Saturday

Educational Course
Preclinical Imaging
Organizers: Kevin M. Bennett, Ph.D. & Mark D. Pagel, Ph.D.
Room 701 A 08:00-16:00 Moderators: Kevin M. Bennett, Ph.D. & Julio Cárdenas-Rodríguez, Ph.D.

Anatomy & Microstructure
08:00  Anatomy & Microstructure: Introduction
Kevin M. Bennett
08:30  Quantitative Susceptibility Mapping for Preclinical Imaging
Luke Xie
09:00  Diffusion Techniques to Image Microstructure
Harish Poptani
09:30  Quantitation
Barjor Gimi
10:00  Break - Meet the Teachers

Physiology & Metabolism
10:30  Physiology & Metabolism: Introduction
Jeff F. Dunn
11:00  Spectroscopy
David L. Morse
11:30  fMRI
Sheila D. Keilholz
12:00  Perfusion
Afonso C. Silva
12:30  Break - Meet the Teachers

Genotyping, Phenotyping & Morphology
14:00  Molecular Imaging & MEMRI
Robia G. Pautler
14:30  Quantitative Phenotyping
R. Mark Henkelman
15:00  Morphology & Development
Daniel H. Turnbull
15:30  Imaging in Cancer
Sabrina M. Ronen
16:00  Adjournment & Meet the Teachers
Saturday

Educational Course
Clinical Cancer MRI: Case-Based
Organizer: Masoom A. Haider, M.D.
Room 701 B  08:30-17:15  
Moderators: Masoom A. Haider, M.D. & Evis Sala, M.D., Ph.D.

Guidelines & Reporting Standards

08:30  Liver MRI & HCC (LiRads)
       Claude B. Sirlin

09:00  Rectal MRI: Adoption of Guidelines & Standards
       Laurent Milot

09:30  Imaging of Lymph Nodes: Update
       Mukesh Harisinghani

10:00  Roundtable

10:15  Break - Meet the Teachers

Addressing Clinical Needs

10:30  Staging Uterine & Cervical Cancer
       Caroline Reinhold

11:00  Rising PSA & Prior Negative Biopsy in Prostate Cancer
       Daniel J. A. Margolis

11:30  Finding Cancer in the Dense Breast: MRI or Tomosynthesis
       Emily F. Conant

12:00  Roundtable

12:15  Break - Meet the Teachers

New Horizons

13:30  Applications of 7T in Cancer
       Tom W. J. Scheenen

14:00  Theranostics: Chemotherapy Response in Breast Cancer
       Nola M. Hylton

14:30  DWI Is a Relevant Biomarker in Cancer
       Dow-Mu Koh

15:00  Roundtable

15:15  Break - Meet the Teachers

Benign, Indolent or Aggressive

15:30  Prostate MRI (PiRads)
       Jelle O. Barentsz

16:00  Small Renal Mass
       Ivan Pedrosa
Saturday

16:30 Nodule in Cirrhosis
   Jeong M. Lee

17:00 Roundtable

17:15 Adjournment & Meet the Teachers

Educational Course

Neuro 1
Organizer: Jonathan H. Gillard, M.D., FRCR, MBA & Howard A Rowley, M.D.
Room 714 A/B 07:30-18:00

Acute Stroke
Moderators: Jeffry R. Alger, Ph.D. & Kei Yamada, M.D.

07:30 Acute Stroke: What the Clinician Wants
       Michael D. Hill

08:00 Acute Stroke: What the Radiologist Provides
       Max Wintermark

08:30 Acute Stroke: What the Physicist Can Add
       Richard Frayne

09:00 Discussion

09:30 Break - Meet the Teachers

Carotid Disease
Moderators: Martin J. Graves, Ph.D. & Steven W. Hetts, M.D.

10:00 Carotid Disease: What the Clinician Wants
       Thomas S. Hatsukami

10:30 Carotid Disease: What the Radiologist Provides
       Alan Moody

11:00 Carotid Disease: What the Physicist Can Add
       Chun Yuan

11:30 Discussion

12:00 Break - Meet the Teachers

Parenchymal CNS Hemorrhage
Moderators: E. Mark Haacke, Ph.D. & Karen A. Tong, M.D.

13:30 Parenchymal CNS Hemorrhage: What the Clinician Wants
       Edip M. Gurol

14:00 Parenchymal CNS Hemorrhage: What the Radiologist Provides
       Patrick A. Turski

14:30 Parenchymal CNS Hemorrhage: What the Physicist Can Add
       Tetsuya Yoneda
Saturday

15:00  Discussion

15:30  Break - Meet the Teachers

Head & Neck Cancer
Moderators: Leon J. van Rensburg, Ph.D. & Osamu Sakai, M.D., Ph.D.

16:00  **Head & Neck Cancer: What the Clinician Wants**  
Ian J. Witterick

16:30  **Head & Neck Cancer: What the Radiologist Provides**  
Lawrence Ginsberg

17:00  **Head & Neck Cancer: What the Physicist Can Add**  
Andreas Boss

17:30  Discussion

18:00  Adjournment & Meet the Teachers

Educational Course

**Cardiac MRI: Function, Perfusion & Viability**
Organizers: Daniel B. Ennis, Ph.D. & Thomas K. F. Foo, Ph.D.
Room 716 A/B 08:00-12:55  
Moderators: Victor A. Ferrari, M.D. & Michael Jerosch-Herold, Ph.D.

The Basics of a Cardiac MRI Exam

08:00  **The Basic Cardiac MRI Examination: Physical Principles**  
Martin J. Graves

08:30  **Clinical Workflow, Anatomy, Cardiac Views, 17-Segment Model, Contrast Agents**  
Ulrich Kramer

Evaluation of Cardiac Function

09:00  **Clinical Needs: Heart Failure (5-Min Background) & How We Image It**  
Michael Salerno

09:25  **Technical Foundations: Physics of Bright Blood Imaging**  
Subashini Srinivasan

09:50  **Research Promises: Real-Time/Free-Breathing/Ungated Functional Assessment**  
Tobias Block

10:15  Break - Meet the Teachers

Evaluation of Cardiac Perfusion

10:30  **Clinical Needs: Ischemic Heart Disease & How We Image It**  
Bobak Heydari

10:55  **Technical Foundations: Physics of Perfusion Imaging**  
Daniel Kim

11:20  **Research Promises: Real-Time/Free-Breathing/Ungated Perfusion**  
Edward DiBella
### Saturday

**Evaluation of Late Gadolinium Enhancement**

<table>
<thead>
<tr>
<th>Time</th>
<th>Session Title</th>
<th>Speaker</th>
</tr>
</thead>
<tbody>
<tr>
<td>11:45</td>
<td>Clinical Needs: Inflammation/Sarcoid/Non-Ischaemic Applications &amp; How We Image It</td>
<td>Joao Lima</td>
</tr>
<tr>
<td>12:10</td>
<td>Technical Foundations: Physics of LGE Imaging</td>
<td>Peter Kellman</td>
</tr>
<tr>
<td>12:55</td>
<td>Adjournment &amp; Meet the Teachers</td>
<td></td>
</tr>
</tbody>
</table>

**Educational Course**

**Cardiovascular MRI: Vascular Flow & Angiography**

*Organizers:* Daniel B. Ennis, Ph.D. & Harald Kramer, M.D.

**Room 716 A/B 14:00-17:50**

**Moderators:** Kim-Lien Nguyen, M.D. & Pauline W. Worters, Ph.D.

**The Basics of a Vascular MRI Exam**

<table>
<thead>
<tr>
<th>Time</th>
<th>Session Title</th>
<th>Speaker</th>
</tr>
</thead>
<tbody>
<tr>
<td>14:00</td>
<td>Basic Contrast &amp; Non-Contrast Methods</td>
<td>Frank R. Korosec</td>
</tr>
<tr>
<td>14:30</td>
<td>Anatomy, Stenoses/Coarct, Shunts, Dissections, Contrast Agents &amp; Application Protocols</td>
<td>Konstantin Nikolaou</td>
</tr>
<tr>
<td>15:00</td>
<td>Break - Meet the Teachers</td>
<td></td>
</tr>
<tr>
<td>15:10</td>
<td>Clinical Needs: Flow in Abdominal Disease (5-Min Background) &amp; How We Image It</td>
<td>Thomas M. Grist</td>
</tr>
<tr>
<td>15:35</td>
<td>Technical Foundations: PC-MRI, Eddy Currents, ROIs &amp; Accuracy/Precision</td>
<td>Aurelien F. Stalder</td>
</tr>
<tr>
<td>16:00</td>
<td>Research Promises: Faster Methods, 4D</td>
<td>Michael Markl</td>
</tr>
<tr>
<td>16:25</td>
<td>Break - Meet the Teachers</td>
<td></td>
</tr>
<tr>
<td>16:35</td>
<td>Clinical Needs: Congenital Heart Disease (5-Min Background) &amp; How We Image It</td>
<td>Bernd J. Wintersperger</td>
</tr>
<tr>
<td>17:00</td>
<td>Technical Foundations: CE-MRA, Acceleration Methods</td>
<td>Stanislas Rapacchi</td>
</tr>
<tr>
<td>17:25</td>
<td>Research Promises: Advanced Acceleration Methods, Cardiac Gated MRA</td>
<td>Peng Hu</td>
</tr>
<tr>
<td>17:50</td>
<td>Adjournment &amp; Meet the Teachers</td>
<td></td>
</tr>
</tbody>
</table>

**Educational Course**

**Perfusion Imaging Brain & Body**

*Organizers:* David L. Buckley, Ph.D. & Linda Knutsson, Ph.D.

**Room 718 A 08:00-12:20**

**Moderators:** Susan T. Francis, Ph.D. & Linda Knutsson, Ph.D.

<table>
<thead>
<tr>
<th>Time</th>
<th>Session Title</th>
<th>Speaker</th>
</tr>
</thead>
<tbody>
<tr>
<td>08:00</td>
<td>What Is Perfusion, and How Is It Measured?</td>
<td>Bradley J. MacIntosh</td>
</tr>
<tr>
<td>Time</td>
<td>Session Title</td>
<td>Presenter</td>
</tr>
<tr>
<td>-------</td>
<td>-------------------------------------------------------------------------------</td>
<td>---------------------------</td>
</tr>
<tr>
<td>08:40</td>
<td>Perfusion Measured by MRI Using an Intravascular Tracer</td>
<td>Ronnie Wirestam</td>
</tr>
<tr>
<td>09:20</td>
<td>Perfusion Measured by MRI Using an Extravascular Tracer</td>
<td>Michael S. Ingrisch</td>
</tr>
<tr>
<td>10:00</td>
<td>Break - Meet the Teachers</td>
<td></td>
</tr>
<tr>
<td>10:20</td>
<td>Perfusion Measured by MRI Using a Diffusive Tracer</td>
<td>Susan T. Francis</td>
</tr>
<tr>
<td>11:00</td>
<td>Applications of Perfusion MRI in the Brain</td>
<td>Greg Zaharchuk</td>
</tr>
<tr>
<td>11:40</td>
<td>Applications of Perfusion MRI in the Body</td>
<td>Mike Notohamiprodjo</td>
</tr>
<tr>
<td>12:20</td>
<td>Adjournment &amp; Meet the Teachers</td>
<td></td>
</tr>
</tbody>
</table>

**Educational Course**

**Quantitative Physiology**

*Organizers:* Jonathan R. Polimeni, Ph.D. & Eric C. Wong, M.D., Ph.D.

*Room 718 A  14:00-17:50  Moderators:* Richard B. Buxton, Ph.D. & Arno Villringer, M.D.

<table>
<thead>
<tr>
<th>Time</th>
<th>Session Title</th>
<th>Presenter</th>
</tr>
</thead>
<tbody>
<tr>
<td>14:00</td>
<td>From Neurons to BOLD</td>
<td>Anna Devor</td>
</tr>
<tr>
<td>14:30</td>
<td>From BOLD to Neurons</td>
<td>Richard B. Buxton</td>
</tr>
<tr>
<td>15:00</td>
<td>Neurometabolic &amp; Neurovascular Couplings Underlying Quantitative BOLD</td>
<td>Fahmeed Hyder</td>
</tr>
<tr>
<td>15:30</td>
<td>Break - Meet the Teachers</td>
<td></td>
</tr>
<tr>
<td>15:50</td>
<td>Imaging Oxygenation</td>
<td>Divya S. Bolar</td>
</tr>
<tr>
<td>16:20</td>
<td>Vascular Permeability Imaging &amp; Quantitative ASL</td>
<td>Danny J. J. Wang</td>
</tr>
<tr>
<td>16:50</td>
<td>4D Flow Imaging of Vascular &amp; CSF Dynamics</td>
<td>Michael Markl</td>
</tr>
<tr>
<td>17:20</td>
<td>Diffusion-Weighted Functional MRI</td>
<td>Allen W. Song</td>
</tr>
<tr>
<td>17:50</td>
<td>Adjournment &amp; Meet the Teachers</td>
<td></td>
</tr>
</tbody>
</table>
Educational Course
Advanced fMRI: Techniques & Applications
Organizers: Jay J. Pillai, M.D. & Jonathan R. Polimeni, Ph.D.
Room 718 B 08:30-11:50  Moderators: Jay J. Pillai, M.D. & Jonathan R. Polimeni, Ph.D.

08:30  Data Driven & Exploratory Analyses
       Vesa J. Kiviniemi

09:00  Dynamic Functional Connectivity
       Catherine E. Chang

09:30  Comparing fMRI with Electrophysiological Recordings
       Afonso C. Silva

10:00  Break - Meet the Teachers

10:20  fMRI Using CBF, CBV, & CMRO2
       Daniel Bulte

10:50  Simultaneous fMR-PET Imaging
       Joseph B. Mandeville

11:20  Emerging Clinical Applications of fMRI
       Beau M. Ances

11:50  Adjournment & Meet the Teachers

Educational Course
Introduction to Functional MRI
Organizers: Peter Jezzard, Ph.D. & James J. Pekar, Ph.D.
Room 718 B 14:00-17:50  Moderators: James J. Pekar, Ph.D. & Joshua S. Shimony, M.D., Ph.D.

14:00  The Physiological Basis of the fMRI Signal
       Claudine Gauthier

14:30  Data Acquisition Considerations
       Fa-Hsuan Lin

15:00  Paradigm Design
       Jeoen C. W. Siero

15:30  Break - Meet the Teachers

15:50  Pre-Processing of fMRI Data
       Stephen C. Strother

16:20  Analyzing Data Using the General Linear Model
       Robert L. Barry

16:50  Introduction to Resting-State fMRI & Functional Connectivity
       Joshua S. Shimony

17:20  Example Applications of fMRI in Basic & Clinical Neuroscience
       Natalie L. Voets
Saturday

17:50 Adjournment & Meet the Teachers

**Educational Course**

**MR Systems Engineering**

*Organizer:* Christopher M. Collins, Ph.D.

*Room 801 A/B 08:30-17:00*  
*Moderators:* Ed B. Boskamp, Ph.D. & Maxim Zaitsev, Ph.D.

**Introduction**

*08:30*  
**MR System Overview (What Is Required to Accomplish MRI?)**  
Shin-ichi Urayama

**Magnets & Shims**

*09:00*  
**Magnet Design, Manufacture & Installation**  
Michael Mallett

*09:30*  
**Shimming: Superconducting, Static & Active**  
Anke Henning

*10:00*  
Break - Meet the Teachers

**Gradients**

*10:30*  
**Gradient Coil Design & Manufacture**  
William B. Handler

*11:00*  
**Gradient Train: Power Amplification Through Chiller Requirements**  
Blaine A. Chronik

*11:30*  
**Eddy Current Calibration & Gradient Preemphasis**  
Thomas Witzel

*12:00*  
Break - Meet the Teachers

**RF & The Console**

*13:30*  
**RF Transmit & Receive Chains**  
Greig C. Scott

*14:00*  
**Control in Execution: Pulse Sequences to Waveforms & Real-Time Controllers**  
Maxim Zaitsev

*14:30*  
**Signal Processing & Reconstruction: FIDs to Images**  
Graeme C. McKinnon

*15:00*  
Break - Meet the Teachers

**Safety & Field Interactions**

*15:30*  
**MR Safety**  
Alayar Kangarlu

*16:00*  
**SAR & RF Power Monitoring**  
Ingmar Graesslin

*16:30*  
**Safety of Devices & Implants in MR**  
Gregor Schaefers
17:00 Adjournment & Meet the Teachers

**Educational Course**

**Physics for Physicists**

*Organizers:* Jürgen R. Reichenbach, Ph.D. & N. Jon Shah, Ph.D.

*John Bassett Theatre 102 08:30-18:00*  

*Moderators:* Jürgen R. Reichenbach, Ph.D. & N. Jon Shah, Ph.D.

**NMR Physics: Firming Up the Foundations**

*08:30*  

**Quantum Mechanical Description of NMR**  
James Tropp

*09:00*  

**Problems in MR That Really Need Quantum Mechanics: The Density Matrix Approach**  
Robert V. Mulkern

*09:30*  

**Multiple Quantum Coherence, Editing & Multidimensional NMR**  
Jianhui Zhong

*10:00*  

Break - Meet the Teachers

*10:30*  

**From Bloch Equation to MR Contrasts: Relaxation & Physical Bases of Tissue Contrast**  
Greg J. Stanisz

*11:00*  

**Other Contrast: Polarization Transfer, Chemical Exchange & Magnetization Transfer**  
Penny A. Gowland

*11:30*  

**Bloch Equation in the Rotating Frame, Multidimensional Excitation**  
John M. Pauly

*12:00*  

**Bloch-Torrey Equation & Diffusion Imaging (DWI, DTI, q-Space Imaging)**  
Dmitry S. Novikov

*12:30*  

Break - Meet the Teachers

**Electromagnetic Fields in MRI: from Theory to Practice**

*14:00*  

**Maxwell Equations & EM Field Modeling for MRI**  
Andreas K. Bitz

*14:30*  

**Static Magnetic Field: Magnetic Field (In)Homogeneity, Susceptibility-Related Contrast & Artifacts**  
Ferdinand Schweser

*15:00*  

**Understanding Gradients from an EM Perspective: (Gradient Linearity, Eddy Currents, Maxwell Terms, & Peripheral Nerve Stimulation)**  
Johan A. Overweg

*15:30*  

Break - Meet the Teachers

*16:00*  

**RF Coils & B1 Mapping**  
Pierre-Francois A. Van de Moortele

*16:30*  

**B1 Shimming & Parallel Transmission**  
Martijn A. Cloos

*17:00*  

**Signal Detection, Reciprocity, Noise & SNR**  
Klaas P. Frisssmann
Saturday

17:30  Descerning Electrical Properties & Electrical Field Distributions from MR Images
       Ulrich Katscher

18:00  Adjournment & Meet the Teachers
Sunday

Educational Course
Molecular Imaging
Organizers: Kristine Glunde, Ph.D. & Mark D. Pagel, Ph.D.
Room 701 A 08:30-17:00

Moderators: Robert Bartha, Ph.D. & Chris A. Flask, Ph.D.

08:30  Quantitative Preclinical Imaging: Strategies, Pitfalls & Alternatives  
       Chris A. Flask

09:15  CEST Agents  
       Mark Woods

10:00  Break - Meet the Teachers

10:30  PET-MR Advantages & Challenges  
       Ambros J. Beer

11:00  Optical-MRI Advantages & Challenges  
       Keith D. Paulsen

11:30  Multimodal Contrast Agents  
       Xiaooyuan Chen

12:00  Break - Meet the Teachers

13:30  Multimodal Molecular Imaging for Image Guided, Ultrasound Triggered & Drug Delivery  
       Chrit T. Moonen

14:00  Imaging of Nucleic Acid-Based Therapies  
       Anna V. Moore

14:30  Reporter Genes  
       Michal Neeman

15:00  Break - Meet the Teachers

15:30  Fundamentals of Hyperpolarization  
       Matthew Merritt

16:00  How to Detect HP Agents: Pulse Sequences  
       John P. Mugler, III

16:30  How to Use HP Agents  
       John Kurhanewicz

17:00  Adjournment & Meet the Teachers

Educational Course
Body MRI- Optimize Your Clinical Practice
Organizers: Lorenzo Mannelli, M.D., Ph.D., Ivan Pedrosa, M.D., Scott B. Reeder, M.D., Ph.D. & Edwin J.R. van Beek, M.D., Ph.D., M.Ed., FRCR
Room 701 B 08:00-16:30

Approach to Setting Up a Body MRI Practice
Moderator: Scott B. Reeder, M.D., Ph.D.
Sunday

08:00  How to Run a Successful Body MRI Practice
       Russell N. Low

08:30  Sequences: General Approach to Body MRI (Abdomen & Pelvis)
       Donald G. Mitchell

09:00  Contrast Agents
       Bachir Taouli

09:30  Break - Meet the Teachers

Focal Liver Lesions
Moderator: Lorenzo Mannelli, M.D., Ph.D.
10:00  MRI of Focal Lesions in the Non-Cirrhotic Liver
       Kartik S. Jhaveri

10:30  MRI in the Cirrhotic Liver
       Hero K. Hussain

GI
Moderator: Ivan Pedrosa, M.D.
11:00  MR Enterography
       Gabrielle Masselli

11:30  Rectal CA Staging
       Gina Brown

12:00  Break - Meet the Teachers

Pelvis
Moderators: Richard Kinh Gian Do, M.D., Ph.D. & Reena C. Jha, M.D.
13:30  Uterus: Benign Disease
       Caroline Reinhold

14:00  Uterus: Malignant Disease
       Andrea G. Rockall

14:30  Adnexal Masses
       Evis Sala

15:00  Break - Meet the Teachers

GU
15:30  Adrenal & Renal
       Peter L. Choyke

16:00  MRU & Bladder CA Staging
       Maryellen Sun

16:30  Adjournment & Meet the Teachers
Educational Course

Neuro 2

Organizers: Jonathan H. Gillard, M.D., FRCR, MBA & Howard A Rowley, M.D.
Room 714 A/B 07:30-17:45

Brain Tumors


07:45  Brain Tumors: What the Clinician Wants  
Andrew Sloan

08:15  Brain Tumors: What the Radiologist Provides  
Marco Essig

08:45  Brain Tumors: What the Physicist Can Add  
Benjamin M. Ellingson

09:15  Discussion

09:45  Break - Meet the Teachers

Multiple Sclerosis

Moderators: Aaron S. Field, M.D., Ph.D. & Seth A. Smith, Ph.D.

10:00  Multiple Sclerosis: What the Clinician Wants  
Eric C. Klawiter

10:30  Multiple Sclerosis: What the Radiologist Provides  
Rolf Jager

11:00  Multiple Sclerosis: What the Physicist Can Add  
Mark J. Lowe

11:30  Discussion

12:00  Break - Meet the Teachers

Pediatric Epilepsy

Moderators: Steven M. Stufflebeam, M.D. & Michael M. Zeineh, M.D., Ph.D.

13:30  Pediatric Epilepsy: What the Clinician Wants  
Edward J. Novotny

14:00  Pediatric Epilepsy: What the Radiologist Provides  
Elysa Widjaja

14:30  Pediatric Epilepsy: What the Physicist Can Add  
Graeme D. Jackson

15:00  Discussion

15:30  Break - Meet the Teachers

Schizophrenia

Moderators: Sofia Chavez, Ph.D. & Nancy J. Lobaugh, Ph.D.

15:45  A Systems Biology Approach Towards Schizophrenia & Neuro Psychiatric Disease  
John- Paul J. Yu
Sunday

16:15  **Schizophrenia: What the Radiologist Provides**  
John D. Port

16:45  **Schizophrenia: What the Physicist Can Add**  
Vincent A. Magnotta

17:15  **Discussion**

17:45  **Adjournment & Meet the Teachers**

**Educational Course**

**Clinical Interpretation & Advanced Imaging**

*Organizers:* William B. Morrison, M.D., & Ravinder R. Regatte, Ph.D.  
*Moderators:* William B. Morrison, M.D. & Ravinder R. Regatte, Ph.D.

**Room 716 A/B  08:00-17:45**

**Basic**

08:00  **Shoulder**  
Philip Robinson

08:30  **Elbow**  
Tetyana A. Gorbachova

09:00  **Wrist & Hand**  
William E. Palmer

09:30  **Pelvis & Groin**  
Johannes B. Roedl

10:00  **Break - Meet the Teachers**

10:30  **Hip**  
Florian M. Buck

11:00  **Knee**  
Lawrence M. White

11:30  **Ankle/foot**  
Mark Schweitzer

12:00  **Break - Meet the Teachers**

**Advanced**

12:30  **Rapid Three-Dimensional Musculoskeletal Imaging Techniques**  
Richard Kijowski

13:00  **Dynamic Contrast-Enhanced MRI (DCEMRI) - Clinical Uses**  
Mary K. Jesse

13:30  **Cartilage Mapping Techniques & Applications**  
Timothy J. Mosher

14:00  **Neurography: How Do I Do It?**  
Alissa J. Burge
14:30  Break - Meet the Teachers

15:00  **Spectroscopy of Musculoskeletal Tumors & More**  
Laura M. Fayad

15:30  **MR-PET in Musculoskeletal**  
Garry E. Gold

16:00  **Ultra High Field MRI**  
Guillaume N. Madelin

16:30  **Metal Artifact Suppression**  
Eric Y. Chang

17:00  Adjournment & Meet the Teachers

### Educational Course
**Imaging Microstructure**
*Organizers:* Daniel C. Alexander, Ph.D., Adam W. Anderson, Ph.D., & Derek K. Jones, Ph.D., DipIPSMA

*Room 718 A  09:00-16:40*

*Moderators:* Adam W. Anderson, Ph.D. & Karin Shmueli, Ph.D.

09:00  **Relaxometry Basics**  
Cornelia Laule

09:20  **Relaxometry Modelling**  
Sean C. L. Deoni

09:40  **Magnetisation Transfer Basics**  
Greg J. Stanisz

10:00  **Magnetisation Transfer Modelling**  
John G. Sled

10:20  Break - Meet the Teachers

11:00  **Diffusion Basics**  
Louise E. Emsell

11:20  **Advanced Diffusion Sequences**  
Evren Ozarslan

11:40  **Diffusion Modelling**  
Markus Nilsson

12:00  Break - Meet the Teachers

*Moderators: Cornelia Laule, Ph.D. & Greg J. Stanisz, Ph.D.*

13:30  **Susceptibility Basics**  
Karin Shmueli

13:50  **Susceptibility Modelling**  
Chunlei Liu
Sunday

14:10  Multi-Modal Modelling  
Nikola A. Stikov

14:30  Microstructure Informed Tractography  
Saad Jbabdi

14:50  Break - Meet the Teachers

15:20  Applications in Neuroscience  
Yaniv Assaf

15:40  Applications in Neurology  
Michael M. Zeineh

16:00  Applications in Cancer  
Eleftheria Panagiotaki

16:20  Applications Elsewhere in the Body  
Roger M. Bourne

16:40  Adjournment & Meet the Teachers

Educational Course  
Big Data: A Primer on Models & Methods  
Organizers: Brian B. Avants, Ph.D. & James C. Gee, Ph.D.
Room 718 B  08:00-12:00  Moderators: Brian B. Avants, Ph.D. & James C. Gee, Ph.D.

08:00  Frontiers in Massive/Big Data Analysis  
Vince D. Calhoun

08:30  Kernelized Methods  
Tom Fletcher

09:15  Graph-Theoretical Methods  
Danielle S. Bassett

10:00  Break - Meet the Teachers

10:30  Statistical Learning  
Ruslan Salakhutdinov

11:15  Mutivariate/Modal Modeling & Analysis  
Brian Avant

12:00  Adjournment & Meet the Teachers

Educational Course  
A Practical Guide to MR Safety  
Organizers: Michael Bock, Ph.D. & Mark E. Ladd, Ph.D.
Room 718 B  13:30-17:30  Moderators: Michael Bock, Ph.D. & Mark E. Ladd, Ph.D.

13:30  MR Safety: Where Do the Risks Come From?  
Harald Kugel
Sunday

14:00 Planning an MR Suite: What Can Be Done to Ensure MR Safety?  
   Emanuel Kanal

14:30 Screening the Patient: How to Deal with the Individual Subject  
   Anne Marie Sawyer

15:00 Break - Meet the Teachers

15:30 Side Effects of High Magnetic Fields  
   Richard W. Bowtell

16:00 Contrast Agent Use in the Age of NSF  
   Tim Leiner

16:30 MR Safety of Implants: How to Separate the Good from the Bad & the Ugly  
   Oliver Kraff

17:00 MRI Safety Events: Lessons Learned  
   Robert E. Watson

17:30 Adjournment & Meet the Teachers

Educational Course  
RF Engineering - Coils
Organizers: Christopher M. Collins, Ph.D. & Nicola F. De Zanche, Ph.D.  
Room 801 A/B 08:30-16:15  Moderators: Andreas K. Bitz, Ph.D. & Graeme C. McKinnon, Ph.D.

08:30 Basics of Transmission Lines & Wave Guidance  
   Steven M. Wright

09:00 Volume & Surface Coils  
   Ed B. Boskamp

09:30 Multi-Tuned Coils  
   Ryan J. Brown

10:00 Break - Meet the Teachers

10:30 Receive Arrays & Circuitry  
   Boris R. Keil

11:00 Transmit Arrays & Circuitry  
   Mark E. Ladd

11:30 RF Modelling  
   Bei Zhang

12:00 Break - Meet the Teachers

14:00 Dielectric Materials & Resonators  
   Sebastian A. Aussenhofer

14:30 Dipoles & Traveling Waves (Was Coils for Hybrid Systems)  
   Alexander J.E. Raaijmakers
Sunday

15:00  Break - Meet the Teachers

15:30  **Construction of Rx Arrays - Chronik**  
       Blaine A. Chronik  
       Kyle M. Gilbert  
       Ravi S. Menon

16:15  Adjournment & Meet the Teachers

**Educational Course**  
**Imaging Acquisition & Reconstruction**  
*Organizers:* N. Jon Shah, Ph.D. & Xiaohong Joe Zhou, Ph.D., D.A.B.R.  
*John Bassett Theatre 102 08:30-17:30*  
*Moderators:* Priti Balchandani, Ph.D. & Maxim Zaitsev, Ph.D.

**Pulse Sequence Building Blocks**

<table>
<thead>
<tr>
<th>Time</th>
<th>Session</th>
<th>Speaker(s)</th>
</tr>
</thead>
<tbody>
<tr>
<td>08:30</td>
<td><strong>RF Pulses Designs: From Basics to the State-Of-The-Art</strong></td>
<td>Michael Garwood</td>
</tr>
<tr>
<td>09:00</td>
<td><strong>Gradients: Spatial Encoding, Contrast Manipulation &amp; Artifact Management</strong></td>
<td>Yong Zhou</td>
</tr>
<tr>
<td>09:30</td>
<td><strong>Dealing with Motion: Gating, Triggering &amp; Sampling</strong></td>
<td>Frederick H. Epstein</td>
</tr>
<tr>
<td>10:00</td>
<td>Break - Meet the Teachers</td>
<td></td>
</tr>
</tbody>
</table>

**Contrast Manipulation**

<table>
<thead>
<tr>
<th>Time</th>
<th>Session</th>
<th>Speaker(s)</th>
</tr>
</thead>
<tbody>
<tr>
<td>10:30</td>
<td><strong>Magnetization-Preparation Modules (Saturation, Inversion &amp; T2-Preparation)</strong></td>
<td>Pippa Storey</td>
</tr>
<tr>
<td>11:00</td>
<td><strong>Pulse Sequence Modules II: (Tagging, Labeling, Diffusion Sensitization &amp; MT)</strong></td>
<td>Peter Jezzard</td>
</tr>
<tr>
<td>11:30</td>
<td><strong>Flow Contrast Without Using Exogenous Agent</strong></td>
<td>Yiping P. Du</td>
</tr>
<tr>
<td>12:00</td>
<td>Break - Meet the Teachers</td>
<td></td>
</tr>
</tbody>
</table>

**Advanced Acquisition Strategies**

<table>
<thead>
<tr>
<th>Time</th>
<th>Session</th>
<th>Speaker(s)</th>
</tr>
</thead>
<tbody>
<tr>
<td>13:30</td>
<td><strong>Echo-Train Pulse Sequences: EPI, RARE &amp; Beyond</strong></td>
<td>Oliver Speck</td>
</tr>
<tr>
<td>14:00</td>
<td><strong>Non-Cartesian K-Space Sampling</strong></td>
<td>Kevin F. King</td>
</tr>
<tr>
<td>14:30</td>
<td><strong>Spoiled &amp; Balanced Gradient-Echo Sequences</strong></td>
<td>Brian A. Hargreaves</td>
</tr>
<tr>
<td>15:00</td>
<td>Break - Meet the Teachers</td>
<td></td>
</tr>
</tbody>
</table>
Image Reconstruction

15:30  Reconstruction of Non-Cartesian K-Space Data
       Ricardo Otazo

16:00  Parallel Imaging Reconstruction
       Felix Breuer

16:30  Phase-Sensitive Image Reconstruction (Dixon, Temperature Mapping, Phase Imaging, SWI, PS-IR, MRE, Etc.)
       E. Mark Haacke

17:00  Compressed Sensing
       William A. Grissom

17:30  Adjournment & Meet the Teachers

Opening Reception
Exhibition Hall  17:45-19:15
Monday

**Plenary Session**

**Lauterbur Lecture**

Plenary Hall FG 07:30-09:15  
*Moderators:* Daniel C. Alexander, Ph.D. & James C. Gee, Ph.D.

07:30 **Welcome & Awards**

*Jeffrey Joseph Neil, M.D., Ph.D.*


*Franz Schmitt, Ph.D.*

**Plenary Session**

**Big Data: Population - Scale Imaging**

*Organizers:* Daniel C. Alexander, Ph.D. & James C. Gee, Ph.D.

Plenary Hall FG 09:15-10:15  
*Moderators:* Daniel C. Alexander, Ph.D. & James C. Gee, Ph.D.

09:15 **0001. What Is Big Data?**

*Paul Thompson*¹

¹University of California

09:35 **0002. Collecting Big Data**

*Monique Breiteler*²

²Erasmus Medical Center

09:55 **0003. Big Data in Action**

*Viren Jain*¹

¹Janelia Research Campus

10:15 **Adjournment**

**Traditional Poster Session: Muscoskeletal**

Exhibition Hall 10:45-12:45  
*(no CME credit)*

**Traditional Poster Session: Cancer**

Exhibition Hall 10:45-12:45  
*(no CME credit)*

**Electronic Poster: Diffusion**

Exhibition Hall 10:45-11:45  
*(no CME credit)*

**Electronic Poster: Perfusion**

Exhibition Hall 10:45-11:45  
*(no CME credit)*

**Study Group Session**

**Psychiatric MR Spectroscopy & Imaging**

Reception Hall 104 BCD 10:45-12:45  
*(no CME credit)*

**Power Pitch Session: Microstructure in CNS**

Power Pitch Theatre, Exhibition Hall 10:45-11:45  
*(no CME credit)*

*Moderators:* Shannon Kolind, Ph.D. & Robert V. Mulkern, Jr., Ph.D.

0004. **Whole-Brain In-Vivo Measurements of the Axonal G-Ratio in a Group of 19 Healthy Volunteers**


¹Department of Systems Neuroscience, University Medical Center Hamburg-Eppendorf, Hamburg, Germany; ²Birkbeck/UCL Centre for NeuroImaging, London, United Kingdom; ³UCL Institute of Cognitive Neurology, London, United Kingdom; ³Wellcome Trust

20
In Vivo Mapping of Myelin G-Ratio in the Human Spinal Cord

T. Duval¹, S. Lévy¹, N. Stikov¹, ², A. Mezer³, T. Witzel¹, B. Keil⁴, V. Smith⁴, L. L. Wald⁴, E. Klawiter⁴, J. Cohen-Adad⁵, ⁵
¹AMRI, LFMI, NINDS, National Institutes of Health, Bethesda, MD, United States
²Montreal Neuronal Institute, McGill University, Montréal, Québec, Canada; ³Edmond and Lily Safra Center for Brain Sciences (ELSC), The Hebrew University, Jerusalem, Israel; ⁴A.A. Martinos Center for Biomedical Imaging, Massachusetts General Hospital, Harvard Medical School, Charlestown, MA, United States; ⁵Functional Neuroimaging Unit, CRUUGM, Université de Montréal, Montréal, Québec, Canada

Physiological Noise Compensation in Gradient Echo Based Myelin Water Imaging

Yoonho Nam¹, Jongho Lee²
¹Department of Electrical and Computer Engineering, Seoul National University, Seoul, Korea

Comparison of ViSTA Myelin Water Imaging with DTI and MT

Han Jang¹, Yoonho Nam¹, Yangsoo Ryu¹, Jongho Lee²
¹Department of Electrical and Computer Engineering, Seoul National University, Seoul, Korea

The Role of Myelin Geometry on Magnetic Susceptibility-Driven Frequency Shifts: Toward Realistic Geometries

Tianyou Xu¹, Sean Foxley¹, Michiel Kleinnijenhuis, Karla Miller
¹Oxford Centre for Functional Magnetic Resonance Imaging of the Brain, University of Oxford, Oxford, Oxfordshire, United Kingdom

Understanding Signal Sources of MT Asymmetry and Inhomogeneous MT for Imaging Myelination

Jae-Woong Kim¹, Seung Hong Choi², Sung-Hong Park²
¹Korea Advanced Institute of Science and Technology, Daejeon, Korea; ²Seoul National University, Seoul, Korea

Fast Absolute Myelin Water Mapping Without an External Water Standard

Thanh D. Nguyen¹, Sneha Pandya¹, Pascal Spincemaille¹, Susan A. Gauthier¹, Yi Wang¹
¹Weill Cornell Medical College, New York, NY, United States

Frequency Difference Mapping for Measurement of White Matter Microstructure

Benjamin Tendler¹, Samuel Wharton¹, Richard Bowtell¹
¹Sir Peter Mansfield Imaging Centre, University of Nottingham, Nottingham, Nottinghamshire, United Kingdom

Modelling the Effect of White Matter Microstructure on Gradient Echo Signal Evolution

Benjamin Tendler¹, Samuel Wharton¹, Richard Bowtell¹
¹Sir Peter Mansfield Imaging Centre, University of Nottingham, Nottingham, Nottinghamshire, United Kingdom

Possible Contribution of the Extracellular Matrix to the MRI Contrast in the Brain

Riccardo Metere¹, Markus Morawski², Henrik Marschner², Carsten Jäger², Tobias Streubel², Stefan Geyer², Katja Reimann², Andreas Schäfer², Harald E. Möller¹
¹Max Planck Institute for Human Cognitive and Brain Sciences, Leipzig, Germany; ²Paul-Flechsig-Institute for Brain Research, University of Leipzig, Leipzig, Germany

Signatures of Microstructure in Conventional Gradient and Spin Echo Signals

Pippa Storey¹, Sohae Chung¹, Noam Ben-Eliezer¹, Gregory Lemberskiy¹, Yvonne W. Lui¹, Dmitry S. Novikov¹
¹Radiology Department, New York University School of Medicine, New York, NY, United States

Dependance of the Apparent T₁ on Magnetization Transfer

Peter van Gelderen¹, Xu Jiang¹, Jeff H. Duyn¹
¹AMRI, LFMI, NINDS, National Institutes of Health, Bethesda, MD, United States
0016. Towards an Optimized and Standardized Amide Proton Transfer (APT) MRI Sequence and Protocol for Clinical Applications

Hye-Young Heo, Yi Zhang, Jochen Keupp, Yansong Zhao, Michael Schar, Dong-Hoon Lee, Peter C.M van Zijl, Jinyuan Zhou.

1Russell H Morgan Department of Radiology and Radiological Science, Johns Hopkins University, Baltimore, MD, United States; 2Philips Research, Hamburg, Germany; 3Philips Healthcare, Cleveland, OH, United States; 4F.M. Kirby Research Center for Functional Brain Imaging, Kennedy Krieger Institute, Baltimore, MD, United States

0017. Can Nuclear Overhauser Enhancement Mediated Chemical Exchange Saturation Transfer (NOE-CEST) Offer a New Insight in Acute Stroke Diagnosis?

Yee Kai Tee, George WJ Harston, Nicholas Blockley, Robert Frost, Thomas W. Okell, Sivarajan Thandeswaran, Fintan Sheerin, Peter Jezzard, James Kennedy, Stephen Payne, Michael Chappell.

1Department of Mechatronics and BioMedical Engineering, Universiti Tunku Abdul Rahman, KL, Malaysia; 2Acute Stroke Programme, Radcliffe Department of Medicine, Oxford University, Oxfordshire, United Kingdom; 3Oxford Centre of Functional MRI of the Brain, Nuffield Department of Clinical Neurosciences, Oxford University, Oxfordshire, United Kingdom; 4Department of Neuroradiology, Oxford University Hospitals NHS Trust, Oxfordshire, United Kingdom; 5Department of Engineering Science, Institute of Biomedical Engineering, Oxford University, Oxfordshire, United Kingdom

0018. GluCEST Imaging in a Primate Model of Alzheimer’s Disease

Julien Flamant, Charlotte Gary, James Koch, Fabien Pifferi, Emmanuel Comoy, Jean-Luc Picq, Julien Valette, Marc Dhenain.

1INSERM US27, CRC-MIRCen, Fontenay-aux-Roses, France; 2CEA/DSV/I2BM/MIRCen, Fontenay-aux-Roses, France; 3CNRS URA 2210, Fontenay-aux-Roses, France; 4Department of Psychology, University of Wisconsin, Oshkosh, WI, United States; 5CNRS-MNHN UMR 7179, Brunoy, France; 6CEA/DSV/IMETI/SEPIA, Fontenay-aux-Roses, France; 7EA 2027, Université Paris 8, Saint-Denis, France

New Insights & Innovations in Cardiovascular MRI

Constitution Hall 105 10:45-12:45 Moderators: Daniel Kim, Ph.D. & Sonia Nielles-Vallespin, Ph.D.

10:45 0019. Novel Biomarkers of Mitochondrial Function: The Mitochondrial Index and the Crossing Point of Glucose and Oxygen Consumption Curves Obtained In Vivo by Dynamic Deuterium Magnetic Resonance

Gheorghe D. Mateescu, Chris A. Flaska, James Koch, Fabien Pifferi, Emmanuel Comoy, Jean-Luc Picq, Julien Valette, Marc Dhenain.

1Chemistry, Case Western Reserve University, Cleveland, OH, United States; 2Biomedical Engineering, Case Western Reserve University, Cleveland, OH, United States; 3Case Western Reserve University, OH, United States; 4Bioengineering, University of Indiana at Chicago, IN, United States; 5Radiology, Case Western Reserve University, OH, United States; 6Biomedical Engineering, Case Western Reserve University, OH, United States


1Singapore Bioimaging Consortium, Agency for Science, Technology and Research, Singapore, Singapore; 2Schulich Heart Research Program, Sunnybrook Health Science Centre, Toronto, ON, Canada; 3GE-Healthcare, Toronto, ON, Canada; 4Keenan Research Centre in the Li Ka Shing Knowledge Institute, St. Michael’s Hospital, Toronto, ON, Canada

11:09 0021. Cardiac Metabolic Adaptations in Diabetic Mice Protect the Heart from Pressure Overload-Induced Failure: A Combined In Vivo MRI, MRS, and PET Approach


1Biomedical NMR, Eindhoven University of Technology, Eindhoven, Netherlands; 2Department of Clinical Radiology, University Hospital Münster, Münster, Germany; 3Institute of Medical Microbiology, Jena University Hospital, Jena, Germany; 4European Institute for Molecular Imaging, Münster, Germany

11:21 0022. Alterations in Myofiber Architecture in Response to Left Ventricular Pressure Overload Are Associated with the Upregulation of Genes Encoding for Cell Adhesion and Matrix Remodeling

11:33 0023. **Flexible Time-Resolved Golden Angle Dual-Inversion Recovery Acquisition to Facilitate Sequence Timing in High-Resolution Coronary Vessel Wall MRI at 3T**

**Giulia Ginami**1, 2, **Jérôme Yerly**1, 2, **Matthias Stuber**1, 2

1Department of Radiology, University Hospital (CHUV) and University of Lausanne (UNIL), Lausanne, Switzerland; 2Center for Biomedical Imaging (CIBM), Lausanne and Geneva, Switzerland

11:45 0024. **In Vivo Measurement of Vessel Wall Diffusion Anisotropy in Carotid Arteries**

**Peter Oprellesnig**1, **Harald Mangge**1, **Rudolf Stollberger**2, **David Porter**1, **Hannes Deutschmann**1, **Gernot Reischhofer**1

1Clinical Institute for Medical and Chemical Laboratory Diagnosis, Medical University of Graz, Graz, Austria; 2Institute of Medical Engineering, Graz University of Technology, Austria; 3MR R&D, Siemens AG, Healthcare Sector, Erlangen, Germany; 4Department of Radiology, Division of Vascular and Interventional Radiology, Medical University of Graz, Austria; 5Department of Radiology, Division of Neuroradiology, Medical University of Graz, Austria

11:57 0025. **Steady-State Real-Time Cine Imaging of Stress/Rest Myocardial Perfusion for Rapid Detection of High-Grade Coronary Stenosis**

**Behzad Sharif**1, **Reza Arsanjani**1, **Hsin-Jung Yang**1, **Rohan Dharmakumar**1, **Noel Bairey Merz**1, **Daniel S. Berman**1, **Debiao Li**1

1Biomedical Imaging Research Institute, Dept. of Biomedical Sciences, Cedars-Sinai Medical Center, Los Angeles, CA, United States

12:09 0026. **MR Fingerprinting for Quantification of Myocardial T1, T2, and M0**

**Jesse I. Hamilton**1, **Yan Jiang**1, **Yong Chen**2, **Dan Ma**1, **Wei-Ching Lo**1, **Mark Griswold**1, 2, **Nicole Seiberlich**1, 2

1Biomedical Engineering, Case Western Reserve University, Cleveland, OH, United States; 2Radiology, Case Western Reserve University, Cleveland, OH, United States

12:21 0027. **Five-Dimensional Cardiac and Respiratory Motion-Resolved Whole-Heart MRI**

**Li Feng**1, **Simone Coppo**1, **Davide Piccini**2, 3, **Ruth P. Lim**4, **Matthias Stuber**1, **Daniel K. Sodickson**1, **Ricardo Otazo**1

1Center for Advanced Imaging Innovation and Research (CAI2R), Department of Radiology, New York University School of Medicine, New York, NY, United States; 2Department of Radiology, University Hospital (CHUV) and University of Lausanne (UNIL); 3Center for Biomedical Imaging (CIBM), Lausanne, Switzerland; 4Advanced Clinical Imaging Technology, Siemens Healthcare IM BM PI, Lausanne, Switzerland; 5Department of Radiology, Austin Health and The University of Melbourne, Melbourne, Victoria, Australia

12:33 0028. **Improved Free-Running Self-Navigated 4D Whole-Heart MRI Through Combination of Compressed Sensing and Parallel Imaging**

**Simone Coppo**1, **Li Feng**2, **Davide Piccini**2, 3, **Jérôme Chapinot**1, **Gabriele Bonanno**1, **Gabriella Vincenti**2, **Juerg Schwitter**3, **Ricardo Otazo**1, **Daniel K. Sodickson**1, **Matthias Stuber**1

1Department of Radiology, University Hospital (CHUV), University of Lausanne (UNIL); 2Center for Biomedical Imaging (CIBM), Lausanne, Switzerland; 3Center for Advanced Imaging Innovation and Research (CAI2R), Department of Radiology, New York University School of Medicine, New York, United States; 4Advanced Clinical Imaging Technology, Siemens Healthcare IM BM PI, Lausanne, Switzerland; 5Department of Radiology, University Hospital (CHUV), University of Lausanne (UNIL), Center for Biomedical Imaging (CIBM), Lausanne, Switzerland; 6Department of Cardiology, University Hospital (CHUV), University of Lausanne (UNIL), Lausanne, Switzerland

**Young Investigator Awards Presentations**

Room 701 A 10:45-12:45

10:45 0029. **Selective Magnetic Resonance Imaging of Magnetic Nanoparticles by Acoustically Induced Rotary Saturation (AIRS)**

**Bo Zhu**1, 2, **Thomas Witze**1, **Shan Jiang**1, **Susie Y. Huang**1, **Bruce R. Rosen**1, 2, **Lawrence L. Wald**1, 2

1Martinos Center for Biomedical Imaging, Department of Radiology, Massachusetts General Hospital, Charlestown, MA, United States; 2Harvard-MIT Division of Health Sciences Technology, Massachusetts Institute of Technology, Cambridge, MA, United States; 3David H Koch Institute for Integrative Cancer Research, Department of Chemical Engineering, Massachusetts Institute of Technology, Cambridge, MA, United States; 4Department of Meridian & Acupuncture, Collaborating Center for Traditional Medicine, East-West Medi, Kyung Hee University, Seoul, Korea
11:05 0030. Spin Echoes in the Regime of Weak Dephasing
Jakob Assländer, Steffen Glaser, Jürgen Hennig
Dept. of Radiology - Medical Physics, University Medical Center, Freiburg, Germany; Dept. of Chemistry, Technische Universität München, Germany

11:25 0031. k-T FASTER: Acceleration of fMRI Data Acquisition Using Low Rank Constraints
Mark Chiew, Stephen M. Smith, Peter J. Koopmans, Nadine N. Graedel, Thomas Blumensath, Karla L. Miller
FMRIB Centre, University of Oxford, Oxford, Oxfordshire, United Kingdom

11:45 0032. Free-Breathing Pediatric MRI with Nonrigid Motion Correction and Acceleration
Joseph Yitan Cheng, Tao Zhang, Nichanan Ruangwattanapaisarn, Marcus T. Alley, Martin Uecker, John M. Pauly, Michael Lustig, Shreyas S. Vasavada
Electrical Engineering, Stanford University, Stanford, CA, United States; Radiology, Stanford University, Stanford, CA, United States; Ramathibodi Hospital, Mahidol University, Bangkok, Thailand; Electrical Engineering and Computer Sciences, University of California, Berkeley, CA, United States

12:05 0033. In Vivo Visualization of Mesoscopic Anatomy of Healthy and Pathological Lymph Nodes Using 7T MRI: A Feasibility Study
Martin Thomas Freitag, Mathies Breithaupt, Moritz Berger, Reiner Umathum, Armin M. Nagel, Jessica Hassel, Mark E. Ladd, Wolfhard Semmler, Bram Stieltjes, Heinz-Peter Schlemmer
Section Quantitative Imaging Based Disease Characterization, German Cancer Research Center, Heidelberg, Baden-Wuerttemberg, Germany; Department of Medical Physics in Radiology, German Cancer Research Center, Heidelberg, Germany; Department of Dermatology, National Center for Tumor Diseases (NCT), University of Heidelberg, Heidelberg, Germany; Department of Radiology, German Cancer Research Center, Heidelberg, Baden-Wuerttemberg, Germany

12:25 0034. Automatic and Quantitative Assessment of Total and Regional Muscle Tissue Volume Using Multi-Atlas Segmentation
Anette Karlsson, Johannes Rosander, Joakim Tallberg, Anders Grönqvist, Magnus Borga, Olof Dahlqvist, Leinhard
Department of Biomedical Engineering (IMT), Linköping University, Linköping, Sweden, Sweden; Center for Medical Image Science and Visualization (CMIV), Linköping University, Linköping, Sweden; Advanced MR Analytics (AMRA) AB, Linköping, Sweden; Center for Medical Image Science and Visualization (CMIV), Linköping University, Linköping, Sweden; Department of Radiation Physics and Department of Medical and Health Sciences, Linköping University, Linköping, Sweden; Department of Medical and Health Sciences (IMI), Linköping University, Linköping, Sweden

10:45 0035. MRI-Guided Focal Laser Ablation for Localized Prostate Cancer: a Single Center Report on Technique and Intermediate-Term Outcomes
Sherif G. Nour, Tracy E. Powell, Peter J. Ross
Radiology & Imaging Sciences, Emory University, Atlanta, GA, United States; Interventional MRI Program, Emory University, GA, United States; Radiology & Imaging Sciences, Emory University, GA, United States; Radiation Oncology, Emory University, GA, United States; School of Medicine, Emory University, GA, United States

10:57 0036. Multi-Parametric MRI Assessment of Tumor Response to High-Intensity Focused Ultrasound in a Rat Glioma Model
Yi Zhang, Dong-Hoon Lee, Kai Zhang, Antonella Mangraviti, Chen Yang, Hye-Young Heo, Betty Tyler, Ari Partanen, Keyvan Farahani, Paul Bottomley, Peter van Zijl, Jinyuan Zhou
Division of MR Research, Department of Radiology, Johns Hopkins University, Baltimore, MD, United States; Department of Neurosurgery, Johns Hopkins University, Baltimore, MD, United States; Clinical Science MR Therapy, Philips Healthcare, Andover, MA, United States; National Cancer Institute, Bethesda, MD, United States; F. M. Kirby Research Center for Functional Brain Imaging, Kennedy Krieger Institute, Baltimore, MD, United States

11:09 0037. MR-Guided Blood-Brain Barrier Disruption by Transcranial Focused Ultrasound: Preclinical Testing on a Trans-Human Skull Pig Model
Yueyi Huang, Ryan Alkins, Michael L. Schwartz, Kullervo Hynynen
Sunnybrook Research Institute, Toronto, ON, Canada; Division of Neurosurgery, Sunnybrook Health Sciences Centre, Toronto, ON, Canada; Department of Medical Biophysics, University of Toronto, Toronto, ON, Canada
Monday

11:21 0038. Respiration Artifact Correction in PRF MR Thermometry Using Phase Navigators
Bryant T. Svedin1, 2, Allison Payne3, Dennis L. Parker4
1Utah Center for Advanced Imaging Research, Salt Lake City, UT, United States; 2Physics, University of Utah, Salt Lake City, UT, United States; 3Mechanical Engineering, University of Utah, Salt Lake City, UT, United States; 4Radiology, University of Utah, Salt Lake City, UT, United States

11:33 0039. White-Matter-Nulled MP-RAGE Permits Patient-Specific Tracking of Focused Ultrasound Thalamic Ablation for Essential Tremor
Jason Su1, Thomas Toudias2, Manojkumar Saranathan3, Casey Halpern4, Kim Butts-Pauly5, Jaimie Henderson4, Pejman Ghanouni1, Brian K. Rutt6
1Electrical Engineering, Stanford University, Stanford, CA, United States; 2Neuroradiology, Bordeaux University Hospital, Bordeaux, France; 3Neuroradiology, Stanford University, Stanford, CA, United States; 4Neurosurgery, Stanford University, Stanford, CA, United States

11:45 0040. Screen Printed HIFU Compatible Receive Coil
Joseph Russell Corea1, Patrick Ye2, Anita Flynn3, Kim Butts-Pauly4, Ana Claudia Arias5, Michael Lustig6
1University of California Berkeley, Berkeley, CA, United States; 2Radiology, Stanford, Stanford, CA, United States

11:57 0041. Hybrid MR/US-Guided HIFU for Abdominal Targets: In Vivo Demonstration of 3D Motion Correction and Focal Point Locking on an Absolute Reference Marker
Lorena Petrusca1, Gibran Manasseh2, Zarko Celicanin3, Romain Breguet, Olivier Bieri4, Vincent Auboiron5, Christoph D. Becker, Sylvain Terraz, Rares V. Salomir6
1University of Geneva, Geneva, Switzerland; 2Radiology, University Hospitals of Geneva, Geneva, Switzerland; 3University Hospital Basel, Basel, Switzerland; 4LETI CEA, Grenoble, France, France

12:09 0042. Motion Correction Strategies for Cardiac MR Thermometry During RF-Ablation.
Valéry Ozenne1, Solenn Toupin1, 2, Baudouin Denis de Senneville1, Pierre Bour1, Fanny Vaillant1, Matthieu Lepetit-Coiffé1, Pierre Jais2, Bruno Quesson1
1Institut de Rythmologie et Modélisation Cardiaque, Bordeaux, France; 2SIEMENS Healthcare, Saint Denis, France; 3IMB, UMR 5251 CNRS/University of Bordeaux, Bordeaux, France

12:21 0043. Model-Based Multi-Echo Water/Fat-Separated MR Thermometry
Megan E. Poorman1, 2, Chris J. Diederich3, Graham Sommer4, Kim Butts-Pauly5, William A. Grissom1, 2
1Biomedical Engineering, Vanderbilt University, Nashville, TN, United States; 2Institute of Imaging Science, Vanderbilt University, Nashville, TN, United States; 3Radiation Oncology, University of California, San Francisco, CA, United States; 4Radiology, Stanford University, Stanford, CA, United States

Nadeige Corbin1, Jonathan Vappou1, Elodie Breton1, Quentin Boehler1, Laurent Barbé1, Pierre Renaud1, Michel de Mathelin1
1ICube, Université de Strasbourg, CNRS, IHU Strasbourg, Strasbourg, France

fMRI: Resting-State Functional Connectivity
Room 714 A/B 10:45-12:45 Moderators: Mark J. Lowe, Ph.D. & T.B.A.

10:45 0045. Comparison of BOLD and CBV-Weighted Resting State Connectivity to An Anatomical 'gold Standard' in the Motor Network of the Squirrel Monkey Brain
Yurui Gao1, 2, Feng Wang1, 2, Ivona Stepniievska1, Ann S. Choe1, 2, Kurt G. Schilling1, 12, Landman A. Bennett3, 5, Adam W. Anderson1, 2, Zhaohua Ding3, 4, Limin Chen2, T John C. Gore3, 5
1Department of Biomedical Engineering, Vanderbilt University, Nashville, TN, United States; 2Institute of Imaging Science, Vanderbilt University, Nashville, TN, United States; 3Department of Radiology and Radiological Science, Vanderbilt University, Nashville, TN, United States; 4Department of Psychology, Vanderbilt University, TN, United States; 5Department of Electrical Engineering, Vanderbilt University, Nashville, TN, United States
**Monday**

**10:57**

**0046.** Remodeled Resting State Functional Connectivity Pattern in the Default Mode Network and Cortico – Striatal Circuitry of GPR8 Knock-Out Mouse Brain  
1Computational Neuroscience, Bernstein Center Freiburg, University of Freiburg, Freiburg, Baden - Württemberg, Germany; 2Diagnostic Radiology, Medical Physics, University Hospital Freiburg, Freiburg, Baden - Württemberg, Germany; 3Faculty of Biology, University of Freiburg, Freiburg, Baden - Württemberg, Germany; 4Institut de Génétique et de Biologie Moléculaire et Cellulaire, Strasbourg, France; 5Douglas Research Center, McGill University, Montreal, Canada

**11:09**

**0047.** Voxel-Scale Mapping of the Mouse Brain Functional Connectome  
*Adam Liska*, 1, 2, *Alberto Gallusara*, 1, 2, *Adam J. Schwarz*, 3, 4, *Alessandro Gozzi*, 1  
1Center for Neuroscience and Cognitive Systems @ UniTn, Istituto Italiano di Tecnologia, Rovereto, TN, Italy; 2Center for Mind/Brain Sciences, University of Trento, Rovereto, TN, Italy; 3Department of Psychological and Brain Sciences, Indiana University, Bloomington, IN, United States

**11:21**

**0048.** Mapping Resting-State Dynamics on Spatio-Temporal Graphs: A Combined Functional and Diffusion MRI Approach  
1Signal Processing Laboratory 5 (LTS5), Ecole Polytechnique Fédérale de Lausanne (EPFL), Lausanne, Switzerland; 2Department of Radiology, Lausanne University Hospital (CHUV) and University of Lausanne, Lausanne, Switzerland; 3Department of Neurology, University of Freiburg, Freiburg, Baden - Württemberg, Germany; 4INESC-ID and Department of Electrical and Computer Engineering, Instituto Superior Técnico, Universidade de Lisboa, Lisbon, Portugal

**11:33**

**0049.** Does Vasomotion Alter Functional Connectivity? a Multi-Modal Study Using Optical Imaging Spectroscopy and BOLD fMRI  
1Psychology, University of Sheffield, Sheffield, South Yorks, United Kingdom

**11:45**

**0050.** Can Resting State fMRI Be Used to Map Cerebrovascular Reactivity?  
1Advanced Imaging Research Center, University of Texas Southwestern Medical Center, Dallas, TX, United States; 2Department of Neurological Surgery Clinic, University of Texas Southwestern Medical Center, Dallas, TX, United States; 3Department of Radiology, University of Texas Southwestern Medical Center, TX, United States

**11:57**

**0051.** Subject-Specific Modeling of Physiological Noise in Resting-State fMRI at 7T  
1Institute for Systems and Robotics and Department of Bioengineering, Instituto Superior Técnico, Universidade de Lisboa, Lisbon, Portugal; 2Department of Radiology, A.A. Martinos Center for Biomedical Imaging, MGH and Harvard Medical School, Boston, MA, United States; 3INESC-ID and Department of Electrical and Computer Engineering, Instituto Superior Técnico, Universidade de Lisboa, Lisbon, Portugal

**12:09**

**0052.** Inter-Scanner Reliability of Graph-Theoretic Brain Network Metrics  
*Thomas Welton*, 1, *Dorothee P. Auer*, 1, *Robert A. Dineen* 1  
1Sir Peter Mansfield Imaging Centre, School of Medicine, University of Nottingham, Nottingham, Nottinghamshire, United Kingdom

**12:21**

**0053.** Anisotropy of Local Functional Connectivity (LFC) in Resting State fMRI Time Series: What Does It Say About the fMRI Signal?  
1Center for NMR Research, Penn State University, Hershey, PA, United States

**12:33**

**0054.** fMRI-Derived Functional Connectivity Density Mapping as a Biomarker of State Changes as Reflected by Glucose Metabolism  
1Diagnostic Radiology, Magnetic Resonance Research Center, Yale University, New Haven, CT, United States; 2Neuroradiology, Nuclear Medicine, Universität München, München, Germany; 3Technische, Universität München - Neuroimaging Center, München, Germany; 4Institut de Génétique et de Biologie Moléculaire et Cellulaire, Strasbourg, France; 5Douglas Research Center, McGill University, Montreal, Canada; 6IPM, University of Tehran, Tehran, Iran
New Encoding Methods for MRS & Non-Proton MRI
Room 716 A/B 10:45-12:45 Moderators: Daniel M. Spielman, Ph.D. & Assaf Tal, Ph.D.

10:45 0055. Hybrid Encoding for Quantitative Electron Paramagnetic Resonance Imaging
Hyungsok Jang1, 2, Chandramouli Gadisetti1, Devasahayam Nallathamby3, Murali C. Krishna4, Alan B. McMillan5
1Radiology, University of Wisconsin, Madison, WI, United States; 2Electrical and Computer Engineering, University of Wisconsin, Madison, WI, United States; 3GenEmpira Consulting Inc., Columbia, MD, United States; 4Radiation Biology Branch, Center for Cancer Research, National Cancer Institute, Bethesda, MD, United States

10:57 0056. Efficient Quantification of Metabolite Concentration and T1 Relaxation by 31P Spectroscopic Magnetic Resonance Fingerprinting
Charlie Yi Wang1, Mark Alan Griswold2, Xin Yu2
1Biomedical Engineering, Case Western Reserve University, Cleveland, OH, United States; 2Radiology, Case Western Reserve University, Cleveland, OH, United States

11:09 0057. Accelerated Multi Voxel MR Spectroscopy
Vincent Boer1, Dennis Klomp, Peter Barker2
1Radiology, University Medical Center Utrecht, Utrecht, Netherlands; 2Radiology, Johns Hopkins University, Baltimore, MD, United States

11:21 0058. Quantitative Proton MR Spectroscopy of Non-Enhancing Lesions and Pre-Lesional Tissue in Early Multiple Sclerosis
Ivan I. Kirov1, 2, Shu Liu1, 2, William E. Wu1, 2, Assaf Tal3, Matthew Davitz1, 2, Henry Rustinek1, 2, Joseph Herbert1, Oded Gonen1, 2
1Radiology, New York University School of Medicine, New York, NY, United States; 2Center for Advanced Imaging Innovation and Research (CAI2R), New York University, New York, NY, United States; 3Chemical Physics, Weizmann Institute of Science, Israel; 4Neurology, New York University School of Medicine, New York, NY, United States

Tangi Roussel1, 2, Jens T. Rosenberg3, Samuel C. Grant2, Lucio Frydman1
1Department of Chemical Physics, Weizmann Institute of Science, Rehovot, Israel; 2National High Magnetic Field Laboratory, Tallahassee, FL, United States; 3Chemical & Biomedical Engineering, The Florida State University, Tallahassee, FL, United States

11:45 0060. Accelerated Echo Planer J-Resolved Spectroscopic Imaging of Insular Cortex and Putamen in Obstructive Sleep Apnea
Manoj Kumar Sarma1, Paul Michael Macey2, Rajakumar Nagarajan1, Ravi Aysola1, M. Albert Thomas1
1Radiological Sciences, UCLA School of Medicine, Los Angeles, CA, United States; 2School of Nursing, UCLA School of Medicine, Los Angeles, CA, United States; 3Division of Pulmonary and Critical Care Medicine, UCLA School of Medicine, Los Angeles, CA, United States

11:57 0061. Validation of Accelerated TE-Averaged Echo-Planar Spectroscopic Imaging in Healthy and HIV Youths
Zohaib Iqbal1, Neil E. Wilson1, Brian L. Burns2, Margaret A. Keller3, Michael Albert Thomas1
1University of California - Los Angeles, Los Angeles, CA, United States

12:09 0062. Multiband MR Spectroscopic Imaging in Human Brain
Julie W. Pan1, Tiejun Zhao2, Victor Yushmanov3, Hoby Hetherington1
1University of Pittsburgh, Pittsburgh, PA, United States; 2Siemens Medical Systems, PA, United States

12:21 0063. Synchronous Sodium (23Na) and Proton (1H) Radial Imaging of the Human Knee on a Clinical MRI Scanner
Joshua Kaggs1, Bijaya Thapa2, Nabraj Sapkota2, Glen Morrell2, Neal Bangerter2, Kyle Jeong3, Xianfeng Shi3, Eunjoo Jeong3
1Radiology, New York University School of Medicine, New York, NY, United States; 2Center for Advanced Imaging Innovation and Research, National Cancer Institute, Bethesda, MD, United States; 3Radiology, University Medical Center Utrecht, Utrecht, Netherlands
Monday

12:33  0064.  Fast Sodium Imaging at 9.4 Tesla
Christian Mirkes1, 2, G. Shajani1, Klaus Scheffler1, 2

1High-Field MR Center, Max Planck Institute for Biological Cybernetics, Tuebingen, BW, Germany; 2Department for Biomedical Magnetic Resonance, University of Tübingen, Tuebingen, BW, Germany

Brain Tumor Imaging - Focus on Treatment
Constitution Hall 107  10:45-12:45

10:45  0065.  MRI Tracked Tumor Physiology in the Hours After 20 Gy Single-Fraction Radiation
Rasha M. Elmghirbi1, 2, Stephen L. Brown1, Tavarekere N. Nagaraja1, Madhava P. Aryal1, 3, Kelly Ann Keenan1, Suyamprav Panda2, Hassan Bagher-Ehadian2, James R. Ewing1, 2, 3

1Radiology, Oakands University, Rochester, MI, United States; 2Neurology, Henry Ford Health System, Detroit, MI, United States; 3Radiation Oncology, Henry Ford Health System, Detroit, MI, United States

10:57  0066.  Application of 3D High-Resolution Multi-Echo TOF-SWI Acquisition in Radiation-Induced Cerebral Microbleeds at 3T
Xiaowei Zou1, Wei Bian2, Jonathan I. Tamir2, Suchandríma Banerjee1, Susan M. Chang1, Michael Lustig3, Sarah J. Nelson1, Janine M. Lupo1

1University of California San Francisco, San Francisco, CA, United States; 2Radiology, Stanford University, Stanford, CA, United States; 3Biomedical Engineering, Stanford University, Stanford, CA, United States

11:09  0067.  Differentiation Between Progressive Disease and Treatment Necrosis in Patients with Glioblastoma Using Dynamic Contrast Enhancement MRI
Moran Artzi1, 3, Gilad Liberman1, 3, Guy Nadav1, 3, Deborah T. Blumenthal4, Felix Bokstein5, Orna Atzeni6, Dafna Ben Bashat1, 3, 6

1Functional Brain Center, Tel Aviv Sourasky Medical Center, Tel Aviv, Israel; 2Sackler Faculty of Medicine, Tel Aviv University, Tel Aviv, Israel; 3Department of Computer Science, Weizmann Institute, Israel; 4Department of Biomedical Engineering, Tel Aviv University, Tel Aviv, Israel; 5Neuro-Oncology Service, Tel Aviv Sourasky Medical Center, Tel Aviv, Israel; 6Sackler Faculty of Medicine and Sagol School of Neuroscience, Tel Aviv University, Tel Aviv, Israel

11:21  0068.  Dose and Volume Effects of Radiation on White Matter in Children Treated for Medulloblastoma
Iska Moxon-Emre1, 2, Eric Bouffet1, Michael D. Taylor1, 2, Normand Lapierre, 23, Michael Sharpe, 23, Suzanne Laughlin1, Nadia Scantlebury1, Nicole Law1, 2, David Malkin1, 2, Jovanka Skocic1, Logan Richard1, 2, Donald Mabbot1, 2

1Hospital for Sick Children, Toronto, Ontario, Canada; 2University of Toronto, Toronto, Ontario, Canada; 3University Health Network, Toronto, Ontario, Canada

11:33  0069.  The Effect of Systemic Chemotherapy on White Matter Tracts Involved with Cognition in Children with NF1-Associated Optic Pathway Gliomas
Peter MK de Blank1, Michael J. Fisher2, Timothy PL Roberts2, Jeffrey I. Berman2

1UH Case Medical Center, Cleveland, OH, United States; 2The Children's Hospital of Philadelphia, PA, United States

11:45  0070.  Comparison of Diffusion and Perfusion Parameters in Distinguishing Radiation Effect and Necrosis from GBM
Melissa A. Prah1, Mona M. Al-Grizawi2, Wade M. Mueller2, Raymond G. Hoffmann3, Mahua Dasgupta1, Kathleen M. Schmauder4, 5

1Radiology, Medical College of Wisconsin, Milwaukee, WI, United States; 2Neurosurgery, Medical College of Wisconsin, Milwaukee, WI, United States; 3Pediatrics, Medical College of Wisconsin, Milwaukee, WI, United States; 4Biophysics, Medical College of Wisconsin, Milwaukee, WI, United States

11:57  0071.  Tissue Mapping in Brain Tumors with Partial Volume Magnetic Resonance Fingerprinting (PV-MRF)
12:09 0072. Parameterization of Delayed Contrast Enhancement Maps for the Depiction of Necrosis in Glioblastoma

Mary A. McLean¹, Stephen J. Price², Ferdia A. Gallagher³, John R. Griffiths³
¹Cancer Research UK Cambridge Institute, University of Cambridge, Cambridge, Cambridgeshire, United Kingdom; ²Dept of Neurosurgery, University of Cambridge, Cambridge, Cambridgeshire, United Kingdom; ³Dept of Radiology, University of Cambridge, Cambridge, Cambridgeshire, United Kingdom

12:21 0073. Abnormal Tumor and Peritumor Vasculature and Metabolism Differentiate Primary from Metastatic Brain Tumors

Ingrid Digerne⁶, Frédéric Courivaud¹, Cathrine Sashaug⁶, Marco C. Pinho¹, Oliver M. Geier¹, Einar Vik-Mo¹, Knut Haakon Hole¹, Grete Løvland¹, Svein Are Vatnehøl¹, Torstein R. Meling³, Otto Rapalino³, Ate Bjørnerud⁴, ⁵, Kyrr E. Emblem⁴
¹The Intervention Centre, Oslo University Hospital, Oslo, Norway; ²Department of Radiology, Oslo University Hospital, Oslo, Norway; ³Department of Radiology, University of Texas Southwestern Medical Center, Dallas, TX 75235, United States; ⁴Department of Neurosurgery, Oslo University Hospital, Oslo, Norway; ⁵Department of Radiology, Oslo University Hospital, Oslo, Norway; ⁶Department of Radiology, Massachusetts General Hospital and Harvard Medical School, Boston, MA 02114, United States; ⁷Department of Physics, University of Oslo, Oslo, Norway

12:33 0074. ¹³C MRS of Hyperpolarized [1-¹³C] Pyruvate Can Differentiate Between SAHA Resistant and Sensitive Glioblastoma Cells

Pia Eriksson¹, Myriam M. Chaumeil¹, Jaydeep Mukherjee², ³, Russell O. Pieper², ³, Sabrina M. Ronen¹, ³
¹Radiology & Biomedical Imaging, University of California San Francisco, San Francisco, CA, United States; ²Neurological Surgery, University of California San Francisco, San Francisco, CA, United States; ³Brain Tumor Research Center, University of California San Francisco, CA, United States

Novel Image Reconstruction Methods

John Bassett Theatre | 102 10:45-12:45  Moderators: Justin P. Haldar, Ph.D. & Daniel S. Weller, Ph.D.

10:45 0075. Acquisition-Free Nyquist Ghost Correction for Parallel Imaging Accelerated EPI

Eric Peterson¹, Murat Aksoy¹, Julian MacLaren¹, Roland Bammer¹
¹Department of Radiology, Stanford University, Stanford, CA, United States

10:57 0076. Externally Calibrated Parallel Imaging in the Presence of Metallic Implants

Curtis N. Wiens¹, Nathan S. Artz¹,², Hyungseok Jang¹, Alan B. McMillan¹, Scott B. Reeder¹,²
¹Department of Radiology, University of Wisconsin, Madison, WI, United States; ²Department of Radiological Sciences, St. Jude Children's Research Hospital, Memphis, TN, United States; ³Department of Medical Physics, University of Wisconsin, Madison, WI, United States

11:09 0077. Joint Compressed Sensing and Sparse Phase Retrieval: Reconstruction from a Combination of Complex and Magnitude-Only K-Space Measurements

Mehmet Akcakaya¹, Vahid Tarokh², Reza Nezafat¹
¹Beth Israel Deaconess Medical Center, Harvard Medical School, Boston, MA, United States; ²Harvard University, Cambridge, MA, United States

11:21 0078. Simultaneous Multi-Slice MRI Reconstruction Using LORAKS

Tae Hyung Kim¹, Justin P. Haldar¹
¹Department of Electrical Engineering, University of Southern California, Los Angeles, CA, United States

11:33 0079. Complex-Difference Constrained Reconstruction for Accelerated Phase Contrast Flow Imaging

Aiqi Sun¹, Bo Zhao¹, Rui Li¹, Chun Yuan¹,²
¹Center for Biomedical Imaging Research, School of Medicine, Tsinghua University, Beijing, China; ²Department of Electrical and Computer Engineering, University of Illinois at Urbana-Champaign, Urbana, IL, United States; ³Department of radiology, University of Washington, WA, United States
Monday

11:45  0080.  Total Generalized Variation Based Joint Multi-Contrast, Parallel Imaging Reconstruction of Undersampled K-Space Data
Adrian Martin¹, ², Ithi Chatmuntawee¹, Berkin Bilgic³, Kavin Setsompop⁴, ⁵, Elfar Adalsteinsson⁴, ⁵, Emanuele Schiavi
¹Department of Electrical Engineering and Computer Science, Massachusetts Institute of Technology, Cambridge, MA, United States; ²Applied Mathematics, Universidad Rey Juan Carlos, Mostoles, Madrid, Spain; ³A. A. Martinos Center for Biomedical Imaging, Department of Radiology, Massachusetts General Hospital, Charlestown, MA, United States; ⁴Harvard Medical School, Boston, MA, United States; ⁵Harvard-MIT Health Sciences and Technology, Massachusetts Institute of Technology, Cambridge, MA, United States

11:57  0081.  Non-Linear Phase Correction in Model-Based Reconstruction of the Diffusion Tensor
Jose Raya¹, ², Florian Knoll¹, ²
¹Center for Advanced Imaging Innovation and Research (CAI²R), NYU School of Medicine, New York, NY, United States; ²Bernard and Irene Schwartz Center for Biomedical Imaging, Department of Radiology, NYU School of Medicine, New York, NY, United States

12:09  0082.  Wave-CS: Combining Wave Encoding and Compressed Sensing
Andrew T. Curtis¹, Berkin Bilgic², Kavin Setsompop³, Ravi S. Menon³, Christopher K. Anand³
¹Computing and Software, McMaster University, Hamilton, Ontario, Canada; ²Martinos Center for Biomedical Imaging, Charlestown, MA, United States; ³Robarts Research Institute, London, Ontario, Canada

12:21  0083.  TrueCISS: Genuine BSSFP Signal Reconstruction from Undersampled Multiple-Acquisition SSFP Using Model-Based Iterative Non-Linear Inversion
Tom Hilbert¹, ², Damien Nguyen¹, Tobias Koerber¹, ², Jean-Philippe Thiran³, Gunnar Krueger¹, ², Oliver Bieri³
¹Siemens ACIT – CHUV Radiology, Siemens Healthcare IM BM PI & Department of Radiology CHUV, Lausanne, Switzerland; ²LTS5, Ecole Polytechnique Fédérale de Lausanne, Lausanne, Switzerland; ³Radiological Physics, Department of Radiology, University of Basel, Basel, Switzerland

12:33  0084.  Multiscale Image Reconstruction for MR Fingerprinting
Eric Y. Pierre¹, Dan Ma¹, Yong Chen², Chaitra Badve², Mark A. Griswold¹, ²
¹Department of Biomedical Engineering, Case Western Reserve University, Cleveland, OH, United States; ²Department of Radiology, Case Western Reserve University & University Hospitals, Cleveland, OH, United States

Combined Educational & Scientific Session
Quantitative Biomarkers in Liver MRI: How to Use Them in the Real World
Room 718 A  10:45-12:45  Moderators: Catherine D. G. Hines, Ph.D. & Kartik S. Jhaveri, M.D.

10:45  Introduction

10:48  Liver Fat Quantification - Seriously, Who Cares?
Mustafa Rifaat Bashir

11:03  0085.  Systematic Comparison Between Modified Dixon MRI Techniques, MR Spectroscopic Relaxometry, and Different Histologic Quantification Methods in the Assessment of Fatty Liver Disease
Guido Matthias Kukuk¹, Alois Martin Sprinkart¹, Wolfgang Block¹, Holger Eggers², Jürgen Gieseke², ³, Kanishka Hittiatya¹, Patrick Kupczyk¹, Julian Luetskens¹, Rami Homsi¹, Vera Keil¹, Michael Meier-Schroers¹, Milka Marinova¹, Asadeh Lakghomi¹, Dariusch Hadizadeh¹, Hans Heinz Schild¹, Frank Träber³
¹University of Bonn, Bonn, NRW, Germany; ²Philips Research Europe, Hamburg, Germany; ³Philips Healthcare, Best, NL, Netherlands

11:15  0086.  Multi-Site, Multi-Vendor Validation of Accuracy, Robustness and Reproducibility of Fat Quantification on an Oil-Water Phantom at 1.5T and 3T
Diego Hernando¹, Mustafa R. Bashir¹, Gavin Hamilton¹, Jean M. Shaffer¹, Samir D. Sharma¹, Claude B. Sirlin¹, Keitaro Sofue², ³, Nikolaus M. Szeverenyi¹, Takeshi Yokoo¹, ³, Qing Yuan¹, Scott B. Reeder¹, ²
¹Radiology, University of Wisconsin-Madison, Madison, WI, United States; ²Radiology, Duke University, Durham, NC, United States; ³Radiology, University of California, San Diego, San Diego, CA, United States; ⁴Radiology, Kobe University Graduate School of Medicine, Kobe, Hyogo, Japan; ⁵Radiology, University of Texas Southwestern Medical Center, Dallas, TX, United States; ⁶Advanced Imaging Research Center, University of Texas Southwestern Medical Center, Dallas, TX, United States; ⁷Medical Physics, University of Wisconsin-Madison, Madison, WI, United States
Monday

11:27
Iron
Takeshi Yokoo

Axel J. Krafft1, 2, Ralf B. Loeffler1, Ruitian Song1, Mary E. McCarville1, Matthew D. Robson1, Jane S. Hankins4, Claudia M. Hillenbrand3
1Radiological Sciences, St. Jude Children's Research Hospital, Memphis, TN, United States; 2Radiology - Medical Physics, University Medical Center Freiburg, German Cancer Consortium (DKTK), Heidelberg, Germany; 3Radiology Department of Medicine, University of Oxford, Oxford, United Kingdom; 4Hematology, St. Jude Children's Research Hospital, Memphis, TN, United States

11:54 0088. A T2* MRI Prospective Survey on Pancreatic Iron in Thalassemia Major Patients Treated with Deferasirox, Deferiprone and Desferrioxamine
Antonella Meloni4, Gennaro Restaino4, Stefania Renne4, Massimiliano Missere4, Maria Chiara Resta4, Vincenzo Positano4, Daniele De Marchi4, Gaetano Roccamo4, Nicola Romano4, Maria Giovanna Neri4, Alessia Pepe4
1CMR Unit, Fondazione G. Monasterio CNR-Regione Toscana, Pisa, Italy; 2Dipartimento di Radiologia, Università Cattolica del Sacro Cuore, Campobasso, Italy; 3Struttura Complessa di Cardioradiologia-UTIC, P.O. “Giovanni Paolo II”, Lamezia Terme, Italy; 4Struttura Complessa di Radiologia, OSP. SS. Annunziata ASL Taranto, Taranto, Italy; 5Unità di Prevenzione e Cura delle Mictrocitemie, PO di S. Agata di Militello (ASP-ME), S. Agata di Militello (ME), Italy; 6S.C. Medicina Trasfusionale, AO Arcispedale “S. Maria Nuova”, Reggio Emilia, Italy

12:09 MR Imaging of Liver Fibrosis
Laurent Huwart

12:21 0089. Evaluation of Spin-Echo Based Sequences for MR Elastography of Liver with Iron Overload
Bogdan Dzyubak1, Yogesh K. Marianne2, Kevin J. Glaser1, Sudhakar K. Venkatesh1, Richard L. Ehman1
1Radiology, Mayo Clinic, Rochester, MN, United States; 2Philips Healthcare, Bangalore, Karnataka, India

Wen-Pei Wu1, 2, Ran-Chou Chen, 2, 3, Chen-Te Chou1, Chih-Wei Lee1, Cheng-In Ho2, Yi-Chun Wang2, 4, Kwo-Wei Lee1
1Radiology, Chang-Hua Christian Hospital, Chang-Hua, Taiwan, Taiwan; 2Biomedical Imaging and Radiological Science., National Yang-Ming Medical University, Taiwan, Taiwan; 3Radiology, Taipei city Hospital, Taipei, Taipei, Taiwan, Taiwan; 4Taiyuan general hospital ministry of health and welfare, Taiwan, Taiwan

12:45 Adjournment & Meet the Teachers

Educational Course
Osteoarthritis: Who, Where & Why?
Organizers: Garry E. Gold, M.D., Richard Kijowski, M.D., William B. Morrison, M.D., & Ravinder R. Regatte, Ph.D.
Room 718 B 10:45-12:45
Moderators: Garry E. Gold, M.D. & Richard Kijowski, M.D.

10:45 Meniscal & Ligament Tears: Role in Knee Degeneration
Timothy J. Mosher

11:15 Hip Arthritis: Does Primary OA Exist?
Jonelle Petscavage

11:45 Rotator Cuff Arthropathy
Michael J. Tuite

12:15 Population Based OA Research: What Has It Shown?
Ali Guermazi

12:45 Adjournment & Meet the Teachers
Monday

Combined Educational & Scientific Session
Hyperpolarized C-13 Imaging
Organizers: Peter Caravan, Ph.D. & Matthew Merritt, Ph.D.
Room 801 A/B 10:45-12:45

Matthew Merritt

11:05 Acquisition & Reconstruction Strategies: State of the Art
Charles H. Cunningham

11:25 Imaging Metabolism with Hyperpolarized 13C-Labelled Cell Substrates
Kevin M. Brindle

Hikari A. I. Yoshihara1,2, Jessica A. M. Bastiaansen23, Magnus Karlsson1, Mathilde Lerche4, Arnaud Comment25, Jürg Schwitter1
1Division of Cardiology and Cardiac MR Center, Lausanne University Hospital, Lausanne, Switzerland; 2Center for Biomedical Imaging (CIBM), Lausanne, Switzerland; 3Department of Radiology, Lausanne University Hospital and University of Lausanne, Switzerland; 4Albeda Research ApS, Copenhagen, Denmark; 5Institute of Physics of Biological Systems, Ecole Polytechnique Fédérale de Lausanne, Lausanne, Switzerland

The heart is fueled mainly by long-chain fatty acids. We report the in vivo myocardial metabolism of hyperpolarized [1-13C]-octanoate, a novel probe to study β-oxidation in the heart. The probe demonstrated high selectivity for cardiac cell metabolism, providing a new tool to investigate cardiac energy metabolism.

11:57 0092. Hyperpolarized 13C-Alphaketobutyrate, a Pyruvate Analog
Cornelius von Morze1, Robert A. Bok1, Michael A. Ohliger1, Daniel B. Vigneron1, John Kurhanewicz2
1Department of Radiology & Biomedical Imaging, UCSF, San Francisco, CA, United States

In this work we demonstrate hyperpolarization and rapid in vivo enzymatic conversion of an endogenous structural analog of pyruvate, 13C-alpha-ketobutyrate, to lactate. This provides a new hyperpolarized probe to study metabolic pathways in the heart.

Benjamin J. Geraghty1,2, Justin Y.C. Lau1,2, Albert P. Chen3, William Dominguez-Viqueira1, Charles H. Cunningham1,2
1Imaging Research, Sunnybrook Health Sciences Centre, Toronto, Ontario, Canada; 2Dept. of Medical Biophysics, University of Toronto, Toronto, Ontario, Canada; 3GE Healthcare, Toronto, Ontario, Canada

Spectral-spatial excitation can be used for rapid time resolved 3D acquisitions; however, maintaining adequate spatial resolution and sensitivity is challenging. We present a novel trajectory that enables rapid 3D acquisition of hyperpolarized 13C-labeled pyruvate and lactate.

12:21 0094. Parallel Imaging Using a Concentric Rings Trajectory and Application to Hyperpolarized 13C MR Spectroscopic Imaging
Wenwen Jiang1, Michael Lustig2, Peder E.Z. Larson1
1Bioengineering, UC Berkeley/UCSF, Berkeley, CA - California, United States; 2EECS, UC Berkeley, Berkeley, CA, United States; 3Radiology and Biomedical Imaging, UCSF, San Francisco, CA - California, United States

The short-lived effect of hyperpolarization of 13C poses severe challenges to develop rapid and robust imaging techniques. We present a new trajectory, the concentric rings trajectory, that utilizes parallel imaging to address these challenges.

12:33 0095. Hyperpolarized Metabolic MR Imaging of Acute Myocardial Changes and Recovery Upon Ischemia-Reperfusion
Patrick Wespi1, Darach O h-Ici1,2, Julia Busch1, Lukas Wissmann1, Marcin Krajewski1, Kilian Weiss1, Andreas Sigfridsson1, Daniel Messroghli2, Sebastian Kozierke1
1Institute for Biomedical Engineering, University and ETH Zurich, Zurich, Switzerland; 2Department of Congenital Heart Disease and Pediatric Cardiology, German Heart Institute, Berlin, Germany; 3Division of Imaging Sciences and Biomedical Engineering, King's College London, London, United Kingdom

The heart is a highly metabolic organ, and its function can be severely impaired by ischemia-reperfusion injury. We present a new technique for hyperpolarized metabolic MR imaging that allows for the non-invasive assessment of acute myocardial changes and recovery upon ischemia-reperfusion.

12:45 Adjournment & Meet the Teachers

Gold Corporate Symposium
Philips Healthcare Gold Corporate Symposia
Plenary Hall FG 13:00-14:00

(no CME credit)

Traditional Poster Session: Young Investigator Awards
Exhibition Hall 14:15-16:15

(no CME credit)
Monday

Electronic Poster Session: Engineering
Exhibition Hall 14:15-16:15 (no CME credit)

Electronic Poster Session: UHF
Exhibition Hall 14:15-16:15 (no CME credit)

Electronic Poster Session: MR Safety
Exhibition Hall 14:15-16:15 (no CME credit)

Study Group Session
Electro-Magnetic Tissue Properties (SWI)
Reception Hall 104 BCD 14:15-16:15 (no CME credit)

Study Group Session
MR Spectroscopy
Constitution Hall 105 14:15-16:15 (no CME credit)

Power Pitch Session: Powerful Acquisition
Power Pitch Theatre, Exhibition Hall 14:15-15:15 (no CME credit)
Moderators: Michael S. Hansen, Ph.D. & Nicole E. Seiberlich, Ph.D.

0096. **Field-Map-Free First-Order Dynamic Shimming**
Yuhang Shi1, Johanna Vannesjo1, Karla Miller1, Stuart Clare1
1Oxford Centre for Functional Magnetic Resonance Imaging of the Brain, Oxford, United Kingdom

0097. **Spatial Motion Model Driven by the Noise Covariance Matrix of a Receive Array.**
Anna Andreychenko1, Baudouin Denis de Senneville1, 2, Robin J.M. Naves1, Jan J.W. Lagendijk1, Cornelis A.T. van den Berg1
1Imaging Division, UMC Utrecht, Utrecht, Netherlands; 2IMB, UMR 5251 CNRS/University of Bordeaux, Bordeaux, France

0098. **Improved Reconstruction of Nonlinear Spatial Encoding Techniques with Explicit Intra-Voxel Dephasing**
Kelvin Layton1, Stefan Kroboth1, Feng Jia1, Sebastian Littin1, Huijun Yu1, Maxim Zaitsev1
1Medical Physics, University Medical Center Freiburg, Freiburg, Baden-Württemberg, Germany

0099. **Magnification Imaging by Radiofrequency-Induced Nonlinear Phase Encoding**
Jun Shen1
1NIMH, Bethesda, MD, United States

0100. **Reliable Phase Gradient Mapping and Phase Unwrapping for Low-SNR Images: A Novel Procedure Based on K-Space Energy Peak Quantification**
Pei-Hsin Wu1, Hsiao-Wen Chung2, Nan-Kuei Chen2
1Institute of Biomedical Electronics and Bioinformatics, National Taiwan University, Taipei, Taiwan; 2Brain Imaging and Analysis Center, Duke University Medical Center, Durham, NC, United States

0101. **Orthogonally Combined Motion- And Diffusion-Sensitized Driven Equilibrium (OC-MDSDE) Preparation for Improved Vessel Signal Suppression in 3D TSE Imaging of Peripheral Nerves**
Barbara Cervantes1, Jinnan Wang2, Jan S. Bauer1, Hendrik Kooijman1, Peter Börnert1, Axel Haase1, Ernst J. Rummenny1, Klaus Wörtler1, Dimitrios C. Karapetanos1
1Diagnostic and Interventional Radiology, Technische Universität München, Munich, Germany; 2Philips Research North America, Seattle, WA, United States; 3Neuroradiology, Technische Universität München, Munich, Germany; 4Philips Healthcare, Hamburg, Germany; 5Philips Research Laboratory, Hamburg, Germany; 6Zentralinstitut für Medizintechnik, Technische Universität München, Garching, Germany
0102. Off-Resonance Positive Contrast Flow Imaging Using Extraneous Paramagnetic Biomarker-Induced Spin Labeling
Jessica A.M. Bastiaansen¹, Helene Feliciano¹, Andrew Coristine¹, Matthias Stuber²
¹Department of Radiology, University Hospital (CHUV) and University of Lausanne (UNIL), Lausanne, Switzerland; ²Center for Biomedical Imaging (CIBM), Lausanne, Switzerland

0103. Hierarchically Semiseparable Generalized Encoding Matrix Compression for Fast Distortion Corrected Inverse Imaging
Stephen F. Cauley¹, ², KavinSetsompop¹, ², Dan Ma¹, Yun Jiang¹, Elfar Adalsteinsson³, Lawrence Wald³, ², Mark Griswold⁴, ⁵
¹Athinoula A. Martinos Center for Biomedical Imaging, MGH/HST, Charlestown, MA, United States; ²Dept. of Radiology, Harvard Medical School, Boston, MA, United States; ³Dept. of Biomedical Engineering, Case Western Reserve University, Cleveland, OH, United States; ⁴Harvard-MIT Div. of Health Sci. and Tech., Dept. of Electrical Engineering and Computer Science, Cambridge, MA, United States; ⁵Dept. of Radiology, Case Western Reserve University and University Hospitals of Cleveland, Cleveland, OH, United States

0104. Accelerated Multiparameter Mapping Using Low-Rank Tensors
Anthony G. Christodoulou¹, Zhi-Pei Liang⁴
¹Beckman Institute and Department of Electrical and Computer Engineering, University of Illinois at Urbana-Champaign, Urbana, IL, United States

0105. Use of Pattern Recognition for Unaliasing Simultaneously Acquired Slices in Simultaneous MultiSlice Magnetic Resonance Fingerprinting
Yun Jiang¹, Dan Ma¹, Himanshu Bhat², Huihui Ye³, ⁴, Stephen F. Cauley¹, Lawrence L. Wald³, ⁵, Kavin Setsompop¹, Mark A. Griswold⁶
¹Department of Biomedical Engineering, Case Western Reserve University, Cleveland, OH, United States; ²Siemens Medical Solutions USA Inc., Charlestown, MA, United States; ³Department of Radiology, Massachusetts General Hospital, Athinoula A. Martinos Center for Biomedical Imaging, Charlestown, MA, United States; ⁴Department of Biomedical Engineering, Zhejiang University, Hangzhou, Zhejiang, China; ⁵Department of Electrical Engineering and Computer Science; Harvard-MIT Division of Health Sciences a, MIT, Cambridge, MA, United States; ⁶Department of Radiology, Case Western Reserve University, Cleveland, OH, United States

0106. Non-CPMG Multi-Spectral PROPELLER for Diffusion-Weighted Imaging Near Metal Implants
Kevin M. Koch¹, Ajeet Gaddipati², Ali Erosoz³, Robert Peters³, Valentina Taviani³, Brian A. Hargreaves⁴, L. Tugan Muftuler⁵
¹Biophysics and Radiology, Medical College of Wisconsin, Milwaukee, WI, United States; ²GE Healthcare, Milwaukee, WI, United States; ³Biophysics, Medical College of Wisconsin, Milwaukee, WI, United States; ⁴Radiology, Stanford University, Stanford, CA, United States; ⁵Neurosurgery and Biophysics, Medical College of Wisconsin, Milwaukee, WI, United States

0107. Two-Dimensional Multiband Diffusion Weighted Imaging
Valentina Taviani¹, Suchandrima Banerjee², Bruce L. Daniel¹, Shreyas S. Vasanawala¹, Brian A. Hargreaves¹
¹Radiology, Stanford University, Stanford, CA, United States; ²Global Applied Science Laboratory, GE Healthcare, Menlo Park, CA, United States

0108. In Vivo Simultaneous Acquisition of Diffusion Tensor Imaging (DTI) and MR Elastography (MRE) in Mouse Brain
Ziying Yin¹, Steven Kearney², Richard L. Magin², Dieter Klatt¹
¹Richard and Loan Hill Department of Bioengineering, University of Illinois at Chicago, Chicago, IL, United States; ²Department of Mechanical and Industrial Engineering, University of Illinois at Chicago, Chicago, IL, United States

0109. Rapid and Accurate PTX B1 Mapping Using 3DREAM with Dual Interferometry
Daniel Brenner¹, Desmond H. Y. Tse², ³, Patrick J. Leedden¹, Claudine Neumann¹, Tony Stöcker⁴, ⁵
¹German Center for Neurodegenerative Diseases (DZNE), Bonn, Germany; ²Faculty of Psychology, Maastricht University, Maastricht, Netherlands; ³Department of Radiology, Maastricht University Medical Centre, Maastricht, Netherlands; ⁴Novo Medical, Inc., Wilmington, MA, United States; ⁵Department of Physics and Astronomy, University of Bonn, Bonn, Germany
**Cartilage Imaging: Technical Developments**

Room 701 A  14:15-16:15  
*Moderators: Xiaojuan Li, Ph.D. & Miika T. Nieminen, Ph.D.*

0110.  Accelerating Bloch-Siegert $B_1^+$ Mapping Using Modified Iterative SENSE and ESPRIT (iSENSE)  
*Mohammad Mehdi Khalighi1, Peng Lai1*  
1Applied Science Lab, GE Healthcare, Menlo Park, CA, United States

0111.  Response of Quantitative MRI to Artificial Collagen Cross-Linking of Articular Cartilage  
*Jari Rautiainen1,2, Mikko J. Nissilä1,2, Elli-Noora Salo1, Harri Kokkonen1,2, Shalom Michaeli1, Silvi Mangia3, Olli Gröhn1, Juha Töyräs1,2, Miika T. Nieminen1,2*  
1Medical Research Center Oulu and Department of Diagnostic Radiology, University of Oulu, Oulu, Finland; 2Department of Applied Physics, University of Eastern Finland, Kuopio, Finland; 3Department of Diagnostic Radiology, Oulu University Hospital, Oulu, Finland; 4Diagnostic Imaging Center, Kuopio University Hospital, Kuopio, Finland; 5Center for Magnetic Resonance Research, University of Minnesota, MN, United States; 6Department of Neurobiology, A.I. Virtanen Institute for Molecular Sciences, University of Eastern Finland, Kuopio, Finland

0112.  Validation of Diffusion Tensor Imaging of Articular Cartilage in an Animal Model of Posttraumatic Osteoarthritis  
*Jorge G. Raya1, Ignacio Rosso1, Oran Kennedy1, Natalie Danna1, Bryan Beutel1, You Jin Lee1, Thorsten Kirsch1*  
1NYU Langone Medical Center, New York, NY, United States

0113.  Rapid T1 and T2 Mapping of the Hip Articular Cartilage with Radial MR Fingerprinting  
*Martijn A. Cloos1, Leeor Alon1, Christian Geppert2, Daniel K. Sodickson1, Riccardo Lattanzi1*  
1Center for Biomedical Imaging, Department of Radiology, New York University School of Medicine, New York, NY, United States; 2Siemens AG Healthcare, Erlangen, Germany

0114.  Correlation Between Cartilaginous Endplate Defects and Intervertebral Disc Degeneration: An In Vivo MRI Study at 3.0 Tesla  
*Dong Xing1, Jiao Wang1, Yunfei Zha1, Lei Hu1, Hui Lin2, Yuan Lin1*  
1Department of Radiology, Renmin Hospital of Wuhan University, Wuhan, Hubei, China; 2GE Healthcare China, Shanghai, China

0115.  Metal Artifact Reduction Using a 3D UTE-MSI Sequence with Time-Frame Regularized Compressed Sensing Reconstruction  
*Yifei Lou1, Qin He1, Xun Jia1, Eric Chang2, Christine B. Chang2, Jiang Du1*  
1Department of Mathematical Sciences, University of Texas Dallas, Dallas, TX, United States; 2Radiology, University of California, San Diego, CA, United States; 3Department of Radiation Oncology, University of Texas Southwestern Medical Center, Dallas, TX, United States

0116.  Effects of Bath Solutions on the Quantitative Determination of Relaxation Times in Compressed Articular Cartilage by Microscopic MRI  
*Nian Wang1, Yang Xia1*  
1Department of Physics and Center for Biomedical Research, Oakland University, Rochester, MI, United States

0117.  Determination of Correlation Time in Articular Cartilage by $T1\rho$ Relaxation Dispersion  
*Matti Hanni1,2, Mikko J. Nissilä1,2, Jari Rautiainen34, Simo Saarakkala2, Jutta Ellermann2, Miika T. Nieminen27*  
1Department of Radiology, University of Oulu, Oulu, Finland; 2Medical Research Center Oulu, Oulu University Hospital and University of Oulu, Oulu, Finland; 3Department of Radiology, and Medical Research Center Oulu, University of Oulu and Oulu University Hospital, Oulu, Finland; 4Department of Applied Physics, University of Eastern Finland, Kuopio, Finland; 5Department of Diagnostic Radiology, Oulu University Hospital, Department of Medical Technology, University of Oulu, Oulu, Finland; 6Center for Magnetic Resonance Research, Department of Radiology, University of Minnesota, Minneapolis, MN, United States; 7Department of Diagnostic Radiology, University of Oulu and Oulu University Hospital, Oulu, Finland

0118.  Magnetic Resonance Imaging as Biomarker of Adverse Local Tissue Reactions in Total Hip Arthroplasty  
*Matthew F. Koff1, Parina H. Shah1, ALESSA Burge1, Mauro Miranda1, Christina Esposito1, Elexis Baral2, Thomas W. Bauer3, Allina Nocera3, Kara Fields4, Stephen Lyman4, HSS Adult Reconstruction & Joint Replacement Division5, Douglas Padgett5, Timothy Wright5, Hollis G. Potter1*  
1Magna Cum Laude; 2Summa Cum Laude; 3Department of Applied Physics, University of Eastern Finland, Kuopio, Finland; 4Diagnostic Imaging Center, Kuopio University Hospital, Kuopio, Finland; 5Center for Magnetic Resonance Research, University of Minnesota, MN, United States; 6Department of Neurobiology, A.I. Virtanen Institute for Molecular Sciences, University of Eastern Finland, Kuopio, Finland; 7Department of Radiology, University of Minnesota, Minneapolis, MN, United States

Monday  
35
Monday

15:51 0119. Quantitative Susceptibility Mapping (QSM) to Correlate with Histology and Quantitative Parametric Mapping in Surgically Induced Juvenile Osteochondritis Dissecans
Luning Wang¹, Mikko J. Nissi,¹,², Ferenc Toth, Michael Garwood³, Cathy Carlson, Jutta Ellermann¹
¹Center for Magnetic Resonance Research, University of Minnesota, Twin Cities, Minneapolis, MN, United States; ²Medical Research Center Oulu, Oulu University Hospital and University of Oulu, Finland

16:03 0120. Cartilage MR T1ρ and T2 Quantifications: Longitudinal Reproducibility and Variations Using Different Coils and Scanners at Single and Multi-Sites
Xiaojuan Li¹, Valentina Pedoa¹, Deepak Kumar¹, Drew Lansdown¹, Cory Wyatt¹, Julien Rivort¹, Narihiro Okazaki¹, Dragana Savic¹, Matthew F. Koff¹, Joel Felmlee¹, Williams Steven¹, Sharmila Majumdar¹
¹University of California, San Francisco, CA, United States; ²Hospital for Special Surgery, New York, NY, United States; ³Mayo Clinic, Rochester, MN, United States

Relaxometry Applications Throughout the Body
Room 701 B 14:15-16:15 Moderators: Oliver Bieri, Ph.D. & Rexford D. Newbould, Ph.D.

14:15 0121. Regional Brain T1 and T2 Relaxometry in Healthy Volunteers Using Magnetic Resonance Fingerprinting
Chaitra Badve¹, Alice Yu¹, Matthew Rogers¹, Dan Ma¹, Jeffrey Sunshine¹, Vikas Galani¹, Mark Griswold¹
¹Radiology, University Hospitals Case Medical Center, Cleveland, OH, United States; ²Case Western Reserve University, OH, United States

14:27 0122. In Vivo Assessment of Age-Related White Matter Differences Using T2+ Relaxation
Erika F. Raven¹,², Peter van Gelderen¹, Jacco A. de Zwart², Diana H. Fishbein¹, John VanMeter²,³, Jeff H. Duyn²,³
¹Georgetown University, Washington, DC, United States; ²Advanced MRI, LFMI, NINDS, NIH, Bethesda, MD, United States; ³University of Maryland School of Medicine, Baltimore, MD, United States; ⁴Georgetown Center for Functional and Molecular Imaging, Washington, DC, United States

14:39 0123. Extensive and Intensive Measures of Corpus Callosum Health in Multiple Sclerosis
Manoj K. Sammi¹, Yosef A. Berlow¹, John G. Grinstead², Dennis M. Bourdette³, William D. Rooney⁴, ⁵
¹Advanced Imaging Research Center, Oregon Health & Science University, Portland, OR, United States; ²Siemens Healthcare, OR, United States; ³Department of Neurology, Oregon Health & Science University, Portland, OR, United States

14:51 0124. Quantitative 3D Whole Liver T1rho Mapping at 3.0T
Weibo Chen¹,², Xin Chen¹, Guangbin Wang¹, Queenie Chan¹, He Wang¹, Jianqi Li¹, Xiaohua Li¹, Shanshan Wang¹, Bin Yao¹, Dongrong Xu¹,²,³
¹Shanghai Key Laboratory of Magnetic Resonance and Department of Physics, East China Normal University, Shanghai, China; ²Philips Healthcare, Shanghai, China; ³Shandong Medical Imaging Research Institute, Shandong University, Jinan, Shandong, China; ⁴Philips Healthcare, Hong Kong, China; ⁵Philips Research China, Shanghai, China; ⁶Shanghai Key Laboratory of Magnetic Resonance and Department of Physics, East China Normal University, Shanghai, China; ⁷Key laboratory of Brain Functional Genomics (MOE & STCSM), Institute of Cognitive Neuroscience, East China Normal University, shanghai, China; ⁸Epidemiology Division & MRI Unit, Columbia University Department of Psychiatry, NY, United States

15:03 0125. Leveraging Transverse Relaxation Processes and Dixon Oscillations to Achieve High-Quality Segmentation of Bone Marrow
Mukund Balasubramanian¹,², Delma Y. Jarrett¹,², Robert V. Mulkern¹,²
¹Department of Radiology, Boston Children's Hospital, Boston, MA, United States; ²Harvard Medical School, Boston, MA, United States

15:15 0126. Significant Alterations on T2-Spectra Observed in the Calf of Myopathic Patients
Ericky Caldas de Almeida Araujo¹, Pierre G. Carlier¹,²
¹NMR Laboratory, Institute of Myology, Paris, Île-de-France, France; ²NMR Laboratory, CEA/I2BM/MIRCen, Paris, Île-de-France, France
15:27 0127. Endogenous Assessment of Diffuse Myocardial Fibrosis with T1p-Mapping in Patients with Dilated Cardiomyopathy

Joep van Oorschot1, Johannes Gho1, Sanne de Jong1, Aryan Vink1, Fredy Visser2, Jacques de Bakker1, Steven Chameleau1, Peter Luijten1, Tim Leiner1, Jaco Zwanenburg3

1University Medical Center Utrecht, Utrecht, Netherlands; 2Philips Healthcare, Best, Noord-Brabant, Netherlands; 3AMC, Amsterdam, Netherlands

15:39 0128. What Are the Blood T1 and T2 Values in Neonates?

Peiying Liu1, Lina Chalak2, Lisa Krishnamurthy1, Imran Mir2, Shin-Lei Peng1, Hao Huang1, Hanzhang Lu3

1Advanced Imaging Research Center, University of Texas Southwestern Medical Center, Dallas, TX, United States; 2Department of Pediatrics, University of Texas Southwestern Medical Center, TX, United States

15:51 0129. Combined T1 and T2 Measurement for Non-Invasive Evaluation of Blood Oxygen Saturation and Hematocrit

Daniel Albaugh1, Garret Stuber2, Yen-Yu Ian Shih3

1Department of Medical Biophysics, University of Toronto, Toronto, Ontario, Canada; 2Diagnostic Imaging, The Hospital for Sick Children, University of Toronto, Toronto, Ontario, Canada; 3Physics and Astronomy, Western University, London, ON, Canada

16:03 0130. Delta Relaxation Enhanced Magnetic Resonance (DreMR) Imaging of a Healthy Mouse for Determination of Spin-Lattice Relaxation Rates and R1 Dispersion at 1.5 T

Yoanathan T. Araya1, Francisco M. Martinez-Santiesteban1, Chad T. Harris2, William B. Handler3, Blaine A. Chronik3, Timothy J. Scholl4

1Medical Biophysics, Western University, London, ON, Canada; 2Synaptic Medical, Toronto, ON, Canada; 3Physics and Astronomy, Western University, London, ON, Canada; 4Robarts Research Institute, Western University, London, ON, Canada

fMRI Applications, Including Optogenetics

Room 714 A/B 14:15-16:15  Moderators: Victoria L. Morgan, Ph.D. & T.B.A.

14:15 0131. Hunting the Source of a Unique Negative fMRI Signal in the Striatum Using Optogenetics

Daniel Albaugh1, Garret Stuber2, Yen-Yu Ian Shih3

1Department of Medical Biophysics, University of Toronto, Toronto, Ontario, Canada; 2Diagnostic Imaging, The Hospital for Sick Children, University of Toronto, Toronto, Ontario, Canada; 3Physics and Astronomy, Western University, London, ON, Canada

14:27 0132. Spatial Correlations of Neurovascular Coupling Studied Using Single Pulse Opto-fMRI

Jack A. Wells1, Isabel N. Christie1, Sergey Kasparov1, Alexander Gourine1, Mark F. Lythgoe1

1Curriculum in Neurobiology, University of North Carolina at Chapel Hill, Chapel Hill, NC, United States; 2Department of Psychiatry, University of North Carolina at Chapel Hill, Chapel Hill, NC, United States; 3BRIC, Department of Neurology, University of North Carolina at Chapel Hill, Chapel Hill, NC, United States

14:39 0133. Intrahippocampal and Hippocampal-Cortical Interactions Driven by Frequency Specific Optogenetic Stimulation

Russell W. Chan1, 2, Alex T.L. Leong1, 2, Joe S. Cheng1, 2, Partick P. Gao1, 2, Shu-Juan J. Fan1, 2, Kevin K. Tsia2, Ed X. Wu1, 2

1Laboratory of Biomedical Imaging and Signal Processing, The University of Hong Kong, Hong Kong, China; 2Department of Electrical and Electronic Engineering, The University of Hong Kong, Hong Kong, China

14:51 0134. Uncovering the Functional Network of Medial Prefrontal Cortex in Awake Rodents Using Optogenetic fMRI

Zhifeng Liang1, 2, Glenn D.R. Waston, 23, Kevin D. Alloway, 23, Gangshea Lee2, Thomas Neuberger2, Nanyin Zhang, 24

1Dept. of Biomedical Engineering, Pennsylvania State University, University Park, PA, United States; 2Center for Neural Engineering, The Huck Institutes of Life Sciences, Pennsylvania State University, University Park, PA, United States; 3Neural and Behavioral Sciences, College of Medicine, Pennsylvania State University, Hershey, PA, United States; 4Dept. of Biomedical Engineering, Pennsylvania State University, University Park, PA, United States
Our preliminary results show that navigator echo respiratory triggering restricted FOV (rFOV) ss-DW imaging is feasible ... ADC values in the body and trends towards lower ADCs in the head and tail, a finding that merits further investigation.

Magnetic Resonance Imaging (MRI) enables the non-invasive characterization of the pancreas tumor microenvironment. Using ... direct information on localization and local tumor heterogeneity for biological correlation of functional MRI parameters.

Concentration of the neurotransmitter γ-aminobutyric acid (GABA) is known to predict task-related BOLD and CBF ... individual differences in haemodynamic contrast tuning and may be a mediator of the dynamic range of BOLD/CBF responses.

Here we propose to use ultra-high-field (9.4T) human fMRI in order to answer two questions: firstly, is there a ... signals, respectively. A columnar segregation would indicate specialized and segregated circuits within a given area.

Infrasound is a potential hazard to human health. This multimodal study is targeting the perception of infrasound and low-frequency sound ... reception of the infrasound is mainly tactile only brain activation in the region of the auditory cortex was found.

To improve functional understanding of odor-evoked glomerular activity patterns revealed by BOLD signal and to relate ... bulb with odorant stimulation provides new opportunities for gaining insights into complexities of neuropilar activities.

Timing has been postulated as one of the most important aspects of information processing in the brain, and frequency is ... the dynamics of the somatosensory thalamocortical circuit of the rat in response to differing frequency stimulation.

We present a feasibility study for endogenous GABA concentration and haemodynamic responses to graded visual contrast. ... University of Oxford, Oxford, United Kingdom

Correlating Post-Operative Whole Mount Immunohistochemistry to Functional MRI Parameters in Pancreatic Cancer

Endoscopy is the standard of care for assessing the extent of primary pancreatic neoplasms. However, both the primary surgical resection and the postoperative follow-up are limited by the ability to image the pancreas in sufficient detail. Diffusion-weighted imaging (DWI) is a promising recent imaging technique that can provide complementary information to the functional multi-parametric imaging of the pancreas. However, DWI is usually performed with a large field of view (FOV) and the diffusion parameters are set to provide optimal image quality. Additionally, DWI sequences are designed for the brain and cannot be applied to the pancreas in its entirety due to anatomical constraints.

In this study, we present a feasibility study of endoscopy-guided reduced FOV DWI (rFOV-DWI) with and without navigator respiratory triggering technique, using a 1.5T and 3T scanner to assess the quantitatively and qualitatively differences of rFOV-DWI compared to standard FOV-DWI techniques. The study was conducted in a porcine model with a single injection of 10 mmol/kg of Gd-DTPA to fill the contrast-enhanced pancreatic tissue. The study was approved by the institutional animal care and use committee.

The results showed that rFOV-DWI were able to visualize the pancreas in sufficient detail to allow accurate assessment of the extent of disease. Additionally, the use of navigator respiratory triggering technique was shown to improve the image quality of rFOV-DWI.

Feasibility Study on Reduced FOV Diffusion Imaging of the Pancreas Using Navigator Triggering Technique

Lorenzo Mannelli1, Maggie M. Fung2, Gregory Nyman1, Sabrina Lopez1, Richard Kinh Gian Do1

1Radiology, Memorial Sloan Kettering Cancer Center, New York, NY, United States; 2Global MR Applications and Workflow, GE Healthcare, New York, NY, United States
Rupture of gastroesophageal varices is a dreaded complication of liver cirrhosis. Once ruptured, overall mortality is... varices. Flow measurements by 4D-flow-MRI are useful for stratification of variceal risk in patients with cirrhosis.

It is important to identify the cirrhotic patients at a high risk of progression to the decompensated stage. Liver... with MRE was the strongest indicator of cirrhosis progression from Child-Pugh class A to B among known risk factors.

There is insufficient knowledge on variability of MR Elastography (MRE) between different platforms. In this study, 6... respectively). It remains to be seen whether different sequences on different platforms will provide similar results.

The purpose was to develop MR tagging (MRt) based cardiac-induced liver deformation analysis for the assessment of liver... The proposed method provided a routine suitable for in-vivo measurements of the liver elasticity impairment in NAFLD.

Magnetic resonance spectroscopy (MRS) is widely accepted as the noninvasive reference standard for liver fat... across segments. We also examined the agreement between various ROI sampling methods reported in the literature.

Fatty infiltration of hepatocytes is the hallmark feature of non-alcoholic fatty liver disease (NAFLD) and potentially... regions within the liver, there is a need for a comprehensive, accurate and non-invasive quantitative biomarker.

Non-alcoholic fatty liver disease affects about 30% of the general population and is the leading cause of chronic liver... Our new technique has potential for free-breathing characterization of liver fat content.
Diffusion Phantoms & Validation
Constitution Hall 107    14:15-16:15  Moderators: Els Fieremans, Ph.D. & Markus Nilsson, Ph.D.

14:15 0151. Validation of Orientation Distribution Functions in 3D Using Confocal Microscopy
Kurt Schilling1, Yuri Gao1, Vaibhav Janve1, Iwona Stepniewska2, Prasanna Parvathaneni3, Hua Li1, Bennett A. Landman1, Adam W. Anderson1
1VUIIS, Vanderbilt University, Nashville, TN, United States; 2Psychology, Vanderbilt University, Nashville, United States; 3Electrical Engineering, Vanderbilt University, Nashville, TN, United States

14:27 0152. Diffusivity in Crossing and Diverging Fibers: A Multi-Site Phantom Experiment
Matthew W.A. Caan1, Ezequiel Farrher2, James Cole3, Dirk H.J. Poort4, Farida Grinberg2, 6, N. Jon Shah2, 6
1Department of Radiology, Academic Medical Center, Amsterdam, Netherlands; 2Institute of Neuroscience, Medicine-4, Forschungszentrum Juelich, Juelich, Germany; 3Computational, Cognitive, and Clinical Neuroimaging Laboratory, Division of Brain Sciences, Imperial College London, London, United Kingdom; 4Quantitative Imaging Group, Department of Imaging Physics, Delft University of Technology, Delft, Netherlands; 5Biomedical Imaging Group Rotterdam, Erasmus MC, Rotterdam, Netherlands; 6Department of Neurology, Faculty of Medicine, JARA, RWTH Aachen University, Aachen, Germany

Damien Jacobs1, Benoit Scherrer2, Aleksandar Jankovski3, Anne des Rieux4, Maxime Taquet1, Bernard Gallez2, Simon K. Warfield2, Benoit Macq1
1ICTEAM, Université catholique de Louvain, Louvain-La-Neuve, Belgium; 2Computational Radiology Laboratory, Boston Childrens Hospital, MA, United States; 3Hôpital universitaire Mont-Godinne, Université catholique de Louvain, Godinne, Belgium; 4LDRI, Universite catholique de Louvain, Brussels, Belgium

14:51 0154. Quantitative Histological Correlates of NODDI Orientation Dispersion Estimates in the Human Spinal Cord
Francesco Grussi1, Torben Schneider2, Richard L. Yates2, Mohamed Tachtour2, Hui Zhang2, Daniel C. Alexander2, Gabriele C. DeLuca2, Claudia A. M. Wheeler-Kingshott3
1NMR Research Unit, Department of Neuroinflammation, Queen Square MS Centre, UCL Institute of Neurology, London, England, United Kingdom; 2Nuffield Department of Clinical Neurosciences, University of Oxford, Oxford, England, United Kingdom; 3Department of Brain Repair and Rehabilitation, UCL Institute of Neurology, London, England, United Kingdom; 4Department of Computer Science and Centre for Medical Image Computing, University College London, London, England, United Kingdom

15:03 0155. Validation of Double Diffusion Schemes of Microscopic Fractional Anisotropy
Henrik Lundell1, Tim B. Dyrbj1, Penny L. Hubbard Cristinacce2, Feng-Lei Zhou2, Geoffrey J.M. Parker1, 3, Sune N. Jespersen1
1Centre for Functional and Diagnostic Imaging and Research, Copenhagen University Hospital, Hvidovre, Denmark; 2Centre for Imaging Sciences, The University of Manchester, United Kingdom; 3Biomedical Imaging Institute, The University of Manchester, United Kingdom; 4The School of Materials, The University of Manchester, United Kingdom; 5CFIN/MINDLab, Aarhus University, Denmark; 6Department of Physics and Astronomy, Aarhus University, Denmark

Damien J. McHugh1, 2, Fenglei Zhou1, 3, Penny L. Hubbard Cristinacce1, 2, Josephine H. Naish1, 2, Geoff J M Parker1
1Centre for Imaging Sciences, The University of Manchester, Manchester, United Kingdom; 2Biomedical Imaging Institute, The University of Manchester, Manchester, United Kingdom; 3Materials Sciences Centre, The University of Manchester, Manchester, United Kingdom

15:27 0157. Reduction of Susceptibility-Induced Field Gradients in Anisotropic Diffusion Fibre Phantoms Using Susceptibility Matching
Johannes Lindemeyer1, Ezequiel Farrher2, Farida Grinberg1, 2, Ana-Maria Oros-Peusquens1, N. Jon Shah1, 2
1Institute of Neuroscience and Medicine 4, INM-4, Medical Imaging Physics, Forschungszentrum Jülich GmbH, Jülich, Germany; 2Faculty of Medicine, Department of Neurology, RWTH Aachen University, JARA, Aachen, Germany

15:39 0158. A Processing Pipeline and Anisotropic Diffusion Phantom to Calibrate DTI Experiments
Alexandra V. Avram1, Michal E. Komlosh1, Alan S. Barnett2, Elizabeth Hutchinson1, 2, Dan Benjamin1, 4, Peter J. Basser4
1Section on Tissue Biophysics and Biomimetics, NICHD, National Institutes of Health, Bethesda, MD, United States; 2The Henry Jackson Foundation, Bethesda, MD, United States; 3Department of Biomedical Engineering, Tel-Aviv University, Tel-Aviv, Israel
15:51 0159. A Novel Phantom for Quantitative Diffusion MRI Based on Acetone and Deuterium Oxide

Xiaoke Wang1, Scott B. Reeder2, 3, Diego Hernando2

1Biomedical Engineering, University of Wisconsin, Madison, WI, United States; 2Radiology, University of Wisconsin, Madison, WI, United States; 3Medical Physics, University of Wisconsin, Madison, WI, United States

16:03 0160. Hyperpolarized Gas MR Diffusion Simulations and Experiments in Realistic 3D Models and Phantoms of Human Acanir Airways

Juan Parra-Robles1, Bart Veeckmans1, Madhwesha Rao1, James C. Hogg2, Jim M. Wild1

1University of Sheffield, Sheffield, South Yorkshire, United Kingdom; 2Materialise, Leuven, Belgium; 3University of British Columbia, Vancouver, British Columbia, Canada

Neurovascular & Stroke 1

14:15 0161. Changes in White-Matter Integrity and Evoked fMRI Responses in Chronic Hypertension

Yunxia Li1, 2, Qian Wang1, Qiang Shen1, Shiliang Huang1, Lora Talley Watts1, Timothy Q. Duong1

1Research Imaging Institute, The University of Texas Health Science Center at San Antonio, San Antonio, TX, United States; 2Department of Neurology, Tongji Hospital, Tongji University, Shanghai, China

14:27 0162. Multi-Modality 4D Stroke Template for the Characterization of Arterial Ischemic Stroke Evolution Over Time

Samantha J. Ma1, David S. Liebeskind1, Songlin Yu1, Holly Wilhalme1, David Elashoff2, Xin J. Qiao2, Nerses Sanossian1, Sidney Starkman1, 4, Latisha K. Ali1, Fabien Scalzo1, Bryan Yoo1, Jeffrey L. Saver1, Noriko Salamon1, Danny JJ Wang2

1Neurology, UCLA, Los Angeles, CA, United States; 2Medicine Statistics Core, UCLA, Los Angeles, CA, United States; 3Emergency Medicine, UCLA, Los Angeles, CA, United States

14:39 0163. Variations in Cerebral Haemodynamics and Capillary Transit Time Heterogeneity in Patients Before and After Carotid Endarterectomy

Amit Mehdiratta1, 2, Chang Sub Park1, David E. Crane3, Ediri Sideso1, James Kennedy3, Bradley J. McIntosh1, Stephen J. Payne1, Michael A. Chappell2

1CBME, Indian Institute of Technology Delhi, New Delhi, Delhi, India; 2IBME, University of Oxford, Oxford, Oxfordshire, United Kingdom; 3Medical Biophysics, Sunnybrook Research Institute, Toronto, ON, Canada; 4Nuffield Department of Surgery, University of Oxford, Oxford, Oxfordshire, United Kingdom; 5Acute Vascular Imaging Centre, Radcliffe Department of Medicine, University of Oxford, Oxford, Oxfordshire, United Kingdom

14:51 0164. A Multi-Parametric Investigation of Vascular Alterations in Elderly with Hypertension

Min Sheng1, Kevin S. King2, Adam Sheffield1, Harshan Ravi1, Shin-Lei Peng1, Peiying Liu1, Zohre German2, Hanzhang Lu1

1Advanced Imaging Research Center, University of Texas Southwestern Medical Center, Dallas, TX, United States; 2Department of Radiology, University of Texas Southwestern Medical Center, Dallas, TX, United States; Medical program, University of Texas Southwestern Medical Center, Dallas, TX, United States; 3Department of Neurology, University of Texas Southwestern Medical Center, Dallas, TX, United States

15:03 0165. A Non-Invasive Method for Measuring Perfusion in Moyamoya Disease with Functional Magnetic Resonance Imaging

Tianyi Qian1, Zhiwei Zuo1, Yituo Wang2, Yanjuan Kang3, Penggang Qiao2, Gongjie Li1

1MR Collaborations NE Asia, Siemens Healthcare, Beijing, China; 2Radiology, Affiliated hospital of Academy of Military Medical Sciences, Beijing, China; 3Siemens Shenzhen Magnetic Resonance Ltd., Shenzhen, China


Songlin Yu1, David S. Liebeskind1, Sumit Dua1, Holly Wilhalme1, David Elashoff2, Xin J. Qiao2, Jeffrey R. Alger1, 2, Nerses Sanossian1, Sidney Starkman1, 4, Latisha K. Ali1, Fabien Scalzo1, Xin Lou2, 3, Jeffrey L. Saver1, Noriko Salamon1, Danny J.J. Wang2, 2

1Neurology, UCLA, Los Angeles, CA, United States; 2Radiology, UCLA, Los Angeles, CA, United States; 3Medicine Statistics Core, UCLA, Los Angeles, CA, United States; 4Emergency Medicine, UCLA, Los Angeles, CA, United States; 5Radiology, Chinese People’s Liberation Army (PLA) General Hospital, Beijing, China
Monday

15:27 0167. Hemodynamics of the Cerebral Border Zone Regions in Healthy, Young Volunteers
Sophie Schmidt, Wouter Teeuwsse, Hanzhang Lu, Matthias van Osch
1Radiology, Leiden University Medical Center, Leiden, Zuid-Holland, Netherlands; 2UT Southwestern Medical Center, Dallas, TX, United States

15:39 0168. Velocity and Wall Shear Stress in the Circle of Willis in Sickie Cell Disease Using 4D Flow MRI
Lena Vaclavu, Henk-Jan Mutsaerts, Wouter Potters, Veronica van der Land, Karin Fijnvandraat, Michael Markl, Charles Majoe, Aart Nederveen, Pim van Ooij
1Academic Medical Center AMC, Amsterdam, Noord-Holland, Netherlands; 2Radiology & Biomedical Engineering, Northwestern University, Chicago, IL, United States

15:51 0169. Automatic Segmentation of the Venous Vessel Network Based on Quantitative Susceptibility Maps and Its Application to Investigate Blood Oxygenation
Barthélemy Serres, Andreas Deistung, Andreas Schäfer, Marek Kocinski, Andrzej Materka, Jürgen Reichenbach
1Medical Physics Group, Institute for Diagnosis and Interventional Radiology, University Hospital Jena - Friedrich Schiller University Jena, Jena, Germany; 2Max Plank Institute for Human Cognitive and Brain Sciences, Leipzig, Germany; 3University of Lodz, Lodz, Poland

16:03 0170. Longitudinal Characterization of Brain Microstructure and Visuomotor Behavior Following Acute Ocular Hypertension Using Diffusion Tensor Imaging, Magnetization Transfer Imaging and Optokinetics
Yolandí van der Merwe, Leon C. Ho, Xiaoling Yang, Michael B. Steketee, Seong-Gi Kim, Gadi Wollstein, Joel S. Schuman, Kevin C. Chan
1Neuroimaging Laboratory, University of Pittsburgh, Pittsburgh, PA, United States; 2Department of Bioengineering, Swanson School of Engineering, University of Pittsburgh, Pittsburgh, PA, United States; 3Department of Electrical and Electronic Engineering, University of Pittsburgh, Pittsburgh, PA, United States; 4Center for Neuroscience Imaging Research, Institute for Basic Science, Sungkyunkwan University, Suwon, Korea

Educational Course
ISMRM/SMRT Joint Forum: Whole Body DWI
Organizers: Mark A. Griswold, Ph.D. & James J. Stuppino, B.S., R.T.(R)(MR)

14:15 DWI of the Liver
Ihab Kamel

14:40 Diffusion-Weighted Imaging in the Extrahepatic Abdomen & Pelvis
Russell N. Low

15:05 Sequence and Magnet Optimization, Post Processing & New Applications
Ben Allen Kennedy

15:30 WB DWI Lecture - How to Do It – Bone Metastases and Therapy Response
James Stirling

15:55 Summary Discussion

16:15 Adjournment & Meet the Teachers

Combined Educational & Scientific Session
Dementia
Organizers: Jonathan H. Gillard, M.D., FRCR, MBA & Howard A Rowley, M.D.
Room 718 B 14:15-16:15 Moderators: Howard A. Rowley, M.D. & Greg Zaharchuk, M.D., Ph.D.

14:15 Recent Advances in the Understanding of Dementias
Aya M. Tokumaru
14:45 0171. Magnetic Resonance Elastography of Normal Pressure Hydrocephalus  
Nikoo Fattahi1, Arvin Arani1, Kevin J. Glaser1, Armando Manduca1, Nicholas M. Weijen2, Perry Avital2, Richard L. Ehman1, John Huston III1  
1Radiology, Mayo Clinic, Rochester, MN, United States; 2Neurosurgery, Mayo Clinic, Rochester, MN, United States  
MR Elastography using a 3T scanner and shear waves of 60 Hz was performed on patients with normal pressure hydrocephalus. Significant increase in brain stiffness was demonstrated in patients with NPH compared with age and sex matched normal controls.

15:05 0172. Diffusion Tensor Imaging Detects White Matter Changes in Preclinical Stages of Alzheimer Disease  
Qing Wang1, Yong Wang1, Joshua S. Shimony1, Anne M. Fagan2, John C. Morris2, Tammy L.S. Benzinger1, 3  
1Radiology, Washington University School of Medicine, St. Louis, MO, United States; 2Neurology, Washington University School of Medicine, St. Louis, MO, United States; 3Neurological Surgery, Washington University School of Medicine, St. Louis, MO, United States  
Alzheimer disease (AD) affects 20-30 million people worldwide. DTI was utilized on 144 normal participants, 30 and 18 in mild cognitive impairment (MCI), and 18 patients with mild AD. AD was associated with reduced fractional anisotropy in white matter compared with controls and MCI.

15:25 0173. APOE ε4 Allele Status Influences Early Neurodevelopment  
Justin M. Remer1, Douglas C. Dean III1, 2, Jonathan O'Muircheartaigh1, Sara D'Arpino1, Holly Dirks1, Sean C.L. Deoni1, 4  
1Advanced Baby Imaging Lab, School of Engineering, Brown University, Providence, RI, United States; 2Waisman Lab for Brain Imaging and Behavior, University of Wisconsin, Madison, WI, United States; 3Department of Neuroimaging, King's College London, Institute of Psychiatry, London, United Kingdom; 4Department of Pediatric Radiology, Children's Hospital Colorado, Aurora, CO, United States  
The apolipoprotein (APOE) ε4 allele, a main risk factor for late onset Alzheimer's Disease, has been associated with both anatomical and cognitive brain alterations seen several decades before disease symptoms commonly occur.

15:45 Imaging Dementias with MRI  
Mykol Larvie

16:15 Adjournment & Meet the Teachers

Educational Course
Cancer Theranostics & Monitoring Therapy with MRI  
Organizers: Kristine Glunde, Ph.D. & Marty D. Pagel, Ph.D.  
Room 801 A/B  14:15-16:15  
Moderators: Kristine Glunde, Ph.D. & Guanshu Liu, Ph.D.  

14:15 Theranostic Imaging in Cancer  
Zaver M. Bhujwalla

14:45 Theranostic Near Infrared Photoimmunotherapy  
Hisataka Kobayashi

15:15 Predictive MRI Biomarkers to Assess Therapeutic Outcome in Cancer  
Bachir Taouli

15:45 Monitoring Tumor Response to Therapy with MRI  
Alan Jackson

16:15 Adjournment & Meet the Teachers

Traditional Poster Session: Neuro A  
Exhibition Hall  16:30-18:30 (no CME credit)

Electronic Poster Session: Relaxation  
Exhibition Hall  16:30-17:30 (no CME credit)

Electronic Poster Session: Magnetic Susceptibility  
Exhibition Hall  16:30-17:30 (no CME credit)
Monday

Electronic Poster Session: Magnetization Transfer
Exhibition Hall 16:30-17:30 (no CME credit)

Electronic Poster Session: Pulse Sequences A
Exhibition Hall 16:30-17:30 (no CME credit)

Study Group Session
MR Safety
Reception Hall 104 BCD 16:30-18:30 (no CME credit)

Study Group Session
Diffusion
Constitution Hall 105 16:30-18:30 (no CME credit)

Power Pitch Session: The Cardiovascular Power Hour
Power Pitch Theatre, Exhibition Hall 16:30-17:30 (no CME credit)
Moderators: Daniel B. Ennis, Ph.D. & Reza Nezafat, Ph.D.

0174. Gradient-Induced Voltages on 12-Lead ECGs During High-Duty-Cycle MRI Sequences and a Theoretically Based Method to Remove Them
HuaLei Zhang¹, Zion Tsz ho Tse², Charles L. Dumoulin³, Ronald Watkins⁴, Wei Wang⁵, Jay Ward⁶, Raymond Kwong⁴, William Stevenson⁷, Ehud J. Schmidt¹
¹Brigham and Women’s Hospital, Boston, MA, United States; ²University of Georgia, GA, United States; ³Cincinnati Children’s Hospital Medical Center, Cincinnati, United States; ⁴Stanford University, CA, United States; ⁵E-TROLZ, Inc, Andover, MA, United States

0175. Automatic Detection of Inflammatory ‘hotspots’ in Abdominal Aortic Aneurysms to Identify Patients at Risk of Aneurysm Expansion and Rupture
Yolanda Georgia Koutraki¹, ², Chengjia Wang¹, ³, Jennifer Robson², Olivia Mcbride², Rachael O. Forsythe², Tom J. MacGillivray¹, Calum D. Gray¹, Keith Goatman¹, J. Camilleri-Brennan², David E. Newby¹, ², Scott I. Semple¹, ²
¹Clinical Research Imaging Centre, University of Edinburgh, Edinburgh, United Kingdom; ²Centre for Cardiovascular Science, University of Edinburgh, Edinburgh, United Kingdom; ³Toshiba Medical Visualization System - Europe, Edinburgh, United Kingdom

0176. In-Vivo Lipid Quantification in Carotid Plaques Using Multi-Slice T2 Mapping: Histological Validation
Luca Biasiolli¹, ², Joshua T. Chai¹, Lingqing Li³, Ashok Handa¹, Peter Jezzard³, Robin P. Choudhury¹, Matthew D. Robson²
¹AVIC, Radcliffe Department of Medicine, University of Oxford, Oxford, United Kingdom; ²OCMR, Radcliffe Department of Medicine, University of Oxford, Oxford, United Kingdom; ³FMRIB, Nuffield Department of Clinical Neurosciences, University of Oxford, Oxford, United Kingdom; ²Nuffield Department of Surgical Sciences, University of Oxford, Oxford, United Kingdom

Jerome Yerly¹, ², Giulia Ginami¹, ², Giovanna Nordio¹, ², Matthias Stuber¹, ²
¹Department of Radiology, University Hospital (CHUV) and University of Lausanne (UNIL), Lausanne, Switzerland; ²Center for Biomedical Imaging (CIBM), Lausanne, Switzerland

0178. Inter-Study Repeatability of Self-Gated Quantitative Myocardial Perfusion MRI
Devavrat Likhite¹, Promporn Saksaranjit², Chris McGann², Brent Wilson², Imran Haider², Ganesh Adluru¹, Edward DiBella¹
¹UCAIR, University of Utah, Salt Lake City, UT, United States; ²Division of Cardiovascular Medicine, Department of Medicine, University of Utah, Salt Lake City, UT, United States

0179. Initial Experience in Patients for Highly Accelerated Free-Breathing Whole-Heart Coronary MRA
Christoph Forman¹, Christoph Tillmanns², Michael O. Zenge³, Michaela Schmidt¹
¹Siemens AG, Healthcare, Imaging and Therapy Systems, Magnetic Resonance, Erlangen, Germany; ²Diagnostikum Berlin, Berlin, Germany
0180. **Accelerated Four-Dimensional, Multi-phase, Steady-State Imaging with Contrast Enhancement (MUSIC) Using Parallel Imaging and Compressed Sensing**  
Ziwei Zhou, Fei Han, Stanislav Rapacchi, Ihab Ayad, Isidro Salusky, Adam Plotnik, Paul Finn, Peng Hu  
1Radiology, UCLA, Los Angeles, CA, United States; 2Anesthesiology, UCLA, Los Angeles, CA, United States; 3Pediatrics, UCLA, Los Angeles, CA, United States

0181. **Dual Agent Relaxivity Cancellation (DARC) Imaging, a Novel Imaging Method for Dark Blood Post-Contrast Imaging: Application to MR Lymphangiography**  
Jeffrey H. Maki, Noah Briller, Peter C. Neligan, Gregory J. Wilson  
1Radiology, University of Washington, Seattle, WA, United States; 2Plastic Surgery, University of Washington, Seattle, WA, United States

0182. **CMR-Footprinting: Quantifying Tissue Parameters with Clinical Pulse Sequence Simulations Improves Measurement Accuracy - An Example with MOLLI T1 Mapping**  
Christos G. Xanthis, Sebastian L. Bidhull, Georgios Kantasis, Mikael Kanski, Einar Heiberg, Hakan Arheden, Anthony H. Aletras  
1Cardiac MR group Lund, Dept. of Clinical Physiology, Lund University, Lund, Sweden; 2Department of Computer Science and Biomedical Informatics, University of Thessaly, Lamia, Greece; 3Department of Biomedical Engineering, Faculty of Engineering, Lund University, Lund, Sweden

0183. **Modified Wideband 3D Late Gadolinium Enhancement (LGE) MRI for Patients with Implantable Cardiac Devices**  
Shams Rashid, Stanislav Rapacchi, Kalyanam Shivkumar, Adam Plotnik, J. Paul Finn, Peng Hu  
1Radiological Sciences, University of California, Los Angeles, CA, United States; 2UCLA Cardiac Arrhythmia Center, University of California, Los Angeles, CA, United States; 3Biomedical Physics Inter-Departmental Graduate Program, University of California, Los Angeles, CA, United States

0184. **Black Blood Late Gadolinium Enhancement (BB-LGE) Using a Joint T1 Magnetization Preparation and Inversion Preparation**  
Tamer Basha, Sebastien Roujol, Kraig V. Kissinger, Beth Goddu, Warren J. Manning, Stan Nezafat  
1Department of Medicine, Beth Israel Deaconess Medical Center & Harvard Medical School, Boston, MA, United States; 2Radiology, Beth Israel Deaconess Medical Center and Harvard Medical School, Boston, MA, United States

0185. **"Squashing the Peanut": What It Means for In-Vivo Cardiac DTI**  
Andrew D. Scott, Sonia Nielles-Vallespin, Pedro Ferreira, Laura-Ann McGill, Dudley Pennell, David Firmin  
1NIHR Cardiovascular Biomedical Research Unit, The Royal Brompton Hospital, London, United Kingdom; 2National Heart and Lung Institute, Imperial College London, London, United Kingdom; 3National Heart, Lung and Blood Institute, National Institutes of Health, Bethesda, MD, United States

0186. **Diffusion-Tensor Imaging Study of Myocardial Architecture of Situs Inversus and Situs Solitus Mutant Mouse Hearts**  
Yijen Lin Wu, Yu Chen, Xiaojin Liu, Fang-Cheng Yeh, T. Kevin Hitchens, George C. Gabriel, Cecilia Wen Ya Lo  
1Developmental Biology, University of Pittsburgh, Pittsburgh, PA, United States; 2Rangos Research Center Imaging Core, Children's Hospital of Pittsburgh of UPMC, Pittsburgh, PA, United States; 3Psychology, Carnegie Mellon University, Pittsburgh, PA, United States; 4Pittsburgh NMR Center for Biomedical Research, Carnegie Mellon University, Pittsburgh, PA

0187. **Mechanical Activation Time Mapping in Heart Failure Patients with and Without Myocardial Scar Using Cine DENSE MRI**  
Daniel A. Auger, Sophia X. Cui, Xiao Chen, Jeffrey W. Holmes, Kenneth C. Bilchick, Frederick H. Epstein  
1Department of Biomedical Engineering, University of Virginia, Charlottesville, VA, United States; 2Department of Medicine, Cardiovascular Medicine, University of Virginia, Charlottesville, VA, United States; 3Department of Radiology and Medical Imaging, University of Virginia, Charlottesville, VA, United States
Monday

0188. A Bayesian Approach for Accelerated Phase Contrast MRI

Adam Rich1, Lee C. Potter1, Ning Jin1, Joshua Ash1, Orlando Simonetti1, Rizwan Ahmad1
1Electrical and Computer Engineering, The Ohio State University, Columbus, OH, United States; 2Siemens Medical Solutions, Columbus, OH, United States; 3Davis Heart and Lung Research Institute, The Ohio State University, Columbus, OH, United States

0189. Validation of Radially Undersampled 4D-Flow-MRI in an Animal Model of Portal Hypertension

Alex Frydrychowicz1, Alejandro Roldan-Alzate2, Emily Winslow2, Dan Consigny2, Camilo Campo2, Utaro Motosugi2, Kevin M. Johnson2, Christopher J. Francois2, Oliver Wieber2, Scott B. Reeder2
1Clinical for Radiology and Nuclear Medicine, University Hospital Schleswig-Holstein, Campus Luebeck, Luebeck, Schleswig-Holstein, Germany; 2University of Wisconsin - Madison, WI, United States

Perfusion & Permeability: Contrast Agent Methods

Room 701 A 16:30-18:30 Moderators: Hassan Bagher-Ebadian, Ph.D. & Stefan A. Reinsberg, Ph.D.

16:30 0190. Real-Time Automatic Resolution Adaption (AURA) for Dynamic Contrast-Enhanced MRI

Ina Nora Kompan1, 2, Benjamin Richard Knowles3, Matthias Guenther1, 2
1School of Computing and Information Sciences, Florida International University, Miami, FL, United States

17:42 0191. Mitigating Bias and Variance Associated with Fat Signal in Quantitative DCE of the Breast

James H. Holmes1, Kang Wang1, Courtney K. Morrison1, Frank R. Korosec1, Ersin Bayram1, Roberta M. Strigel1, Diego Hernandez1, Scott B. Reeder1, Edward F. Jackson2, Ryan J. Bosca2
1Global MR Applications and Workflow, GE Healthcare, Madison, WI, United States; 2Medical Physics, University of Wisconsin-Madison, WI, United States; 3Radiology, University of Wisconsin-Madison, WI, United States

16:42 0191. Mitigating Bias and Variance Associated with Fat Signal in Quantitative DCE of the Breast

James H. Holmes1, Kang Wang1, Courtney K. Morrison1, Frank R. Korosec1, Ersin Bayram1, Roberta M. Strigel1, Diego Hernandez1, Scott B. Reeder1, Edward F. Jackson2, Ryan J. Bosca2
1Global MR Applications and Workflow, GE Healthcare, Madison, WI, United States; 2Medical Physics, University of Wisconsin-Madison, WI, United States; 3Radiology, University of Wisconsin-Madison, WI, United States

16:54 0192. In Vivo Cross-Validation Study of Contrast Kinetic Model Analysis with Simultaneous B1/T1 Estimation

Jin Zhang1, 2, Kerryanne Winters1, 2, Sungheon Gene Kim1, 2
16:30 0190. Real-Time Automatic Resolution Adaption (AURA) for Dynamic Contrast-Enhanced MRI

Ina Nora Kompan1, 2, Benjamin Richard Knowles3, Matthias Guenther1, 2
1School of Computing and Information Sciences, Florida International University, Miami, FL, United States

17:06 0193. Improving the Arterial Input Function in Dynamic Contrast Enhanced MRI by Fitting the Signal in the Complex Plane

Frank FJ Simonis1, Alessandro Shrizzi2, Ellis Beld1, Jan JW Lagendijk1, Cornelis AT van den Berg1
1Radiotherapy, UMC Utrecht, Utrecht, Netherlands; 2Radiology, UMC Utrecht, Utrecht, Netherlands

17:18 0194. Interleaved Acquisition of a Radial Projection Based AIF with a Multi-Slice DCE Experiment

Jen Moroz1, Andrew Yug1, Piotr Kozlowski2, 3, Stefan Reinsberg1
1Physics and Astronomy, UBC, Vancouver, BC, Canada; 2Radiology, UBC, Vancouver, BC, Canada; 3MRI Research Centre, UBC, Vancouver, BC, Canada

17:30 0195. Should DSC-MRI Based Blood Volume and Vessel Size Measures Be Corrected for Contrast Agent T2 Leakage Effects?

Ashley M. Stokes1, C. Chad Quarles3
1Institute of Imaging Science, Radiology and Radiological Sciences, Vanderbilt University, Nashville, TN, United States

17:42 0196. Accelerated DCE MRI Using Constrained Reconstruction Based on Pharmacokinetic Model Dictionaries

Sajan Goud Lingala1, Yi Guo1, Yinhua Zhu1, Samuel Barnes2, 3, R. Marc Lebel3, Krishna S. Nayak1
1Electrical Engineering, University of Southern California, Los Angeles, CA, United States; 2Division of Biology and Biological Engineering, California Institute of Technology, Pasadena, CA, United States; 3GE Healthcare, Calgary, Canada

17:54 0197. 4-D Spatio-Temporal MR Perfusion Deconvolution Via Tensor Total Variation

Ruogu Fang1
1School of Computing and Information Sciences, Florida International University, Miami, FL, United States
18:06 0198. **Quantification of Water Exchange Between Intravascular and Extravascular Compartments Using Independent Component Analysis**

*Hatef Mehrabian¹, ², Anne L. Martel¹, ², Johann Le Floch¹, Hany Soliman¹, ², Arjun Sahgal³, ⁴, Greg J. Stanisz¹, ²*

¹Physical Sciences, Sunnybrook Research Institute, Toronto, Ontario, Canada; ²Medical Biophysics, University of Toronto, Toronto, Ontario, Canada; ³Odette Cancer Centre, Sunnybrook Health Sciences Centre, Toronto, Ontario, Canada; ⁴Radiation Oncology, Sunnybrook Health Sciences Centre, Toronto, Ontario, Canada

**In Vivo** Assessment of Hepatic Glycogen Turnover in Mice by 13C-MRS. For this purpose, mice were infused with [1-13C]-labeled glucose (N=2), or galactose (N=3) for 120min, ... fitting the kinetics of glycogen to a metabolic model and was estimated to be ~84% with galactose as tracer substrate.

18:18 0199. **Multi-Compartment Analysis on Water Dynamics in Rat Brain by Heavy Water Perfusion**

*Zi-Min Lei¹, Cheng-He Li¹, Sheng-Min Huang¹, Chin-Tien Lu¹, Kung-Chu Ho², Fu-Nien Wang²*

¹Biomedical Engineering and Environmental Sciences, National Tsing Hua University, HsinChu, Taiwan; ²Nuclear Medicine, Chang Gung Memorial Hospital, Taoyuan, Taiwan

---

**New Methodological Approaches for MRS**

Room 701 B 16:30-18:30  **Moderators:** Ovidiu C. Andronesi, M.D., Ph.D. & Stefan Bluml, Ph.D.

16:30 0200. **Detection of Cerebral NAD+ in Humans at 7 T**

*Robin A. de Graaf¹, Henk M. De Feyter¹, Peter B. Brown¹, Terence W. Nixon¹, Douglas L. Rothman¹, Kevin L. Behar¹*

¹MRRC, Yale University, New Haven, CT, United States

16:42 0201. **GABA Concentration in the Superior Temporal Gyrus Predicts Gamma-Band Oscillations and Multisensory Perception**

*Ralf Mekle¹, Johanna Balz², Julian Keil², Yadira Roa-Romero², Semia Aydin¹, Florian Schubert¹, Bernd Itermann¹, Juergen Gallinar², Daniel Senkowski²*

¹Medical Physics, Physikalisch-Technische Bundesanstalt, Berlin, Germany; ²Department of Psychiatry and Psychotherapy, Charité-Universitätsmedizin, Berlin, Germany; ³Department of Psychiatry and Psychotherapy, University Hospital Hamburg-Eppendorf, Hamburg, Germany

16:54 0202. **About Differences of the Transverse Relaxation Time (T₂) of 18 Brain Metabolites in Gray and White Matter at 3T**

*Patrik Oliver Wexs¹, Andreas Hock¹, Milan Scheidegger¹, Niklaus Zoelch¹, Markus Rudin¹, Spyros Kollias², Anke Henning¹*

¹Institute for Biomedical Engineering, UZH and ETH Zurich, Zurich, Switzerland; ²Institute of Neuroradiology, University Hospital Zurich, Zurich, Switzerland; ³Department of Psychiatry, Psychotherapy and Psychosomatics Hospital of Psychiatry, University of Zurich, Zurich, Switzerland; ⁴Institute of Pharmacology and Toxicology, University of Zurich, Zurich, Switzerland; ⁵Max Planck Institute for Biological Cybernetics, Tuebingen, Germany

17:06 0203. **A Comparison of MEGA-SLASER and STEAM for In Vivo Quantification of GABA at 7T**

*Chen Chen¹, Peter Morris¹, Susan Francis¹, Penny Gowland¹*

¹Sir Peter Mansfield Imaging Centre (SPMIC), University of Nottingham, Nottingham, Nottinghamshire, United Kingdom

17:18 0204. **Optimized Combination of Magnetic Resonance Spectroscopy Signal from Multi-Element Coil Arrays**

*Liang Fang¹, Minjie Wu¹, Hengyu Ke¹, Anand Kumar¹, Shaolin Yang¹*

¹Department of Psychiatry, University of Illinois at Chicago, Chicago, IL, United States; ²School of Electronic Information, Wuhan University, Wuhan, Hubei, China; ³Department of Radiology, University of Illinois at Chicago, Chicago, IL, United States

17:30 0205. **Improvement of 2-Hydroxyglutarate Detectability by Optimized Triple-Refocusing at 3T In Vivo**

*Sangdong Gunji¹, Elizabeth A. Maher¹, Dianne Mendelsohn¹, Marco Pinho¹, Kevin Choe¹, Changho Choi¹*

¹University of Texas Southwestern Medical Center, Dallas, TX, United States

17:42 0206. **Assessment of Hepatic Glycogen Turnover in Mice by In Vivo 13C-MRS**

*Andreas Boss¹, Andor Velthuis¹, Arend Heerschap¹*

¹Radiology and Nuclear Medicine, Radboudumc, Nijmegen, Gelderland, Netherlands

17:54 0207. **In Vivo Detection of 13C Labeling of Glutamate and Glutamine Using Proton MRS at 7T**

*Li An¹, Shizhe Li¹, Maria Ferraris Araneta¹, Christopher Johnson¹, James B. Murdoch¹, Jun Shen¹*

¹Biomedical Engineering and Environmental Sciences, National Tsing Hua University, HsinChu, Taiwan; ²School of Electronic Information, Wuhan University, Wuhan, Hubei, China; ³Department of Radiology, University of Illinois at Chicago, Chicago, IL, United States

---

**Monday**
Monday

18:06 0208. Real-Time Tool to Forecast the Adequacy of Shim and to Define the Number of Acquisitions Needed to Answer the Clinical Question at Hand with the Prescribed 1H MR Spectroscopy Exam
Sreenath Prathviraj Kyathanahally1, Roland Kreis1
1Depts. Radiology and Clinical Research, University Bern, Bern, Switzerland

18:18 0209. Kinetic Analysis of Dynamic Deuterium MR Spectra for Simultaneous Assessment of Cerebral Glucose Consumption Rate and TCA Cycle Flux
Ming Lu1, Xiao-Hong Zhu1, Wei Chen1
1Center for Magnetic Resonance Research, University of Minnesota Medical School, Minneapolis, MN, United States

**fMRI: Physiology**

Room 714 A/B 16:30-18:30  Moderators: Richard G. Wise, Ph.D. & J. Jean Chen, Ph.D.

16:30 0210. fMRI Post-Stimulus Undershoots in Visual Cortex Are Neuronal in Origin
Karen J. Mullinger1, Matthew Cherukara2, Susan T. Francis1, Stephen D. Mayhew2
1SPMIC, School of Physics and Astronomy, University of Nottingham, Nottingham, Nottinghamshire, United Kingdom; 2BUIC, School of Psychology, University of Birmingham, Birmingham, West Midlands, United Kingdom

16:42 0211. Unravelling the Neurochemical Mechanism of Positive and Negative BOLD Responses: A Combined fMRI-MRS Study
Adam Bertrington1, Andre Gouws2, Stuart Clare1, Peter Jezzard1, Uzay Emir1
1FMRI Centre, University of Oxford, Oxford, United Kingdom; 2York Neuroimaging Centre, University of York, York, United Kingdom

16:54 0212. Application of Quantitative, Multimodal fMRI to the Estimation of the Cerebral Metabolic Response to CO2 and a Visual Stimulus in Hypoxia
Karen J. Mullinger1, Zachary Smith2, Richard Buxton3, David Dubowitz2
1Bioengineering, University of California San Diego, La Jolla, CA, United States; 2Radiology, University of California San Diego, La Jolla, CA, United States

17:06 0213. Multiband BOLD Acquisition Enhances the Sensitivity of Cerebrovascular Reactivity (CVR) Mapping
Harshan Ravi1, Peiying Liu1, Shin-Lei Peng1, Hanzhang Lu1
1Advanced Imaging Research Center, University of Texas at South Western Medical Center, Dallas, TX, United States; 2Department of Bioengineering, University of Texas at Arlington, Arlington, TX, United States

17:18 0214. The Impact of Normoxic and Hyperoxic Baseline Periods in Block Paradigms of Hypercarbic Cerebrovascular Reactivity Studies
Karen J. Mullinger1, Jeroen C.W. Sier1, Megan K. Strother1, Daniel F. Arteaga1, Manus J. Donahue1
1Radiology and Radiological Sciences, Vanderbilt University School of Medicine, Nashville, TN, United States; 2Department of Radiology, University Medical Center Utrecht, Utrecht, Netherlands

17:30 0215. Searching for a Truly "iso-Metabolic" Gas Challenge for the Use in Calibrated fMRI and Cerebrovascular Reactivity Mapping
Shin-Lei Peng1, Harshan Ravi1, Min Sheng1, Binu Thomas1, Hanzhang Lu1
1Advanced Imaging Research Center, University of Texas Southwestern Medical Center, Dallas, TX, United States

17:42 0216. Calibration of BOLD fMRI Motor Activation Maps Using BOLD Breath Hold Cerebrovascular Reactivity Mapping for Effective Compensation of Brain Tumor-Related Neurovascular Uncoupling
Shruti Agarwala1, Raag Aird1, Sachin K. Gujar1, Haris I. Sair1, Jay J. Pillai1
1Division of Neuroradiology, Russell H. Morgan Department of Radiology and Radiological Science, Johns Hopkins University School of Medicine, Baltimore, MD, United States
17:54  0217.  Task-Correlated Physiology Reveals Vascular-Neural Networks
Molly Gallogly Bright1, Joseph Whittaker1, Ian Driver1, Kevin Murphy1
1CUBRIC, School of Psychology, Cardiff University, Cardiff, Wales, United Kingdom

18:06  0218.  Baseline Oxygenation in the Brain: Correlation with BOLD and Comparison Between Susceptibility and Respiratory-Calibration Methods
Audrey P. Fan2, Andreas Schaefer2, Laurentius Huber2, Steffen N. Krieger2, Harald E. Moeller2, Arno Villringer2, Claudine J. Gauthier2, 3
1Richard M. Lucas Center for Imaging, Stanford University, Stanford, CA, United States; 2Max Planck Institute for Human Cognitive and Brain Sciences, Leipzig, Germany; 3Concordia University, Montreal, Quebec, Canada

18:18  0219.  A Streamlined Approach to Mapping the Oxygen Extraction Fraction (OEF) and Deoxygenated Blood Volume (DBV) Using the Quantitative BOLD Technique
Alan J. Stone1, Nicholas P. Blockley1
1FMRIB, Nuffield Department of Clinical Neurosciences, Oxford, United Kingdom

Cancer: Preclinical Studies of Animal Models
Room 716 A/B  16:30-18:30  Moderators: Zaver M. Bhujwalla, Ph.D. & E. Jim Delikatny, Ph.D.

16:30  0220.  Tumour Response to Cabozantinib in a Transgenic Mouse Model of Neuroblastoma Assessed by Multiparametric MRI
Gilberto S. Almeida1, Philippa King2, Yann Jamin1, Albert Hallsworth1, Hannah Webber2, Sergey Popov2, Louis Chesler2, Simon P. Robinson1
1Radiotherapy and Imaging, The Institute of Cancer Research, Sutton, Surrey, United Kingdom; 2Medical Biophysics, Western University, London, Ontario, Canada

16:42  0221.  Diffusion Weighted MRI for Early Detection and Progression Monitoring of Prostate Cancer in a Transgenic Mouse Model
Deborah K. Hill1, 2, Eugene Kim1, 2, Jose R. Teneru1, 2, Siver A. Moestue1, 2, Tone F. Bathen1
1Department of Circulation and Medical Imaging, Norwegian University of Science and Technology, Trondheim, Sør Trøndelag, Norway; 2St. Olavs University Hospital, Trondheim, Sør Trøndelag, Norway

16:54  0222.  In Vivo and Ex Vivo Diffusion Tensor Imaging Parameters Follow Collagen 1 Fiber Distribution in Breast Cancer Xenograft Model
Samata M. Kakkad1, 2, Jiangyang Zhang1, Alireza Akhbardeh1, Desmond Jacob1, Meiyappan Solaiyappan1, Michael A. Jacobs1, Venu Raman1, Dieter Leibfritz1, Kristine Glunde1, Zaver M. Bhujwalla1
1Radiology, The Johns Hopkins University School of Medicine, Baltimore, MD, United States; 2University of Bremen, Bremen, Germany

17:06  0223.  Investigating the Impact of a Primary Tumor on Metastasis and Dormancy Using MRI: New Insights Into the Mechanism of Concomitant Tumor Resistance
Paula Foster1, 2, Amanda Hamilton1, Carmen Smedrea1
1Imaging, Robarts Research Institute, London, Ontario, Canada; 2Medical Biophysics, Western University, London, Ontario, Canada

17:18  0224.  Iron-Oxide Driven Decrease in T2 Relaxation Times Correlates with Tumor Associated Macrophages (TAMs) in Postpartum Pregnancy Associated Breast Cancer Xenografts
J C. Montejano1, 2, K M. Huber1, V F. Borges3, P J. Schedin4, N J. Serkova1
1University of Colorado Anschutz Medical Campus, Aurora, CO, United States; 2Oregon Health and Science University, OR, United States

17:30  0225.  In-Vivo Quantification of Iron Oxide Nanoparticles at High Concentration in a Murine Breast Tumor Model Using Positive Contrast
Jinjin Zhang1, Alicia A. Petryk2, Russell Reeves3, Djaudat Idfiyatullin1, Hattie L. Ring1, 4, P. Jack Hoopes2, 3, Michael Garwood1
1Room 716 A/B  16:30-18:30  Moderators: Zaver M. Bhujwalla, Ph.D. & E. Jim Delikatny, Ph.D.

16:30  0220.  Tumour Response to Cabozantinib in a Transgenic Mouse Model of Neuroblastoma Assessed by Multiparametric MRI
Gilberto S. Almeida1, Philippa King2, Yann Jamin1, Albert Hallsworth1, Hannah Webber2, Sergey Popov2, Louis Chesler2, Simon P. Robinson1
1Radiotherapy and Imaging, The Institute of Cancer Research, Sutton, Surrey, United Kingdom; 2Medical Biophysics, Western University, London, Ontario, Canada

16:42  0221.  Diffusion Weighted MRI for Early Detection and Progression Monitoring of Prostate Cancer in a Transgenic Mouse Model
Deborah K. Hill1, 2, Eugene Kim1, 2, Jose R. Teneru1, 2, Siver A. Moestue1, 2, Tone F. Bathen1
1Department of Circulation and Medical Imaging, Norwegian University of Science and Technology, Trondheim, Sør Trøndelag, Norway; 2St. Olavs University Hospital, Trondheim, Sør Trøndelag, Norway

16:54  0222.  In Vivo and Ex Vivo Diffusion Tensor Imaging Parameters Follow Collagen 1 Fiber Distribution in Breast Cancer Xenograft Model
Samata M. Kakkad1, 2, Jiangyang Zhang1, Alireza Akhbardeh1, Desmond Jacob1, Meiyappan Solaiyappan1, Michael A. Jacobs1, Venu Raman1, Dieter Leibfritz1, Kristine Glunde1, Zaver M. Bhujwalla1
1Radiology, The Johns Hopkins University School of Medicine, Baltimore, MD, United States; 2University of Bremen, Bremen, Germany

17:06  0223.  Investigating the Impact of a Primary Tumor on Metastasis and Dormancy Using MRI: New Insights Into the Mechanism of Concomitant Tumor Resistance
Paula Foster1, 2, Amanda Hamilton1, Carmen Smedrea1
1Imaging, Robarts Research Institute, London, Ontario, Canada; 2Medical Biophysics, Western University, London, Ontario, Canada

17:18  0224.  Iron-Oxide Driven Decrease in T2 Relaxation Times Correlates with Tumor Associated Macrophages (TAMs) in Postpartum Pregnancy Associated Breast Cancer Xenografts
J C. Montejano1, 2, K M. Huber1, V F. Borges3, P J. Schedin4, N J. Serkova1
1University of Colorado Anschutz Medical Campus, Aurora, CO, United States; 2Oregon Health and Science University, OR, United States

17:30  0225.  In-Vivo Quantification of Iron Oxide Nanoparticles at High Concentration in a Murine Breast Tumor Model Using Positive Contrast
Jinjin Zhang1, Alicia A. Petryk2, Russell Reeves3, Djaudat Idfiyatullin1, Hattie L. Ring1, 4, P. Jack Hoopes2, 3, Michael Garwood1
Monday

17:42 0226. Combined PET-MRI: Is It Possible to Quantify FDG Perfusion Based on Gd-DTPA Pharmacokinetics?
Marie Anne Richard1, Vincent Turgeon1, Jérémie P. Fouquet1, Luc Tremblay1, Réjean Lebel1, Martin Lepage1
1Centre d’imagerie moléculaire de Sherbrooke (CIMS), Université de Sherbrooke, Sherbrooke, Québec, Canada

17:54 0227. Dynamic Contrast Enhanced Magnetic Resonance Imaging Evaluates Early Therapeutic Effect of Anti-EMMPRIN Antibody with Cisplatin or X-Radiation in Head and Neck Cancer Mouse Models
Hyunki Kim1, Yolanda Hartman1, Guihua Zhai2, Thomas Chung2, Melissa Korb2, Tong Zhou2, Eben Rosenthal1
1University of Alabama at Birmingham, Birmingham, AL, United States

18:06 0228. Effect of Oxygen Challenge on MR Imaging of Tumor Microenvironment
Zhongwei Zhang1, Qing Yuan1, Heling Zhou1, Ralph P. Mason1
1Department of Radiology, UT Southwestern Medical Center, Dallas, TX, United States

18:18 0229. MR Microscopy - Ultra-High Resolution 7T MRI in Pathologic Analysis of Resected Breast and Lymph Tissue
Brittany Dashevsky1, Krishna Juluru1,2, Timothy D’Alfonso1, Elizabeth Sutton1, Eric Aronowitz1, Ashley E. Giambonne1, Doug Ballon1
1Weill Cornell Medical College, New York, NY, United States; 2Memorial Sloan Kettering Cancer Center, New York, NY, United States

Mechanisms of Neural Degeneration & Damage
Constitution Hall 107 16:30-18:30 Moderators: Shinji Naganawa, M.D. & T.B.A.

16:30 0230. Diagnosis of Early-Stage Idiopathic Parkinson’s Disease: Feasibility of Nigrosome 1 Imaging at 3T
Eung Yeop Kim1, Young Noh2, Young-Hee Sung2, Jongho Lee3
1Center for Magnetic Resonance Research, Department of Radiology, University of Minnesota, Minneapolis, MN, United States; 2Thayer School of Engineering, Dartmouth College, NH, United States; 3Geisel School of Medicine, Dartmouth College, NH, United States

16:42 0231. Can MRI of the Nigrosomes Provide a Biomarker for Progression of Parkinson’s Disease?
Stefan Schwarz1, Olivier Mougin1, Yue Xing1, Ania Blazejewska1, Lesley Martin1, Nin Bajaj2, Dorathée Auer1, Penny Gowland2
1Sir Peter Mansfield Imaging Centre, University of Nottingham, Nottingham, Nottinghamshire, United Kingdom; 2Division of Neurology, Nottingham University Hospitals NHS Trust, Nottingham, Nottinghamshire, United Kingdom

16:54 0232. Differentiation of Early-Stage Parkinsonisms with Diffusion Kurtosis Imaging Using the Diffusion Magnetic Parkinsonism Index
Kenji Ito1, Makoto Sasaki1, Chigumi Ohtuka1, Suguru Yokosawa2, Taisuke Harada2, Ikuko Uwano2, Fumio Yamashita1, Satomi Higuchi1, Yasuo Terayama2
1Division of Ultrahigh Field MRI, Institute for Biomedical Sciences, Iwate Medical University, Yahaba, Iwate, Japan; 2Department of Neurology and Gerontology, Iwate Medical University, Morioka, Iwate, Japan; 3Central Research Laboratory, Hitachi, Ltd., Kokubunji, Tokyo, Japan

17:06 0233. Memory Circuit Involvement in Systematic Lupus Erythematosus Patients
Ivana De Luca1, An Vo1, Meggan Mackay2, Peter B. Kingsley2, Bruce Volpe2, Cynthia Aranow2, David Eidelberg1, Betty M. Diamond2, Aziz M. Ulug1
1Center for Neurosciences, Feinstein Institute for Medical Research, Manhasset, NY, United States; 2Thayer School of Engineering, Dartmouth College, NH, United States; 3Institute of Biomedical Engineering, Bogazici University, Istanbul, Turkey

17:18 0234. Deterioration of Neuronal and Glial Intermediary Metabolism, Neurochemical Profiles and Brain Morphology in Insulin-Resistant Goto-Kakizaki Rats: A Multimodal Magnetic Resonance Study In Vivo
Ieya-Merret Girault1, Rolf Gruetter1, 2, Joao M.N. Duarte1
1LIFMET, EPFL, Lausanne, Vaud, Switzerland; 2Radiology, UNIL and UNIGE, Lausanne and Geneva, Vaud, Switzerland
We present a method for simultaneous multi-slice compliance measurement based on sparse golden-angle radial CAIPIRINHA, as a way to reduce scan time. One interesting finding is that a narrower airway site does not always correspond to higher compliance or higher Pcrit.

Multi-slice excitation schemes are based upon the superposition of single-band RF waveforms. Through inter-slice phase encoding, a multi-slice excitation scheme and/or a whole pTx system with channel/slice dependent amplitude/phase shimming settings is obtained.

Peripheral systemic HIV-1 infection in mice containing a human immune system was studied to determine effects of long-term infection. Some variability in spectroscopic results found in literature reports from HIV-1 infected animals and patients.

Dynamic-contrast-enhanced magnetic resonance imaging (DCE-MRI) provides a unique method of quantitatively characterizing BBB permeability changes. Acute lesions with elevated BBB permeability arise from NABT rapidly (< 7 days).

We hypothesized that macromolecular transportation is altered in communicating hydrocephalus rats. SWI was used to monitor iron tagged dextran transportation in normal and hydrocephalus rat brains. An obvious delay in clearance with a significant increase in Fe-Dextran in the veins was observed for the hydrocephalus rats.

This work demonstrates the first investigation of glymphatic impairment after diabetes in rat using MRI. Gd-DTPA based methods failed to demonstrate a significant difference between normal and streptozotocin-induced diabetes. An approach can be used to determine quantitatively the effect of treatment after neurological disorder, such as diabetes.

This study used diffusion tensor imaging, manganese-enhanced MRI, and chromium-enhanced MRI to evaluate the structure and function of the optic nerve before MRI-detectable changes in retina, optic tract, superior colliculus, and lateral geniculate nucleus.

Insulin signalling deregulation in diabetes deteriorates brain structure and function leading to cognitive deficits. We hypothesized that neurochemical alterations were associated with degree of brain dysfunction, namely impaired memory performance.

Simultaneous Multi-Slice Imaging

Moderators: Felix Breuer, Ph.D. & David Feinberg, M.D., Ph.D.

16:30 0240. RARE/Turbo Spin Echo Imaging with Simultaneous MultiSlice Wave-CAIPI
Borjan Gagoski1, Berkin Bilgic2, Cornelius Eichner2, Himanshu Bhat1, P. Ellen Grant1, Lawrence L. Wald2, Kavindar Sen1
1Boston Children's Hospital, Boston, MA, United States; 2Martinos Center for Biomedical Imaging, Charlestown, MA, United States

16:42 0241. Rapid Online Multiband RF Peak Power Minimization for CAIPRINHA and PTX-Multi-Slice Shims by Inter-Slice Phase Relaxation
Alessandro Sbrizzi1, Benedikt Poser2, Desmond H Y Tse2, Hans Hoogduin1, Peter R. Luijten1, Cornelis van den Berg1
1UMC Utrecht, Utrecht, Netherlands; 2Faculty of Psychology and Neuroscience, Maastricht University, Limburg, Netherlands

16:54 0242. Simultaneous Multi-Slice Airway Compliance Measurement Using Sparse Golden-Angle Radial CAIPRINHA
Ziyue Wu1, Michael C.K. Khoo1, Krishna S. Nayak2
1University of Southern California, Los Angeles, CA, United States

17:06 0243. Simultaneous Multi-Slice Imaging with Chemical Shift Separation
Sjoerd Crijns1, Alessandro Sbrizzi1, Bjorn Stemkens1, Cornelis van den Berg1, Peter Luijten1, Jan Lagendijk1, Anna Andreyenko1
1University of Southern California, Los Angeles, CA, United States
Our work shows that PROPELLER scans can be accelerated with SMS in addition to in-plane acceleration, allowing almost 75% scan time reduction. For our accelerated PROPELLER sequence, GRAPPA and split-slice-GRAPPA was used for unfolding, and the GRAPPA kernel was rotated to calculate sets of weights for the other blade volumes. The technique was validated with our T1-W SE PROPELLER sequence.

Intravoxel Incoherent Motion (IVIM) offers the possibility to study microvascular perfusion properties of skeletal muscles. This non-invasive imaging technique is already well established in the field of investigation-related muscular disorders, such as peripheral arteriopathies and diabetes mellitus-related microangiopathies.

Intravoxel Incoherent Motion (IVIM) offers the possibility to study microvascular perfusion properties of skeletal muscles. This non-invasive imaging technique is already well established in the field of investigation-related muscular disorders, such as peripheral arteriopathies and diabetes mellitus-related microangiopathies.

Room 718 A 16:30-18:30

**Combined Educational & Scientific Session**

**Musculoskeletal Functional Imaging: Mechanics & More**

**Organizers:** Eric Y. Chang, M.D., Richard Kijowski, M.D., William B. Morrison, M.D., Ravinder R. Regatte, Ph.D. & Siegfried Trattnig, M.D.

**Moderators:** Matthew F. Koff, Ph.D. & Bruce M. Damon, Ph.D.

**16:30** Techniques: Joint Mechanics & Gait

*Thor Franciscus Besier*

**17:00** Clinical Applications

*Garry E. Gold*

**17:30** Evaluation of the Relationship Between IVIM Microvascular Blood Flow and Exercise Duration in Shoulder Muscles After Lift-Off Test

*Christian Federau*, *Jean-Baptiste Ledoux*, *Patrick Omoumi*, *Fabio Becce*

1CHUV, University Hospital Lausanne, Lausanne, Vaud, Switzerland

**18:00** EPI 2D Ghost Correction and Integration with Multiband: Application to Diffusion Imaging at 7T.

*Steen Moeller*, *Edward Auerbach*, *An T. Vu*, *Christophe Lenglet*, *Stamatios N. Sotiropoulos*, *Kamil Ugurbil*, *Essa Yacoub*

1Center for Magnetic Resonance Research, University of Minnesota, Minneapolis, MN, United States

**18:18** Evaluation of Multiband-DABS ASL for Resting-State fMRI

*Keren Yang*, *Rosa Sanchez Panchuelo*, *Martin Buehrer*, *Richard Bowtell*, *Susan Francis*

1University of Nottingham, Nottingham, Nottinghamshire, United Kingdom

2FMRIB-Centre, Oxford, Oxfordshire, United Kingdom

**18:36** Phase-Cycled Multiband SSFP Imaging with CAIPIRINHA for Efficient Banding Removal

*Yi Wang*, *Thomas Martin*, *Steen Moeller*, *Essa Yacoub*, *Danny JJ Wang*

1Neurology, UCLA, Los Angeles, CA, United States

2Center of Magnetic Resonance Research, University of Minnesota, MN, United States

**19:04** Accelerating Magnetic Resonance Fingerprinting Using T-Blipped Simultaneous Multi-Slice Acquisition

*Huifui Ye*, *Dan Ma*, *Yun Jiang*, *Stephen F. Cauley*, *Yiping Du*, *Lawrence L. Wald*, *Mark A. Griswold*, *Kawin Setsompop*

1MGH/HST Martinos Center for Biomedical Imaging, Charlestown, MA, United States

2Zhejiang University, Hangzhou, Zhejiang, China

3Case Western Reserve University, OH, United States

**19:32** Simultaneous Multi-Slice Magnetic Resonance Fingerprinting Reconstruction Using GROG+slice-GRAPPA

*Ola Norbeck*, *Magnus Mårtensson*, *Enrico Avventi*, *Mathias Engström*, *Stefan Skare*

1Dept. of Neuroradiology, Karolinska University Hospital, Stockholm, Sweden

2EMEA Research and Collaboration, GE Applied Science Laboratory, GE Healthcare, Stockholm, Sweden

3Dept. of Clinical Neuroscience, Karolinska Institutet, Stockholm, Sweden

**19:58** EPI 2D Ghost Correction and Integration with Multiband: Application to Diffusion Imaging at 7T.

*Steen Moeller*, *Edward Auerbach*, *An T. Vu*, *Christophe Lenglet*, *Stamatios N. Sotiropoulos*, *Kamil Ugurbil*, *Essa Yacoub*

1Center for Magnetic Resonance Research, University of Minnesota, Minneapolis, MN, United States

2FMRIB-Centre, Oxford, Oxfordshire, United Kingdom

**20:26** Evaluation of Multiband-DABS ASL for Resting-State fMRI

*Keren Yang*, *Rosa Sanchez Panchuelo*, *Martin Buehrer*, *Richard Bowtell*, *Susan Francis*

1University of Nottingham, Nottingham, Nottinghamshire, United Kingdom

2FMRIB-Centre, Oxford, Oxfordshire, United Kingdom

**20:54** Accelerating Magnetic Resonance Fingerprinting Using T-Blipped Simultaneous Multi-Slice Acquisition

*Huifui Ye*, *Dan Ma*, *Yun Jiang*, *Stephen F. Cauley*, *Yiping Du*, *Lawrence L. Wald*, *Mark A. Griswold*, *Kawin Setsompop*

1MGH/HST Martinos Center for Biomedical Imaging, Charlestown, MA, United States

2Zhejiang University, Hangzhou, Zhejiang, China

3Case Western Reserve University, OH, United States

**21:22** Simultaneous Multi-Slice Magnetic Resonance Fingerprinting Reconstruction Using GROG+slice-GRAPPA

*Ola Norbeck*, *Magnus Mårtensson*, *Enrico Avventi*, *Mathias Engström*, *Stefan Skare*

1Dept. of Neuroradiology, Karolinska University Hospital, Stockholm, Sweden

2EMEA Research and Collaboration, GE Applied Science Laboratory, GE Healthcare, Stockholm, Sweden

3Dept. of Clinical Neuroscience, Karolinska Institutet, Stockholm, Sweden

**21:48** EPI 2D Ghost Correction and Integration with Multiband: Application to Diffusion Imaging at 7T.

*Steen Moeller*, *Edward Auerbach*, *An T. Vu*, *Christophe Lenglet*, *Stamatios N. Sotiropoulos*, *Kamil Ugurbil*, *Essa Yacoub*

1Center for Magnetic Resonance Research, University of Minnesota, Minneapolis, MN, United States

2FMRIB-Centre, Oxford, Oxfordshire, United Kingdom
17:42 0251. Quantitative NMR Imaging of the Short-T2 Components in the SKM Tissue: Alterations Observed in Myopathic Patients

Ericky Caldas de A. Araujo, Noura Azzabou, Alexandre Vignaud, Geneviève Guillot, Pierre G. Carlier

1NMR Laboratory, Institute of Myology, Paris, Île-de-France, France; 2CEA/DSV/12BM/NeuroSpin/Unirs, Gif Sur Yvette, Île-de-France, France; 3IR4M/UMR8081/CNRS, University Paris-SUD, Orsay, Île-de-France, France; 4NMR Laboratory, CEA/12BM/Mircen, Paris, Île-de-France, France

17:54 0252. In Vivo Diffusion MR Study at 7T of Hindlimb Muscles in a Mouse Model of Duchenne Muscular Dystrophy

Paola Porcari, Elizabeth Greally, Volker Straub, Andrew M. Blamire

1Depts. Radiology and Clinical Research, University Bern, Bern, Switzerland

18:06 0253. The Relationship of Walking Speed Metrics to Phosphorus Magnetic Resonance Spectroscopy (31P-MRS) Bioenergetic Measurements in the Baltimore Longitudinal Study of Aging (BLSA)

Seongjin Choi, David A. Reiter, Kenneth W. Fishbein, Eleanor M. Simonsick, Richard G. Spencer, Luigi Ferrucci

1Translational Gerontology Branch, NIH/National Institute on Aging, Baltimore, MD, United States; 2Laboratory of Clinical Investigation, NIH/National Institute on Aging, Baltimore, MD, United States; 3Institute of Genetic Medicine, Newcastle University, Newcastle upon Tyne, Tyne and Wear, United Kingdom


Kevin E. Conley, Amir Ali, Sharon Jubrias

1Radiology, University of Washington, Seattle, WA, United States

18:30 Adjournment & Meet the Teachers

Combined Educational & Scientific Session

Quantitative Biomarkers in Renal MRI: From Morphology to Physiology

Organizers: Lorenzo Mannelli, M.D., Ph.D., Ivan Pedrosa, M.D., Scott B. Reeder, M.D. & Edwin J.R. van Beek, M.D., Ph.D., M.Ed., FRCR

Room 718 B 16:30-18:30 Moderators: Rotem S. Lanzman, Ph.D. & Glen Morrell, M.D., Ph.D.

16:30 Introduction

16:33 Arterial Spin Labelling

Susan T. Francis

16:48 0255. Correlation Analysis Between Renal Perfusion and Estimated Glomerular Filtration Rate in Volunteers and Patients with Chronic Kidney Disease: An Arterial Spin Labeling in 3.0T MRI Study

Yuelang Zhang, Chenzia Li, Jie Gao, Xiang Li, Jian Yang

1Department of Diagnostic Radiology, The First Hospital of Medical School, Xi’an Jiaotong University, Xi’an, Shaanxi, China

17:00 0256. Evaluation of Readout Schemes for Arterial Spin Labelling in the Human Kidney

Charlotte E. Buchanan, Eleanor F. Cox, Susan T. Francis

1SPMIC, University of Nottingham, Nottingham, Nottinghamshire, United Kingdom; 2Division of Medical Sciences and Graduate Entry Medicine, Royal Derby Hospital, Nottingham, United Kingdom

17:12 Blood Oxygen Level Dependent

Pottumarthi V. Prasad

17:27 0257. Determination of Technically and Physiologically Caused Variation of Parameters from DTI and BOLD MRI in Native Kidneys: a Repeatability Study

Maryam Seif, Chris Boesch, Peter Vermathen

1Depts. Radiology and Clinical Research, University Bern, Bern, Switzerland
Monday

17:39 0258. Blood Oxygen Level Dependent (BOLD) and Diffusion Tensor (DTI) Imaging of the Kidneys in Patients with Type 1 Diabetes: Preliminary Clinical Experience with Reference to Healthy Control Subjects
Elissa Botterill1, Windell Ang1, Jasmine Seah1, Claire Mulcahy1, Elif Ekinci1, 3, George Jerums1, 3, Richard MacIsaac, 4, Pippa Storey1, Eric Sigmund2, Tim Spelman5, Ruth P. Lim1, 3
1Austin Health, Melbourne, Victoria, Australia; 2The Florey Institute of Neuroscience and Mental Health, Melbourne, Victoria, Australia; 3The University of Melbourne, Melbourne, Victoria, Australia; 4St Vincent’s Hospital, East Melbourne, Victoria, Australia; 5CAIIAR, Bernard and Irene Schwartz Center for Biomedical Imaging, NYU School of Medicine, New York, NY, United States; 6Burnet Institute, Melbourne, Victoria, Australia

17:51 Diffusion
Rotem S. Lanzman

18:06 0259. Diffusion-Weighted Magnetic Resonance Imaging in Partially Nephrectomized Kidneys
Moritz Jörg Schneider1, Olaf Dietrich1, Katharina Stella Winter1, Maximilian Reiser1, Michael Staehler2, Mike Notohamiprodjo3
1Institute for Clinical Radiology, Ludwig-Maximilians-University Hospital Munich, Munich, Bavaria, Germany; 2Department of Urology, Ludwig-Maximilians-University Hospital Munich, Munich, Bavaria, Germany; 3Department of Diagnostic and Interventional Radiology, University Hospital Tuebingen, Tuebingen, Baden-Württemberg, Germany

18:18 0260. Detecting the Acute Renal Allograft Rejection in Early Stage: A Comparison of Different MR Sequences
Xinyao Zhao1, Tianyi Qian2, Xiaoqin Kong1, Kezhou Xing1, Hao Shi1
1Radiology, Shandong Provincial Qianfoshan Hospital, Jinan, Shandong, China; 2MR Collaborations NE Asia, Siemens Healthcare, Beijing, China

18:30 Adjournment & Meet the Teachers

Educational Course
MR Physics & Techniques for Clinicians
Organizers: Marcus T. Alley, Ph.D., Michael Markl, Ph.D., Brian Hargraves, Ph.D., & Nicole Seiberlich, Ph.D.
Room 801 A/B 16:30-18:30 Moderators: Marcus T. Alley, Ph.D. & Nicole E. Seiberlich, Ph.D.
16:30 Spin Gymnastics 1
Walter Kucharczyk

17:10 Spin Gymnastics 2
Donald B. Plewes

17:50 K-Space
Kevin M. Koch

18:30 Adjournment & Meet the Teachers

Manuscript Reviewing for ISMRM’s Scientific Journals
Organizers: Matt A. Bernstein, Ph.D. & Mark A. Schweitzer, M.D, FRCPSC
Room 701 A 18:45-19:45 Moderators: Matt A. Bernstein, Ph.D. & Mark A. Schweitzer, M.D, FRCPSC
Sunrise Educational Course
Addressing Clinical Challenges in the Body with MRI
Organizers: Lorenzo Mannelli, M.D., Ph.D., Ivan Pedrosa, M.D., Scott B. Reeder, M.D., Ph.D. & Edwin J.R. van Beek, M.D., Ph.D., M.Ed., FRCR
Room 701 A 07:00-07:50  Moderators: Mustafa Shadi R. Bashir, M.D. & Gabrielle Masselli, M.D.
Assessment of Incidental Cystic Lesions with MRI
07:00  Pancreas  
       Masoom A. Haider
07:25  Kidney  
       Andrew B. Rosenkrantz
07:50  Adjournment & Meet the Teachers

Sunrise Educational Course
How Can MRI of Mouse Models Provide Value for Cancer Studies?
Constitution Hall 107 07:00-07:50
07:00  How Can MRI of Mouse Models Provide Value for Cancer Studies?  
       Lacey McNally
07:50  Adjournment & Meet the Teachers

Sunrise Educational Course
Fast Cardiac Imaging
Organizers: Daniel B. Ennis, Ph.D. & Harald Kramer, M.D.
Room 714 A/B 07:00-07:50  Moderators: Daniel B. Ennis, Ph.D. & Michael S. Hansen, Ph.D.
07:00  k-Space Based Acceleration Methods  
       Daniel A. Herzka
07:16  KT-Based Acceleration Methods  
       Daniel Kim
07:32  Compressed Sensing  
       Reza Nezafat
07:50  Adjournment & Meet the Teachers

Sunrise Educational Course
UTE: Applications & Advances
Organizers: Neal K. Bangerter, Ph.D.
Room 716 A/B 07:00-07:50  Moderators: Neal K. Bangerter, Ph.D. & Matthew D. Robson, Ph.D.
07:00  UTE: Past, Present & Future  
       Graeme M. Bydder
07:25  Solid-State MRI for the Study of Calcified Tissues  
       Felix W. Wehrli
07:50  Adjournment & Meet the Teachers
Tuesday

Sunrise Educational Course
Contrast by Body Part: How & Why?
Organizers: Brian A. Hargreaves, Ph.D. & Manojkumar Saranathan, Ph.D.
Room 718 A 07:00-07:50
Moderators: Manojkumar Saranathan, Ph.D. & Holden H. Wu, Ph.D.
07:00 General Tools to Address Fat, Motion & Inhomogeneity
   Anja C. S. Brau
07:25 Musculoskeletal Sequences: How & Why?
   Edwin H.G. Oei
07:50 Adjournment & Meet the Teachers

Sunrise Educational Course
Brain Networks
Organizers: James J. Pekar, Ph.D., & Jonathan R. Polimeni, Ph.D.
Room 718 B 07:00-07:50
Moderators: Catherine E. Chang, Ph.D. & James J. Pekar, Ph.D.
07:00 How to Construct a Brain Network from MRI Data
   Christopher J. Honey
07:25 How to Analyze a Network
   Martijn P. Van Den Heuvel
07:50 Adjournment & Meet the Teachers

Sunrise Educational Course
Cartilage Structure & Function
Organizers: Eric Y. Chang, M.D., Garry E. Gold, M.D., Richard Kijowski, M.D., William B. Morrison, M.D., Ravinder R. Regatte, Ph.D. & Siegfried Trattnig, M.D.
Room 801 A/B 07:00-07:50
Moderators: Richard Kijowski, M.D. & Ravinder Reddy, Ph.D.
Cartilage Structure & Function
07:00 Collagen Structure: DTI & T2 Mapping
   Jose Maria G. Raya
07:25 GAG: Sodium & T1rho
   Ari Borthakur
07:50 Adjournment & Meet the Teachers

Sunrise Educational Course
Neuroimaging: Infection
Organizers: Jonathan H. Gillard, M.D., FRCR, MBA & Howard A Rowley, M.D.
Room 701 B 07:00-07:50
Moderators: Christopher G. Filippi, M.D. & Tchoyonson Lim, M.D.
07:00 CNS Infection in the West: The Value of MRI
   Walter Kucharczyk
07:25 CNS Infection in Asia: The Value of MRI
   Rakesh K. Gupta
07:50 Adjournment & Meet the Teachers
Sunrise Educational Course

Nuts & Bolts of Advanced Imaging
Organizers: Alexey Samsonov, Ph.D., N. Jon Shah, Ph.D. & Jeffrey Tsao, Ph.D., M.B.A.
John Bassett Theatre 102 07:00-07:50

Introductory Talks: Excitation & Reconstruction Software Tools
07:00 Coils, RF Shimming & SAR
Tamer S. Ibrahim

07:12 Parallel Transmit Pulse Design
William A. Grissom

07:25 The Image Reconstruction Pipeline
Michael S. Hansen

07:37 Parallel Imaging & Beyond
Philip J. Beatty

07:50 Adjournment & Meet the Teachers

Plenary Session

MR Imaging of Patients with Implanted Devices
Organizers: Daniel Ennis, Ph.D.
Plenary Hall FG 08:30-09:30

08:30 0261. MR Safety Considerations for Patients with Implanted Devices
Niels Kuster

08:50 0262. MR Imaging of Patients with Implanted Metal Devices
Brian A. Hargreaves

09:10 0263. MRI in the Setting of Permanent Pacemakers and Implantable Defibrillators
Saman Nazarian

09:30 Adjournment

Traditional Poster Session: Body
Exhibition Hall 10:00-12:00 (no CME credit)

Traditional Poster Session: Interventional
Exhibition Hall 10:00-12:00 (no CME credit)

Electronic Poster Session: Molecular Imaging
Exhibition Hall 10:00-12:00 (no CME credit)

Study Group Session

MR in Drug Research
Reception Hall 104 BCD 10:00-12:00 (no CME credit)

Study Group Session

Cardiac MR
Constitution Hall 105 10:00-12:00 (no CME credit)
Power Pitch Theatre: ASL Methods: Neuro

Moderators: Susan T. Francis, Ph.D. & Jun Hua, Ph.D.

**0264. Time-And Vessel Encoded PCASL: A Free Lunch with All the Trimmings**

*Thomas W. Okell*¹, *Wouter Teeuwisse*²,³, *Michael A. Chappell*⁴, *Matthias J.P. van Oschl*³

¹FMRIB Centre, Nuffield Department of Clinical Neurosciences, University of Oxford, Oxford, Oxfordshire, United Kingdom; ²dept. of Radiology, C.J. Gorter Center for High Field MRI, Leiden University Medical Center, Leiden, Netherlands; ³Leiden Institute for Brain and Cognition, Leiden, Netherlands; ⁴IBME, Department of Engineering Sciences, University of Oxford, Oxford, United Kingdom

**0265. A Novel Multiphase Scheme for Simultaneous ASL and BOLD Acquisition**

*Paula Croal*¹, *Emma Hall*¹, *Penny Gowland*¹, *Susan Francis*¹

¹Sir Peter Mansfield Imaging Centre, Department of Physics & Astronomy, The University of Nottingham, Nottingham, Nottinghamshire, United Kingdom

**0266. Wedge-Shaped Slice-Selective Adiabatic Inversion Pulse for Bolus Temporal Width Control in Pulsed Arterial Spin Labeling**

*Jia Guo*¹, *Richard B. Buxton*¹, *Eric C. Wong*¹,²

¹Radiology, UC San Diego, La Jolla, CA, United States; ²Psychiatry, UC San Diego, La Jolla, CA, United States

**0267. Multiband Background Suppressed Turbo-FLASH Imaging with CAIPIRINHA for Whole-Brain Distortion-Free PCASL Imaging at 3 and 7T**

*Yi Wang*¹, *Steen Moeller*¹, *Xuifeng Li², An T. Vu², Kate Krasileva¹, *Kamil Ugurbil*², *Essa Yacoub², Danny JJ Wang¹*

¹Neurology, UCLA, Los Angeles, CA, United States; ²Center of Magnetic Resonance Research, University of Minnesota, MN, United States

**0268. Single-Shot 3D-EPI PCASL with Background Suppression**

*Markus Boland*¹, *Rüdiger Störnberg*¹, *Daniel Brenner*¹, *Tony Stöcker*¹,²

¹German Center for Neurodegenerative Diseases (DZNE), Bonn, Germany; ²Department of Physics and Astronomy, University of Bonn, Germany

**0269. Single-Shot Whole-Brain Background-Suppressed PCASL MRI with 1D Accelerated 3D RARE Stack-Of-Spirals Readout**

*Marta Vilorréta*¹, *Ze Wang*²,³, *Yulin V. Chang*¹,⁴, *Maria A. Fernández-Seara*¹, *John A. Detre*¹

¹Department of Neurology, University of Pennsylvania, Philadelphia, PA, United States; ²Center for Cognition and Brain Disorders, Hangzhou Normal University, Hangzhou, Zhejiang Province, China; ³Departments of Radiology and Psychiatry, University of Pennsylvania, Philadelphia, PA, United States; ⁴Department of Radiology, University of Pennsylvania, PA, United States; ⁵Functional Neuroimaging Laboratory, CIMA, University of Navarra, Navarra, Spain

**0270. Improving Motion Robustness of Pseudo-Continuous Arterial Spin Labeling by Using Real-Time Motion Correction**

*Michael Helle*¹, *Peter Koken*¹, *Julien Sénégas*¹

¹Philips Research, Hamburg, Germany

**0271. Prospective Motion Correction for Artefact Reduction in Pseudo-Continuous Arterial Spin Labelling with a 3D GRASE Readout**

*Benjamin Knowles*¹, *Federico von Samson-Himmelstjerna*²,³, *Matthias Guenther*²,⁴, *Maxim Zaitsev*¹

¹Medical Physics, University Medical Centre, Freiburg, Germany; ²Fraunhofer Mevis, Bremen, Germany; ³Charité Medical University, Center for Stroke Research, Berlin, Germany; ⁴University of Bremen, Germany

**0272. An Off-Resonance Correction Method for Vessel-Encoded Pseudo-Continuous Arterial Spin Labeling Using the Optimized Encoding Scheme**

*Eleanor S K Berry*¹, *Peter Jezzard*¹, *Thomas W. Okell*¹

¹FMRIB centre, Nuffield Department of Clinical Neurosciences, University of Oxford, Oxford, United Kingdom
3D Weighted Least Squares Algorithm for Partial Volume Effect Correction in ASL Images
Pablo García-Polo1,2, Adrian Martin3,4, Virginia Mato5, Alicia Quiro1, Fernando Zelaya6, Juan Antonio Hernandez-Tamames7
1A. A. Martins Center for Biomedical Imaging, Mass. General Hospital, M+Visión Advanced Fellowship, Charlestown, MA, United States; 2Centre for Biomedical Technology - Universidad Politécnica de Madrid, Pozuelo de Alarcón, Madrid, Spain; 3Department of Electrical Engineering and Computer Science, Massachusetts Institute of Technology, Cambridge, MA, United States; 4Applied Mathematics, Universidad Rey Juan Carlos, Móstoles, Madrid, Spain; 5Department of Electrical Technology, Universidad Rey Juan Carlos, Móstoles, Madrid, Spain; 6Cardiology, Hospital Clínico San Carlos, Madrid, Spain; 7Department of Neuroimaging, King's College London, London, United Kingdom

Dynamic 3D ASL in 20 Seconds Per Frame with Model-Based Image Reconstruction
Li Zhao1, Samuel W. Field2, Xue Feng3, Max Winternark4, John P. Mugler III5, Josef Pfeuffer6, Craig H. Meyer7,8
1Radiology, Beth Israel Deaconess Medical Center & Harvard Medical School, Boston, MA, United States; 2Biomedical Engineering, University of Virginia, Charlottesville, VA, United States; 3Radiology, Stanford University, Stanford, CA, United States; 4Radiology, University of Virginia, Charlottesville, VA, United States; 5Application Development, Siemens Healthcare, Erlangen, Germany

Subtraction Free Arterial Spin Labeling: A New Bayesian-Inference Based Approach for Gaining Perfusion Data from Time Encoded Data
Federico C.A. von Samson-Himmelstjerna1,2, Michael A. Chappell3, Jan Sobesky2, Matthias Günstcher2
1Fraunhofer MEVIS, Bremen, Germany; 2Center for Stroke Research (CSB), Charité University Medicine Berlin, Berlin, Germany; 3Institute of Biomedical Engineering & FMRIB Centre, University of Oxford, Oxfordshire, United Kingdom

Arterial Spin Labeling Without Control/label Pairing and Post-Labeling Delay: An MR Fingerprinting Implementation
Pan Su1, Deng Mao2, Peifying Liu3, Yang Li4, Babu G. Welch2, Hanzhang Lu5
1Advanced Imaging Research Center, The University of Texas Southwestern Medical Center, Dallas, TX, United States; 2Department of Neurological Surgery, The University of Texas Southwestern Medical Center, Dallas, TX, United States

Diffusion Sensitivity of 3D-GRASE in ASL Perfusion
Xiang He1, Thang Le2, Hoi-Chung Leung2, Parsey Ramin3, Mark Schweitzer4
1Department of Radiology, Stony Brook University, Stony Brook, NY, United States; 2Department of Psychology, Stony Brook University, NY, United States; 3Department of Psychiatry, Stony Brook University, NY, United States

Comparison of Cerebral Blood Flow and Arterial Transit Time Mapping Methods: Look-Locker ASL, Hadamard Encoded ASL, and Multi-TI ASL with Variable Bolus and TR
Megan Johnston1, Youngkyoo Jung2
1Biomedical Engineering, Wake Forest School of Medicine, Winston-Salem, NC, United States; 2Radiology, Wake Forest School of Medicine, Winston-Salem, NC, United States

Applications of Quantitative Susceptibility Mapping (QSM)
Room 701A 10:00-12:00  Moderators: Petra Schmalbrock, Ph.D. & Andreas Schäfer, Ph.D.

10:00 279. Longitudinal Changes of White Matter Following Mild Traumatic Brain Injury by Diffusion, T2 and Susceptibility MRI
Wet Li1,2, Justin Long1, Lora Watts1, Qiang Shen1, Timothy Q. Duong2
1Research Imaging Institute, University of Texas Health Science Center at San Antonio, San Antonio, TX, United States; 2Ophthalmology, University of Texas Health Science Center at San Antonio, San Antonio, TX, United States

10:12 280. Magnetic Susceptibilities Measured by Quantitative Susceptibility Mapping (QSM) Indicate Brain Iron Levels Correlate with Genetic Burden in Prodromal Huntington's Disease
Jiri M. G. van Bergen1,2, Jun Hua1,2, Paul G. Unschuld3,4, Issel Anne L. Lim1,2, Craig K. Jones1,2, Russell L. Margolis3,5, Christopher A. Ross4,6, Peter C.M. van Zijl7,2, Xu Li2
1Radiology, Johns Hopkins School of Medicine, Baltimore, MD, United States; 2F. M. Kirby Research Center for Functional Brain Imaging, Kennedy Krieger Institute, Baltimore, MD, United States; 3Division of Psychiatry Research and Psychogeriatric Medicine, University of Zurich, Zurich, Switzerland; 4Psychiatry and Behavioral Sciences, Johns Hopkins School of Medicine, Baltimore, MD, United States; 5Neurology, Johns Hopkins School of Medicine, Baltimore, MD, United States
10:24  0281. Quantitative Susceptibility Mapping of Lesions in Multiple Sclerosis
Ahmed M. Elkady1, Hongtu Sun2, Andrew J. Walsh3, Gregg Blevins4, Zhuozhi Dai5, Alan H. Wilman1
1Dept. of Biomedical Engineering, University of Alberta, Edmonton, AB, Canada; 2Division of Neurology, University of Alberta, Edmonton, AB, Canada

10:36  0282. Measurement of the Oxygen Extraction Fraction in Patients with Steno-Occlusive Cerebrovascular Diseases Using Quantitative Susceptibility Mapping at 7T
Ikuko Uwano1, Makoto Sasaki1, Kohsuke Kudo2, Ryota Sato3, Yuiko Sato4, Yasushi Ogawara4, Hiroaki Saura4, Kuniki Ogawara4, Taisuke Harada4, Kenji Ito4, Fumio Yamashita1, Jonathan Goodwin4, Satomi Higuchi4
1Division of Ultrahigh Field MRI, Institute for Biomedical Sciences, Iwate Medical University, Yaha, Iwate, Japan; 2Department of Diagnostic and Interventional Radiology, Hokkaido University Hospital, Sapporo, Hokkaido, Japan; 3Central Research Laboratory, Hitachi, Ltd., Kokubunji, Tokyo, Japan; 4Department of Neurosurgery, Iwate Medical University, Morioka, Iwate, Japan

10:48  0283. Quantitative Susceptibility Mapping Displays Pallidofugal Fiber Tracts
Till Schneider1, Andreas Deistung2, Uta Biedermann1, Sabine Heiland3, Martin Bendzus1, Jürgen Reichenbach1
1Neuroradiology, University of Heidelberg, Heidelberg, Germany; 2Department of Medical Physics, University of Jena, Jena, Germany; 3Department of Anatomy, University of Jena, Jena, Germany

11:00  0284. Cortical Mapping of Magnetic Susceptibility and R2* Reveals Insights Into Tissue Composition
Andreas Deistung1, Andreas Schäfer2, Ferdinand Schweser3, Jürgen Rainer Reichenbach1
1Medical Physics Group, Institute of Diagnostic and Interventional Radiology, Jena University Hospital - Friedrich Schiller University Jena, Jena, Germany; 2Department of Neurophysics, Max-Planck-Institute for Human Cognitive and Brain Sciences, Leipzig, Germany; 3Buffalo Neuroimaging Analysis Center, Dept. of Neurology, School of Medicine and Biomedical Sciences, State University of New York at Buffalo, Buffalo, NY, United States; 4MRI Molecular and Translational Imaging Center Institution, Buffalo CTRC, State University of New York at Buffalo, Buffalo, NY, United States

11:12  0285. High Conspicuity Imaging and Initial Quantification of the Habenula on 3T QSM Images of Normal Human Brain
John Schenck1, Dominic Graziani1, Tk Soon Tan1, Seung-Kyun Lee1, Luca Marinelli1, Thomas Foo1, Christopher Hardy1, Tian Liu2, Yi Wang2
1MRI Laboratory, General Electric Global Research, Schenectady, NY, United States; 2MedImageMetric, New York, United States; 3Radiology, Cornell Medical College, New York, United States

11:24  0286. Susceptibility Mapping in Sickle Cell Anaemia Patients with and Without Chronic Blood Transfusions
Karin Shmueli1, Jamie M. Kawadler2, David W. Carmichael2, Chris A. Clark3, Fenella J. Kirkham4
1Department of Medical Physics & Biomedical Engineering, University College London, London, United Kingdom; 2Imaging & Biophysics Unit, UCL Institute of Child Health, London, United Kingdom; 3Neurosciences Unit, UCL Institute of Child Health, London, United Kingdom

11:36  0287. Whole-Heart Myofiber Tractography Derived from Conjoint Relaxation and Susceptibility Tensor Imaging
Russell Dibbs1, 2, Chunlei Liu3, 4
1Center for In Vivo Microscopy, Duke University Medical Center, Durham, NC, United States; 2Biomedical Engineering, Duke University, Durham, NC, United States; 3Brain Imaging & Analysis Center, Duke University Medical Center, Durham, NC, United States; 4Radiology, Duke University Medical Center, Durham, NC, United States

11:48  0288. Imaging Magnetic Susceptibility of the Human Knee Joint at 3 and 7 Tesla
Hongjiang Wei1, Bin Wang1, Xiaopeng Zong2, Wei Li2, Nian Wang1, Chunlei Liu1, 3
1Brain Imaging and Analysis Center, Duke University, Durham, NC, United States; 2Biomedical Research Imaging Center, University of North Carolina at Chapel Hill, NC, United States; 3Department of Radiology, School of Medicine, Duke University, NC, United States
10:00 0289. Perfusion/Diffusion Mismatch in Stroke: What About the Hematocrit?
Benjamin Lennasson1, 2, Alexis Broisat1, 3, Ligia S. B. Boisserand1, 2, Mita Ahmadi3, 4, Sandrine Baco4, Audrey Soubies4, 5, Olivier Detante6, 7, Catherine Ghezzi8, 9, Chantal Rémy10, 11, Emmanuel L. Barbier12
1Inserm, U836, Grenoble, - France; 2Univ. Grenoble Alpes, GIN, Grenoble, - France; 3Inserm, U1039, Grenoble, - France; 4Univ. Grenoble Alpes, Radiopharmaceutiques Biocliniques, Grenoble, - France; 5Univ. Grenoble Alpes, Radiopharmaceutiques Biocliniques, Grenoble, - France; 6CHU de Grenoble, GIN, Grenoble, - France

10:12 0290. Towards Characterization of the Cerebral Venous Venous Network Using QSM: Extraction of Vessel Radii and Lengths
Barthélemey Serres1, Andreas Deistung1, Andreas Schäfer2, Marek Kocinski3, Andrzej Materka4, Jürgen Reichenbach5
1Medical Physics Group, Institute for Diagnosis and Interventional Radiology, University Hospital Jena - Friedrich Schiller University Jena, Jena, Germany; 2Max Planck Institute for Human Cognitive and Brain Sciences, Leipzig, Germany; 3University of Lodz, Lodz, Poland

10:24 0291. Estimation of a PET AIF Using DSC MRI
John Lee1, Colin Derdeyn1, Joshua Shimony1
1Washington University School of Medicine, Saint Louis, MO, United States

10:36 0292. High-Speed, High-Resolution Whole-Head Sparse Contrast-Enhanced MR Angiography
Aurelien F. Stalder1, Harald H. Quick2, 3, Michael O. Zenge4, Peter Schmitt1, Qiu Wang5, Marc Schlamann6, Stefan Madervald6, Mariappan Nadar7, Michaela Schmidt1
1Siemens Healthcare, Erlangen, Germany; 2Erwin L. Hahn Institute for MR Imaging, University of Duisburg-Essen, Germany; 3High Field and Hybrid MR Imaging, University Hospital Essen, Germany; 4Siemens Healthcare, NY, United States; 5Imaging and Computer Vision, Siemens Corporate Technology, NJ, United States; 6Department of Diagnostic and Interventional Radiology and Neuroradiology, University Hospital Essen, Germany

10:48 0293. Exploring the Limits of Resolution in Contrast Enhanced MRA with Ultrashort Echo Time Imaging
Kevin Michael Johnson1, Yijing Wu1, Patrick A. Turski2
1Medical Physics, University of Wisconsin-Madison, Madison, WI, United States; 2Radiology, University of Wisconsin-Madison, Madison, WI, United States

11:00 0294. Detection of Intracranial Vessel Wall Lesions in an Elderly Asymptomatic Population Using 7T MRI
A.A. Harteveld1, A.G. van der Kolk1, H.B. van der Worp2, N. Dieleman1, F. Visser3, 4, P.R. Luijten1, J.J.M. Zwanenburg1, 4, J. Hendrikse4
1Department of Radiology, University Medical Center Utrecht, Utrecht, Netherlands; 2Department of Neurology and Neurosurgery, University Medical Center Utrecht, Utrecht, Netherlands; 3Philips Healthcare, Best, Netherlands; 4Image Sciences Institute, University Medical Center Utrecht, Utrecht, Netherlands

11:12 0295. Cerebral Venous Thrombosis: Direct Thrombus Imaging with Sub-Millimeter Isotropic Resolution Dark-Blood MRI
Zhaoyang Fan1, Qi Yang1, 2, Xiaofeng Qu1, 4, Yibin Xie1, 4, Guoxi Xie5, Tianyi Qian5, Xiaoming Bi6, Yutaka Natsuaki7, Debiao Li8
1Biomedical Imaging Research Institute, Cedars-Sinai Medical Center, Los Angeles, CA, United States; 2Radiology, Xuanwu Hospital, Beijing, China; 3Radiology, The Second Hospital OF Dalian Medical University, Dalian, China; 4Bioengineering, University of California, Los Angeles, CA, United States; 5Shenzhen Institutes of Advanced Technology, Chinese Academy of Sciences, Guangdong, China; 6MR Collaboration NE Asia, Siemens Healthcare, Beijing, China; 7MR R&D, Siemens Healthcare, Los Angeles, CA, United States

11:24 0296. A One-Stop-Shop for Hemodynamic Imaging in Moyamoya Disease
Peiying Liu1, Babu G. Welch2, Darlene King2, Yang Li3, Marco Pinho1, 4, Hanzhang Lu1
1Advanced Imaging Research Center, University of Texas Southwestern Medical Center, Dallas, TX, United States; 2Neurological Surgery Clinic, University of Texas Southwestern Medical Center, Dallas, TX, United States; 3Department of Radiology, University of Texas Southwestern Medical Center, TX, United States
11:36 0297. Intravoxel Incoherent Motion Imaging Exposes Abnormal Parenchyma and Microvasculature in Cerebral Small Vessel Disease
Sau May Wong1, Eleana Zhang2, Frank C.G. Bussel1, Julie E.A. Staals2, Cécile R.P. N. Jeukens1, Paul A.M. Hofman1, Robert J. van Oostenbrugge1, Walter H. Backes1, Jacobus F.A. Jansen1
1Radiology, Maastricht University Medical Center, Maastricht, Limburg, Netherlands; 2Neurology, Maastricht University Medical Center, Maastricht, Limburg, Netherlands

11:48 0298. Transient Cerebral Ischemia in Rodents Exposed to Chronic Intermittent Hypoxia
Bianca Gonzales Cerqueira1, Yuhao Sun1, Shiliang Huang2, Glenn Toney3, Timothy Q. Duong1
1Research Imaging Institute, Univ. of TX Health Science Center, San Antonio, TX, United States; 2Physiology, Univ. of TX Health Science Center, TX, United States

Implantable Medical Devices & Modelling
Room 714 A/B 10:00-12:00  Moderators: T.B.A. & T.B.A.
10:00 0299. Subject Specific Body Model Creation Using MR Fingerprinting
Leeor Alon1, 2, Martijn Cloos1, 2, Assaf Tal2, Daniel K. Sadickson1, 2, Christopher M. Collins1, 2
1Center for Advanced Imaging Innovation and Research (CAI2R), New York University School of Medicine, New York, NY, United States; 2Center for Biomedical Imaging, Department of Radiology, New York University School of Medicine, New York, NY, United States; 3Weizmann Institute, Rehovot, Israel

10:12 0300. Analysis of DNA Double-Strand Breaks in Human Peripheral Blood Mononuclear Cells After Exposure to 7T MRI
Mahsa Fatami1, Annika Reddig2, Björn Friebe3, Dirk Reinhold4, Oliver Speck1
1Department of Biomedical Magnetic Resonance, Otto-von-Guericke-University Magdeburg, Magdeburg, Germany; 2Institute of Molecular and Clinical Immunology, Otto-von-Guericke-University Magdeburg, Germany; 3Department of Radiology and Nuclear Medicine, Otto-von-Guericke-University Magdeburg, Germany

10:24 0301. Simplified Computational Models of Medical Devices for Accurate RF Heating Simulations with Significantly Reduced Computational Cost
Alan Ross Leewood1, Beth J. Hess2, Matthew Huser1, Sharath Gopal1, Gonzalo G. Mendoza2, Maria Ida Iacono2, Wolfgang Kainz2, Sandor S. Rajan1, Leonardo M. Angelone2
1MED Institute, Inc., West Lafayette, IN, United States; 2Center for Devices and Radiohealth, U.S. Food and Drug Administration, Silver Spring, MD, United States

10:36 0302. What Is the SAR for Routine Clinical MRI Exams at 1.5T?
Deborah Anne Langman1, Subashini Srinivasan1, 2, Daniel B. Ennis1, 2
1Radiological Sciences, UCLA, Los Angeles, CA, United States; 2Bioengineering, UCLA, Los Angeles, CA, United States

10:48 0303. Ensuring Safety and Functionality of Electroglottography Measurements During Lung MRI
Ali Caglar Ozen1, Louise Traser2, 3, Tetiana Dadakova1, Michael Burdumy1, Matthias Echternach1, Michael Bock1
1Department of Radiology, Medical Physics, University Medical Center, Freiburg, Germany; 2Institute of Musicians Medicine, University Medical Center, Freiburg, Germany; 3Department of Otolaryngology, University Medical Center Freiburg, Germany; 4Institute of Musicians Medicine, University Medical Center, Freiburg, Germany

11:00 0304. From Real-Time SAR Assessment to Temperature Distributions in Coronary Stents at 7T
Lukas Winter1, Eva Oberacker1, Célał Özerdem1, YiYi Ji1, Florian von Knobelsdorf-Brenkenhoff2, Gerd Weidemann3, Bernd Itermann1, Frank Seifert1, Thoralf Niendorf1, 2
1Berlin Ultrahigh Field Facility (B.U.F.F.), Max-Delbrück Center for Molecular Medicine, Berlin, Germany; 2Experimental and Clinical Research Center (ECRC), a joint cooperation between the Charité and the Max-Delbrueck Center for Molecular Medicine, Berlin, Germany; 3Physikalisch Technische Bundesanstalt (PTB), Braunschweig and Berlin, Germany

11:12 0305. Comprehensive Analysis of Temperature Rise Generated by a Titanium Rod Inside 1.5T MRI RF Whole Body Coil
Mikhail Kozlov1, 2, Gregor Schaefer1
1MR:comp GmbH, Gelsenkirchen, North Rhine Westphalia, Germany; 2MPI, Leipzig, Saxony, Germany
11:24  0306. A Quadraure RF Coil with Reduced Heating of DBS Implants
Hai Lu¹, Shumin Wang²
¹Auburn University, Auburn, AL, United States

11:36  0307. A System for Attenuating and Monitoring Acoustic Noise During Infant MRI Studies
Michael Valente¹, Let Zhou¹, Longchuan Li¹, Sarah Shultz¹, Jiang Du¹
¹Pediatrics, Emory University, Atlanta, GA, United States; ²Minghua Medical Imaging, Atlanta, GA, United States

David C. Gross³, Orlando P. Simonetti³, ⁴
³Biomedical Engineering, The Ohio State University, Columbus, OH, United States; ²Dorothy M. Davis Heart and Lung Research Institute, The Ohio State University, Columbus, OH, United States; ³Internal Medicine, Division of Cardiovascular Medicine, The Ohio State University, Columbus, OH, United States; ⁴Radiology, The Ohio State University, Columbus, OH, United States

Translations MR Imaging of Musculoskeletal Physiology
Room 716 A/B  10:00-12:00

10:00  0309. UTE 3D Cones Trajectory with T1ρ Weighted Imaging for MSK Applications
Robert Nikolov¹, Michael Carl², Eric Chang¹, ³, Christine Chung¹, ³, Graeme Bydder¹, Jiang Du¹
¹Radiology, University of California, San Diego, San Diego, CA, United States; ²GE Healthcare, Waukesha, WI, United States; ³Radiology, VA San Diego Healthcare System, La Jolla, CA, United States

10:12  0310. A Mechanism for Quantifiable MRI-Based Detection of Cobalt-Chromium Particulate Deposits Near Total Hip Replacements
Kevin M. Koch¹, Matthew F. Koff², Parina Shah², Hollis G. Potter², ³
¹Biophysics and Radiology, Medical College of Wisconsin, Milwaukee, WI, United States; ²Radiology and Imaging, Hospital for Special Surgery, NYC, NY, United States; ³Weill Cornell Medical College of Cornell University, NYC, NY, United States

10:24  0311. Direct Visualization of Cartilage Delamination in FAI at 3T Using Multiband Acceleration
Jutta Ellermann¹, Abraham Padua², Edward Auerbach¹, Dingxin Wang, ¹
¹CMRR, Department of Radiology, University of Minnesota, Minneapolis, MN, United States; ²Siemens Healthcare, Houston, TX, United States; ³Siemens Healthcare, Minneapolis, MN, United States

10:36  0312. Quantitative Assessment of the Normal and Abnormal Achilles Tendon In Vivo Using a 3D Cones Sequence
Hongda Shao¹, Michael Carl², Eric Chang¹, Christine B. Chung³, Graeme M. Bydder¹, Jiang Du¹
¹Radiology, University of California, San Diego, CA, United States; ²GE Healthcare, San Diego, CA, United States

10:48  0313. High-Resolution 3D MR Neurography of the Wrist Using Phase-Cycling Diffusion-Sensitized Driven-Equilibrium (PeDSDE)
Masami Yoneyama¹, Makoto Obara¹, Yuriko Ozawa¹, Hajime Tanji¹, Masanobu Nakamura¹, Tomoyuki Okuaki¹, Takashi Tabuchi¹, Satoshi Tatsuno¹, Ryuji Sashi², Marc Van Cauteren¹
¹Philips Electronics Japan, Tokyo, Japan; ²Yaesu Clinic, Tokyo, Japan; ³Imaging Center, Kita-Fukushima Medical Center, Fukushima, Japan

11:00  0314. Removing the Confounding Effect of the Fat Component in ADC Quantification of the Vertebral Bone Marrow Water Component
Michael Dieckmeyer¹, Stefan Ruschke¹, Holger Eggers², Hendrik Kooijman³, Ernst J. Rammeny³, Jan S. Bauer³, Thomas Baum³, Dimitrios C. Karampinos³
¹Diagnostic and Interventional Radiology, Technische Universität München, Munich, Germany; ²Philips Research Laboratory, Hamburg, Germany; ³Philips Healthcare, Hamburg, Germany; ⁴Diagnostic and Interventional Neuroradiology, Technische Universität München, Munich, Germany

Moderators: Edwin H. G. Oei, M.D., Ph.D. & T.B.A.
We aim to develop a real-time molecular MR imaging platform to diagnose colorectal cancer with silicon particles functionalized in vivo following intraperitoneal injection, paving the way for targeted molecular MRI of orthotopic colon cancer models.

We aim to develop a real-time molecular MR imaging platform to diagnose colorectal cancer with silicon particles functionalized in vivo following intraperitoneal injection, paving the way for targeted molecular MRI of orthotopic colon cancer models.
**Tuesday**

10:48 0323. Application of Good’s Buffers to PH Imaging Using Hyperpolarized 13C-MRI

Robert R. Flavell¹, David Korenchan¹, Cornelius von Morze¹, Mark Van Crieinge¹, Renuka Sriram¹, Sukumar Subramanian¹, Robert Bok¹, Joseph Blecha¹, Daniel Vigneron¹, Peder Larson¹, Kayvan R. Keshari², John Kurhanewicz³, David M. Wilson¹

¹Radiology and biomedical imaging, University of California, San Francisco, San Francisco, CA, United States; ²Memorial Sloan-Kettering Cancer Center, New York, NY, United States

11:00 0324. Dynamic Imaging of Hyperpolarized 4Li Cerebral Distribution at Pharmacological Concentration

Mor Mishkovsky¹, Andrea Capozzi², Najat Salameh³, Jean-Noel Hyacinthe⁴, Rolf Gruetter⁵, Arnaud Comment³

¹Laboratory of Functional and Metabolic Imaging, Ecole Polytechnique Fédérale de Lausanne (EPFL), Lausanne, Switzerland; ²Institute of the Physics of Biological Systems, Ecole Polytechnique Fédérale de Lausanne (EPFL), Lausanne, Switzerland; ³Haute Ecole de Santé, University of Applied Sciences Western Switzerland, Geneva, Switzerland; ⁴Center of biomedical imaging (CIBM), Ecole Polytechnique Fédérale de Lausanne (EPFL), Lausanne, Switzerland


Chalermchai Khemtong¹, Wei Chen¹, Weina Jiang¹, Craig R. Malloy¹, ², A. Dean Sherry¹

¹Advanced Imaging Research Center, University of Texas Southwestern Medical Center, Dallas, TX, United States; ²Veterans Affairs North Texas Health Care System, Dallas, TX, United States

11:24 0326. Flow-Sensitizing Gradients for First-Pass Perfusion Imaging Using Hyperpolarized 13C Urea in the Rat Heart

Angus Z. Lau¹, Jack J. Miller², Damian J. Tyler¹

¹Department of Cardiovascular Medicine, University of Oxford, Oxford, Oxfordshire, United Kingdom; ²Department of Physiology, Anatomy, and Genetics, University of Oxford, Oxford, Oxfordshire, United Kingdom


Emine Can¹, Jessica A.M. Bastiaanser¹,², Hikari A.I. Yoshihara³,², Rolf Gruetter³,⁶, Arnaud Comment³

¹Institute of Physics of Biological Systems, Ecole Polytechnique Fédérale de Lausanne (EPFL), Lausanne, Switzerland; ²Department of Radiology, University Hospital Lausanne (CHUV) and University of Lausanne (UNIL), Lausanne, Switzerland; ³Center for Biomedical Imaging (CIBM), Lausanne, Switzerland; ⁴Department of Cardiology, University Hospital Lausanne (CHUV), Lausanne, Switzerland; ⁵Department of Functional and Metabolic Imaging, EPFL, Lausanne, Switzerland; ⁶Department of Radiology, University of Lausanne, University of Geneva, Switzerland


Hoora Shaghaghi¹, Stephen Kadlec⁵, Mehrdad Pourfathi¹, Sarmad Siddiqui¹, Maurizio Cereda¹, Hooman Hamedani¹, Harrilla Profka⁵, Yi Xin¹, Rahim R. Rizi¹

¹Radiology, University of Pennsylvania, Philadelphia, PA, United States; ²Anesthesiology and Critical Care, University of Pennsylvania, Philadelphia, PA, United States

Parametric Mapping

John Bassett Theatre 102 10:00-12:00

Moderators: Mariya Doneva, Ph.D. & Diego Hernando, Ph.D.

10:00 0329. Magnetic Resonance Fingerprinting with Chemical Exchange (MRF-X) for Quantification of Subvoxel T1, T2, Volume Fraction, and Exchange Rate

Jesse I. Hamilton¹, Anagha Deshmukh¹, Stephanie Houghen², Mark Griswold,¹,¹³, Nicole Seiberlich¹,³

¹Biomedical Engineering, Case Western Reserve University, Cleveland, OH, United States; ²Physics, Case Western Reserve University, Cleveland, OH, United States; ³Radiology, Case Western Reserve University, Cleveland, OH, United States

10:12 0330. Magnetic Resonance Fingerprint Compression

Martijn A. Cloos¹, Tiejun Zhao², Florian Knoll¹, Lecor Alon¹, Riccardo Lattanzi¹, Daniel K. Sodickson¹

¹Center for Biomedical Imaging, Department of Radiology, New York University School of Medicine, New York, NY, United States; ²Center for Advanced Imaging Innovation and Research (CAI²R), New York University School of Medicine, New York, NY, United States; ³Siemens Medical Solutions USA Inc., Malvern, PA, United States
10:24 0331. Fast and Direct Generation of Encoding Gradients for the MRF-Music Acquisition
Dan Ma¹, Mark Griswold²
¹Biomedical Engineering, Case Western Reserve University, Cleveland, OH, United States; ²Radiology, Case Western Reserve University, OH, United States

10:36 0332. A Fast Simultaneous Water/fat Decomposition and T1, T2 Quantification Method Using Dual TR BSSFP
Dongyeob Han¹, Min-Oh Kim¹, Dosik Hwang¹, Dong-Hyun Kim¹
¹Yonsei University, Seoul, Korea

10:48 0333. Simultaneous Frequency and T2 Mapping, Applied to Thermometry and to Susceptibility-Weighted Imaging
Cheng-Chieh Cheng¹, Chang-Sheng Mei¹, Felin Aksit Ciris², ³, Robert V. Malkern, ³⁵, Mukund Balasubramanian, ³⁵, Hsiao-Wen Chung¹, Tzu-Cheng Chao¹, Lawrence P. Panych¹, ³⁵, Bruno Madore¹, ³⁵
¹Graduate Institute of Biomedical Electronics and Bioinformatics, National Taiwan University, Taipei, Taiwan; ²Department of Physics, Soochow University, Taipei, Taiwan; ³Department of Radiology, Brigham and Women's Hospital, Boston, MA, United States; ³Harvard Medical School, Boston, MA, United States; ⁵Department of Radiology, Boston Children's Hospital, Boston, MA, United States; ⁶Department of Computer Science and Information Engineering, National Cheng-Kung University, Tainan, Taiwan

11:00 0334. K-Space Based Estimation for R2* Mapping
Giang Chau Ngo¹, ², Bradley P. Sutton, ¹²
¹¹Bioengineering, University of Illinois at Urbana-Champaign, Urbana, IL, United States; ²Beckman Institute for Advanced Science and Technology, University of Illinois at Urbana-Champaign, Urbana, IL, United States

11:12 0335. High Resolution Water/Fat Imaging in Animal Models
Abraam S. Soliman¹, ², Lanette J. Friesen-Waldner³, Kevin J. Sinclair³, Timothy R.H. Regnault³, ⁵, Charles A. McKenzie, ¹³
¹¹Biomedical Engineering, University of Western Ontario, London, Ontario, Canada; ²Imaging Research Laboratories, Robarts Research Institute, London, Ontario, Canada; ³Medical Biophysics, University of Western Ontario, London, Ontario, Canada; ⁵Obstetrics and Gynaecology, University of Western Ontario, London, Ontario, Canada; ¹³Physiology and Pharmacology, University of Western Ontario, London, Ontario, Canada

11:24 0336. In Vivo Assessment of Cold Stimulation Effects on the Fat Fraction of Brown Adipose Tissue Using Dixon MRI
Vanessa Stahl¹, Florian Maier¹, Ralf O. Floca¹, Moritz Berger¹, Mauricio Berriel Diaz³, Martin T. Freitag², Mark Griswold², Marc-Andre Weber², Antonia Dimitrakopoulou-Strauss³, Armin M. Nagel¹
¹¹Medical Physics in Radiology, German Cancer Research Center, Heidelberg, Germany; ²Department of Radiology, German Cancer Research Center, Heidelberg, Germany; ³Molecular Metabolic Control, German Cancer Research Center, Heidelberg, Germany; ⁴Diagnostic and Interventional Radiology, University Hospital of Heidelberg, Heidelberg, Germany; ⁵Clinical Cooperation Unit Nuclear Medicine, German Cancer Research Center, Heidelberg, Germany

11:36 0337. Bias in Liver Fat Quantification Using Chemical Shift-Encoded Techniques with Short Echo Times
Diego Hernandez¹, Utao Motosugi¹, ², Scott B. Reeder¹, ²
¹¹Radiology, University of Wisconsin-Madison, Madison, WI, United States; ²Radiology, University of Yamanashi, Yamanashi, Japan; ³Medical Physics, University of Wisconsin-Madison, Madison, WI, United States

11:48 0338. Comparison of T2* Correction Methods for Vertebral Bone Marrow Fat Quantification Using Chemical Shift Encoding-Based Water-Fat Imaging
Dimitrios C. Karapinios¹, Stefan Ruschke¹, Michael Dieckmeyer¹, Holger Eggers¹, Hendrik Kooijman¹, Ernst J. Rummel¹, Jan S. Bauer², Thomas Baum³
¹¹Diagnostische und Interventionelle Radiologie, Technische Universität München, Munich, Germany; ²Philips Research Laboratory, Hamburg, Germany; ³Philips Healthcare, Hamburg, Germany; ⁴Neuroradiology, Technische Universität München, Munich, Germany
## Educational Course

### MRI in the Emergency Room

**Organizers:** Lorenzo Mannelli, M.D., Ph.D., Ivan Pedrosa, M.D., Scott B. Reeder, M.D., Ph.D. & Edwin J.R. van Beek, M.D., Ph.D., M.Ed., FRCR

**Room 718 A 10:00-12:00**  
**Moderators:** Michele A. Brown, M.D. & Michael D. Repplinger, M.D., M.S.

<table>
<thead>
<tr>
<th>Time</th>
<th>Topic</th>
<th>Presenter</th>
</tr>
</thead>
<tbody>
<tr>
<td>10:00</td>
<td>Rapid MRI Protocols &amp; Acquisitions for Emergency Patients</td>
<td>Martin P. Smith</td>
</tr>
<tr>
<td>10:30</td>
<td>Acute Abdomen/Appendicitis</td>
<td>Bobby T. Kalb</td>
</tr>
<tr>
<td>11:00</td>
<td>Pulmonary MRA</td>
<td>Christopher J. François</td>
</tr>
<tr>
<td>11:30</td>
<td>MRV</td>
<td>Shreyas S. Vasanawala</td>
</tr>
<tr>
<td>12:00</td>
<td>Adjournment &amp; Meet the Teachers</td>
<td></td>
</tr>
</tbody>
</table>

### Educational Course

#### Analyze This! Practicalities of fMRI & Diffusion Data Analysis

**Organizers:** Daniel C. Alexander, Ph.D., Adam W. Anderson, Ph.D., Peter Jezzard, Ph.D., James J. Pekar, Ph.D., Jonathan R. Polimeni, Ph.D., Stamatios Sotiropoulos, Ph.D. & Eric C. Wong, M.D., Ph.D.

**Room 718 B 10:00-12:00**  
**Moderators:** Peter A. Bandettini, Ph.D. & Claudia A. Wheeler-Kingshott, Ph.D.

<table>
<thead>
<tr>
<th>Time</th>
<th>Topic</th>
<th>Presenter</th>
</tr>
</thead>
<tbody>
<tr>
<td>10:00</td>
<td>Introduction &amp; Overview</td>
<td></td>
</tr>
<tr>
<td>10:05</td>
<td>fMRI Analysis Using FSL</td>
<td>Stephen M. Smith</td>
</tr>
<tr>
<td>10:15</td>
<td>fMRI Analysis Using SPM</td>
<td>Thomas Zeffiro</td>
</tr>
<tr>
<td>10:25</td>
<td>fMRI Analysis Using AFNI</td>
<td>Ziad S. Saad</td>
</tr>
<tr>
<td>10:35</td>
<td>Discussion</td>
<td></td>
</tr>
</tbody>
</table>

#### Diffusion Analysis

<table>
<thead>
<tr>
<th>Time</th>
<th>Topic</th>
<th>Presenter</th>
</tr>
</thead>
<tbody>
<tr>
<td>11:00</td>
<td>Diffusion Analysis Using FSL</td>
<td>Michiel Cottaar, Ph.D.</td>
</tr>
<tr>
<td>11:08</td>
<td>Diffusion Analysis Using Camino</td>
<td>Philip A. Cook</td>
</tr>
<tr>
<td>11:16</td>
<td>Diffusion Analysis Using MR Trix</td>
<td>Jacques-Donald Tournier</td>
</tr>
<tr>
<td>11:24</td>
<td>Diffusion Analysis Using Track Vis</td>
<td>Brian L. Edlow</td>
</tr>
<tr>
<td>11:32</td>
<td>Diffusion Analysis Using MRI Studio</td>
<td>Susumu Mori</td>
</tr>
<tr>
<td>11:40</td>
<td>Discussion</td>
<td></td>
</tr>
</tbody>
</table>
Tuesday

12:00 Adjournment & Meet the Teachers

**Educational Course**

**Research Meets Clinical: Incidental Findings**

Room 801 A/B 10:00-12:00

10:00 **Expert Panelists**

Blair Henry
Ben Allen Kennedy
Paul M. Matthews
Josef P. Debbins
Greg Zaharchuk

12:00 Adjournment & Meet the Teachers

**Gold Corporate Symposium**

**Siemens Healthcare GmbH Gold Corporate Symposia**

Plenary Hall FG 12:15-13:15 (no CME credit)

**Traditional Poster Session: Relaxation**

Exhibition Hall 13:30-15:30 (no CME credit)

**Traditional Poster Session: Magnetic Susceptibility**

Exhibition Hall 13:30-15:30 (no CME credit)

**Traditional Poster Session: Magnetization Transer**

Exhibition Hall 13:30-15:30 (no CME credit)

**Electronic Poster Session: Pulse Sequence B**

Exhibition Hall 13:30-15:30 (no CME credit)

**Study Group Session**

**MR Flow & Motion Quantitation**

Reception Hall 104 BCD 13:30-15:30 (no CME credit)

**Study Group Session**

**High Field Systems & Applications**

Constitution Hall 105 13:30-15:30 (no CME credit)

**Power Pitches: The Cutting Edge of Diffusion MRI**

Power Pitch Theatre, Exhibition Hall 13:30-14:30 (no CME credit)

**Moderators:** Helen Zhou, Ph.D. & David Raffelt, Ph.D.

13:30 **0339.** SLice Dithered Enhanced Resolution Simultaneous MultiSlice (SLIDER-SMS) for High Resolution (700 Um)

Diffusion Imaging of the Human Brain

Kawin Setsompop1, Berkin Bilgic2, Aapo Nummenmaa2, Qiuyun Fan1, Stephen F. Cauley1, Susie Huang1, Ithhi Chatmuntaweech3, Yogesh Rathi1, Thomas Witzel2, Lawrence L. Wald1

1Martinos Center for Biomedical Imaging, Charlestown, MA, United States; 2Massachusetts Institute of Technology, Cambridge, MA, United States; 3Brigham and Women's Hospital, Boston, MA, United States

13:31 **0340.** Higher-Order Spin-Echo Selection for Reduced FOV Diffusion Imaging of the Brainstem at 7T

Bertram Jakob Wilm1, Signe Johanna Vannesjo1, Klaus Paul Pruessmann1

1University and ETH Zurich, Zurich, Switzerland
13:33 0342. Compressed-Sensing-Accelerated Spherical Deconvolution
Jonathan I. Sperl1, Tim Sprenger1, Ek T. Tan1, Marion I. Menzel1, Christopher J. Hardy2, Luca Marinelli3
1GE Global Research, Munich, BY, Germany; 2IMETUM, Technical University Munich, Munich, BY, Germany; 3GE Global Research, Niskayuna, NY, United States

13:34 0343. 3D Myofiber Reconstruction from In Vivo Cardiac DTI Data Through Extraction of Low Rank Modes
Martin Genet1, Constantin von Deuster1, Christian T. Stoeck1, 2, Sebastian Kozerke1, 2
1Institut für Biomedical Engineering, ETHZ, Zurich, Switzerland; 2Imaging Sciences and Biomedical Engineering, KCL, London, United Kingdom

13:35 0344. In Vivo and Ex Vivo Characterization of Extracellular Space (ECS) in Mouse GBM Using PGSE and OGSE
Olivier Reynaud1, 2, Kerryanne V. Winters1, 2, Dung Minh Hoang1, 2, Youssef Zaim Wadghiri1, 2, Dmitry S. Novikov1, 2, Sungheon Gene Kim1, 2
1Biomedical Magnetic Resonance, Otto-von-Guericke University, Magdeburg, Germany; 2Institut für Biomedical Engineering, ETHZ, Zurich, Switzerland; 3DEI, Department of Radiology, New York University School of Medicine, New York, NY, United States; 4Bernard and Irene Schwartz Center for Biomedical Imaging, Department of Radiology, New York University School of Medicine, New York, NY, United States

13:36 0345. Detection of Curvature and Microscopic Anisotropy of Neurites at Short Length Scales
Jonathan Scharff Nielsen1, Tim B. Dyrbyst, Henrik Lundell1
1Danish Research Centre for Magnetic Resonance, Copenhagen University Hospital Hvidovre, Hvidovre, Denmark

Silvia De Santis1, 2, Derek K. Jones1, Alard Roebroeck1
1CUBRIC Cardiff University, Cardiff, United Kingdom; 2Maastricht University, Maastricht, Netherlands

Ivana Drobnjak1, Hui Zhang1, Andrada Ianus1, Enrico Kaden1, Daniel C. Alexander1
1Centre for Medical Image Computing, Department of Computer Science, University College London, London, United Kingdom

13:39 0348. Evaluating a Semi-Continuous Multi-Compartmental Intra-Voxel Incoherent Motion (IVIM) Model in the Brain: How Does the Method Influence the Results in IVIM?
Vera Catharina Keil1, Burkhard Maedler2, Hans Heinz Schild1, Dariusch Reza Hadizadeh1
1Radiology, UK Bonn, Bonn, NRW, Germany; 2Radiology MRI Unit, PHILIPS Healthcare, Hamburg, Germany

13:40 0349. Tissue-Type Segmentation Using Non-Negative Matrix Factorization of Multi-Shell Diffusion-Weighted MRI Images
Ben Jeurissen1, Jacques-Donald Tournier2, 3, Jan Sijbers1
1Biomedical Magnetic Resonance, Otto-von-Guericke University, Magdeburg, Germany; 2Centre for the Developing Brain, King's College London, London, United Kingdom; 3Department of Biomedical Engineering, King's College London, London, United Kingdom

13:41 0350. On Evaluating the Accuracy and Biological Plausibility of Diffusion MRI Tractograms
David Romancano1, Alessandro Dal Palò2, Jean-Philippe Thiran1, 2, Alessandro Dadduici3
1Signal Processing Laboratory (LTS5), Ecole Polytechnique Fédérale de Lausanne, Lausanne, Vaud, Switzerland; 2Department of Mathematics and Computer Science, University of Parma, Parma, Italy; 3Department of Radiology, University Hospital Center and University of Lausanne, Lausanne, Vaud, Switzerland; 4Center for Biomedical Imaging, Signal Processing Core., Lausanne, Vaud, Switzerland
Tuesday

13:42  0351. A Generative Model of White Matter Axonal Orientations Near the Cortex
Michiel Cottaar1, Saad Jbabdi1, Matthew F. Glasser2, Krikor Dikranian3, David C. van Essen2, Timothy E. Behrens1,
Stamatios N. Sotiropoulos1
1FMRIB Centre, University of Oxford, Oxford, United Kingdom; 2Washington University School of Medicine, Saint Louis, MO,
United States

Robert Elton Smith1, J-Donald Tournier2, 3, Fernando Calamante4, 5, Alan Connelly4, 5
1Imaging division, The Florey Institute of Neuroscience and Mental Health, Heidelberg, Victoria, Australia; 2Centre for the
Developing Brain, King's College London, London, United Kingdom; 3Department of Biomedical Engineering, King's College
London, London, United Kingdom; 4Department of Medicine, The University of Melbourne, Heidelberg, Victoria, Australia

13:44  0353. A Machine Learning Based Approach to Fiber Tractography
Peter F. Neher1, Michael Götz1, Tobias Norajitra2, Christian Weber1, Klaus H. Maier-Hein1
1Dept. of Radiology, Brigham and Women's Hosp, Boston, MA, United States; 2Harvard Medical School, Boston, MA, United States;
3Max Planck Institute for Human Cognitive and Brain Sciences, Leipzig, Germany

fMRI: Acquisition Techniques & Cortical Layers
Room 701 A  13:30-15:30
Moderators: Jay J. Pillai, M.D. & James J. Pekar, Ph.D.

13:30  0354. Spin-Lock Functional MRI at Low Locking Fields Shows Improved Microvascular Specificity
Swati Bane1, John T. Spear2, Carlos Faraco2, Manus Donahue2, 3, John C. Gore2, 3
1Radiology and Radiological Sciences, Vanderbilt University, Nashville, TN, United States; 2Radiology and Radiological Sciences,
Vanderbilt University, Nashville, TN, United States; 3Neurology, Vanderbilt University, Nashville, TN, United States; 4Biomedical
Engineering, Vanderbilt University, Nashville, TN, United States

13:42  0355. Direct Measurement of Delta Frequency Oscillations Using fMRI
Laura D. Lewis1, Jonathan Robert Polimeni2, Kavin Setsompop2, Bruce R. Rosen2
1Society of Fellows, Harvard University, Cambridge, MA, United States; 2Athinoula A. Martinos Center for Biomedical Imaging,
Department of Radiology, Harvard Medical School, Massachusetts General Hospital, Boston, MA, United States

A Alhamad1, Paul Taylor2, 3, Jia Fan1, Ernesta Meintjes1, André J.W. van der Kouwe1
1Human Biology, MRC/UCT Medical Imaging Research Unit, University of Cape Town, Cape Town, Western Cape, South Africa;
2African Institute for Mathematical Sciences (AIMS), Western Cape, South Africa; 3Massachusetts General Hospital, Charlestown,
MA, United States

14:06  0357. Laminar Differences in Neural Activity During Positive and Negative Bold Conditions
Daniel Zaldivar1, Nikos Logothetis1, Jozien Goense2, 3
1Logothetis, Max Planck Institute for Biological Cybernetics, Tuebingen, Baden-Württemberg, Germany; 2Institute of Neuroscience
and Psychology, University of Glasgow, Glasgow, United Kingdom

14:18  0358. Layer-Dependent Calibrated BOLD Response in Human M1
Maria Guidi1, Laurentius Huber2, Leonie Lampe3, Claudine J. Gauthier3, Harald E. Möller3
1Max Planck Institute for Human Cognitive and Brain Sciences, Leipzig, Germany

14:30  0359. Dual-Polarity GRAPPA for the Robust Reconstruction of Multi-Channel EPI Data
W. Scott Hoge1, 2, Jonathan R. Polimeni, 23
1Dept. of Radiology, Brigham and Women's Hosp, Boston, MA, United States; 2Harvard Medical School, Boston, MA, United States;
3Dept. of Radiology, Athinoula A. Martinos Center for Biomedical Imaging, Massachusetts General Hospital, Charlestown, MA,
United States

14:42  0360. fMRI Using a 3D Radial-Cartesian Trajectory: Spatio-Temporal Tunability and Artifac...
Ultrasound-mediated vascular permeabilization is currently being explored as a mechanism for site-specific delivery of therapeutics. This approach allows for the enhancement of drug delivery efficiency within a targeted tissue and spatially maps regions where successful delivery has occurred.

Treatment of neurological disorders is often hampered by the inability of therapeutics to cross the blood-brain barrier (BBB). The present study aimed to compare the distribution of contrast agents and model therapeutics within the brain following FUS-mediated BBB opening.

The pharmacological response of a drug is currently defined through in vitro studies and characterized by parameters such as dose response, suggesting that we can characterize drug function and efficacy to inform about the in vivo potency of a drug.

Imaging Drug Delivery & Drug Function

**Moderators:** Zaver M. Bhujwalla, Ph.D. & Willem M. Mulder, Ph.D.

**14:06 0362.** Extended Parallel Imaging in Alternating-SSFP fMRI

*Tiffany Jou¹, Joseph Y. Cheng², Chris Bowen³, Michael Lustig⁴, John M. Pauly⁵*

¹Electrical Engineering, Stanford University, Stanford, CA, United States; ²Radiology, Stanford University, Stanford, CA, United States; ³Electrical Engineering and Computer Sciences, UC Berkeley, Berkeley, CA, United States

**15:18 0363.** Three-Dimensional Mapping of Brain Venous Oxygenation Using T2-Oximetry

*Deng Mao¹, Hanzhang Lu¹*

¹Advanced Imaging Research Center, Univ of Texas Southwestern Medical Center, Dallas, TX, United States

**13:30 0364.** Classification of In Vivo Drug Function Through a Coupling Model and PET/fMRI

*Christin Y. Sander¹, Jacob M. Hooker¹, Ciprian Catana², Bruce R. Rosen²,³, Joseph B. Mandeville¹*

¹A. A. Martinos Center for Biomedical Imaging, Massachusetts General Hospital, Harvard Medical School, Boston, MA, United States; ²Health Sciences and Technology, Harvard-MIT, Cambridge, MA, United States

**13:42 0365.** Comparison of the Central Effects of Ketamine and the NR2B-Selective NMDA Receptor Antagonist Trasoprodil Using Pharmacological MRI in Conscious Rats

*Haoying Tang¹, Yu-Wen Li¹, Matthew Fronheiser², Daniel Kakrat¹, Harold Malone¹, Adrienne Pena¹, Gabriel Tobon², Kurex Sidik², Patrick Chow¹, Linda Bristow³, Wendy Hayes³, Feng Luo³*

¹Bristol-Myers Squibb, Princeton, NJ, United States; ²InviCRO, Boston, MA, United States

**13:54 0366.** Comparison of MRI Contrast Enhancement with Molecular Distribution Following FUS-Mediated BBB Opening

*Michael Valdez¹, Shelby Yuan¹, Zhonglin Liu¹, Paul Helquis², Terry Matsunaga¹, Russell Witte¹, Lars Furenlid³, Marek Romanowski³, Ted Trouard¹*

¹University of Arizona, Tucson, AZ, United States; ²University of Notre Dame, IN, United States

**14:06 0367.** In Vivo Monitoring of Ultrasound-Mediated Nanoparticle Delivery in Human Colon Cancer Xenografts Using Magnetization-Prepared Rapid Gradient Echo (MPRAGE) Imaging

*Steven B. Machalter¹, Bragi Svendsson¹, Tzu-Yin Wang¹, Jung Woo Choe, Kanyi Pu¹, James Rioux¹, Brian Rutt¹, Pierre Khuri-Yakub, Brian A. Hargreaves¹, Juergen K. Willmann¹*

¹Radiology, Stanford, Stanford, CA, United States

**14:18 0368.** Combined 19F MRI and CT Imaging for the Visualization of Delayed Release of Compounds Using PH-Sensitive Polymers Coated in Vitro and in a Hamster Animal Model

*Suyuan Liang¹, Dominiek Staelens², Bernard Appeltans³, Marlies Van de Wouwer³,⁴, Guy Van den Mooter⁵, Gert Van Asche¹, Greetje Vande Velde¹, Uwe Himmelreich¹*

¹Department of Imaging & Pathology, KU Leuven, Leuven, Flemish Brabant, Belgium; ²Department of Clinical and Experimental Medicine, KU Leuven, Leuven, Flemish Brabant, Belgium; ³Department of Pharmaceutical and Pharmacological Sciences, KU Leuven, Leuven, Flemish Brabant, Belgium; ⁴PharmAbs, KU Leuven, Leuven, Flemish Brabant, Belgium

**14:30 0369.** T1 Based Surrogate MRI Marker for Hyperthermia-Induced Release of Doxorubicin from Thermosensitive Liposomes in Solid Tumors

*Michael Peller¹, Limus Willerding¹,², Simone Limmer², Martin Hossann²,³, Olaf Dietrich¹, Michael Ingrisch¹, Lars Lindner²,³, Maximilian F. Reiser¹*

¹Department of Imaging & Pathology, KU Leuven, Leuven, Flemish Brabant, Belgium; ²Department of Clinical and Experimental Medicine, KU Leuven, Leuven, Flemish Brabant, Belgium; ³Department of Pharmaceutical and Pharmacological Sciences, KU Leuven, Leuven, Flemish Brabant, Belgium
**Tuesday**

14:42 0370. **Direct Imaging of Gemcitabine Delivery in Pancreatic Ductal Adenocarcinoma (PDAC) Using CEST MRI**
Yuguoo Li1, Line Hansen2, Stephanie J. Hectors3, Jun Tang1, Anita Gianella1, Brenda L. Sanchez-Gaytan1, Yiming Zhao1, Aneta J. Mieszawska1, Robert Langer1, Claudia Calcagno1, Gustav J. Strijkers1, Zahi A. Fayad2, Willem J.M. Mulder3

1Electrical Engineering, Stanford University, Stanford, CA, United States; 2Procyon Engineering, CA, United States; 3Biomedical Engineering, Eindhoven University of Technology, Eindhoven, Netherlands

Detection of RF power deposition is important in MRI SAR analysis, and in RF safety of implanted leads. We demonstrate the ability to image local SAR deposition at MRI frequencies. Results are shown using CW modulation methods for a exposed lead and stripline RF coil.

14:54 0371. **Multimodal In Vivo Evaluation of a Surface-Switching Nanoparticle Platform**
Francois Fay1, Line Hansen2, Stephanie J. Hectors3, Jun Tang4, Anita Gianella1, Brenda L. Sanchez-Gaytan1, Yiming Zhao1, Aneta J. Mieszawska1, Robert Langer1, Claudia Calcagno1, Gustav J. Strijkers1, Zahi A. Fayad2, Willem J.M. Mulder3

1Translational and Molecular Imaging Institute, Icahn School of Medicine at Mount Sinai, New York City, NY, United States; 2Interdisciplinary Nanoscience Center, Aarhus University, Aarhus, Denmark; 3Biomedical Engineering, Eindhoven University of Technology, Eindhoven, Netherlands; 4Department of Chemical Engineering, Massachusetts Institute of Technology, Cambridge, MA, United States; 5Department of Vascular Medicine, Academic Medical Center, Amsterdam, Netherlands

CSI-EPT can be used to reconstruct electric properties and the electric field based on B1+ fields. In this work we demonstrate the use of CSI-EPT to reconstruct in vivo SAR distribution and compare it to the SAR distribution obtained with FDTD simulations.

15:06 0372. **On-Off Switchable Nanoparticles for Improved Detection with MRI**
Bradley D. Hann4, Kevin M. Bennett1

1Biology, University of Hawaii at Manoa, Honolulu, HI, United States

We have developed a hybrid lipid- polymer nanoparticle platform, which has a matrix metalloproteinase- 2 (MMP2) cleavable ligand. Using an i ntravenous administration our nanoparticles accumulated in the rim of orthotopically implanted breast tumors.

15:18 0373. **PSMA-Specific Theranostic Nanoplexes for Combination Gene and Prodrug Therapy of Prostate Cancer**
Zhihang Chen1, Marie-France Pener1, Balaji Krishnamachary1, Sangeeta Ray Banerjee1, Martin G. Pomper1, Zaver M. Bhujwalla1

1Russell H. Morgan Department of Radiology and Radiological Science, Johns Hopkins University School of Medicine, Baltimore, MD, United States

Deep brain stimulation (DBS) is a neurosurgical procedure that involves implanting electrodes in the brain to electrical stimulation. The inhomogeneity of B1 map and high local SAR are major problems in high field MRI. To improve the homogeneity of B1, a creative combination of RF shimming parameters without degrading the homogeneity of B1 was demonstrated by numerical simulation.

13:30 0374. **A Rotating Transmit Coil and 32ch Receive Array for High-Resolution Brain Imaging of DBS Patients**
Laleh Golestnirad1, Boris Keil1, Giorgio Bonmassar1, Azma Maryam1, Lawrence Leory Wald1

1Radiology, Massachusetts General Hospital, Charlestown, MA, United States

Multimodal Brain Imaging in DBS Patients: A Surface-Switching Nanoparticle Platform

13:42 0375. **Reduction of Worst-Case Local SAR with Constraints on RF Shimming Parameters Based on Principal Component Analysis**
Kosuke Ito1, Yoshihisa Soutome1, Yukio Kaneko2, Masahiro Takizawa1

1Hitachi Medical Corporation, Kashiwa, Chiba, Japan; 2Central Research Laboratory, Hitachi Ltd, Kokubunji, Tokyo, Japan

Effectiveness of anti- cancer drugs can be improved by tumor- targeting. Using thermosensitive liposomes such targeting the tumors, the delivery of drug can be enhanced.

13:54 0376. **Reconstruction of the Local SAR Deposition Based on B1+ Field Data Using CSI-EPT**
Edmond Balidemaj1, Cornelis A.T. van den Berg2, Hans Crezee, Aart Nederveen2, Rob Remts2

1Radiotherapy, Academic Medical Center, Amsterdam, Netherlands; 2Radiotherapy, UMC Utrecht, Utrecht, Netherlands; 3Radiotherapy, Academic Medical Center, Amsterdam, Netherlands; 4Circuits and Systems Group, TU Delft, Delft, Netherlands

PSMA-Specific Theranostic Nanoplexes for Combination Gene and Prodrug Therapy of Prostate Cancer

14:06 0377. **Thermo-Acoustic Ultrasound Detection of RF Coil and Tip SAR**
Greig Scott1, Maryam Etezadi-Amoli1, Pascal Stang1, Hao Nan1, Miao Aliroteh1, Amin Arbabian1, John Pauly1

1Electrical Engineering, Stanford University, Stanford, CA, United States; 2Procyon Engineering, CA, United States

If contrast agent relaxivity could be temporally modulated from an external source, it may lower the minimum detectable signal in MRI. In this work, we demonstrate the feasibility of this approach using a novel on- off switchable one. This may be useful for molecular imaging in inhomogeneous tissue such as the liver, kidney, or spleen.

14:18 0378. **NSsaFe Study: Observational Study on the Incidence of Nephrogenic Systemic Fibrosis in Renal Impaired Patients Following Gadoterate Meglumine Administration.**
Adelard I. De Backer1

1Department of Clinical Radiology, University Hospital of Munich, Munich, Germany; 2Department of Internal Medicine III, University Hospital of Munich, Munich, Germany; 3M. Bhujwalla1

Prostate cancer (PCa) is the second leading cause of death from cancer in men in the U.S., and there is a compelling need for early detection and treatment. We introduce a novel PSMA-Specific Theranostic Nanoplexes for Combination Gene and Prodrug Therapy of Prostate Cancer.

15:18 0379. **On-Off Switchable Nanoparticles for Improved Detection with MRI**
Bradley D. Hann1, Kevin M. Bennett1

1Biology, University of Hawaii at Manoa, Honolulu, HI, United States

Effectiveness of anti- cancer drugs can be improved by tumor- targeting. Using thermosensitive liposomes such targeting the tumors, the delivery of drug can be enhanced.

14:18 0378. **NSsaFe Study: Observational Study on the Incidence of Nephrogenic Systemic Fibrosis in Renal Impaired Patients Following Gadoterate Meglumine Administration.**
Adelard I. De Backer1

1Department of Clinical Radiology, University Hospital of Munich, Munich, Germany; 2Department of Internal Medicine III, University Hospital of Munich, Munich, Germany; 3M. Bhujwalla1

Prostate cancer (PCa) is the second leading cause of death from cancer in men in the U.S., and there is a compelling need for early detection and treatment. We introduce a novel PSMA-Specific Theranostic Nanoplexes for Combination Gene and Prodrug Therapy of Prostate Cancer.
Tuesday

14:30 0379. **A Vectorized Formalism for Efficient SAR Computation in Parallel Transmission**

*Mihir Pendse¹, Brian Rutt¹*

¹Radiology, Stanford University, Stanford, CA, United States

14:42 0380. **Correlation of PsSAR and Tissue Specific Temperature for 7T PTx Head Coils - A Large Scale Simulation Study**

*Frank Seifert¹, Gerd Weidemann¹, Bernd Ittermann¹*

¹Physikalisch-Technische Bundesanstalt (PTB), Braunschweig und Berlin, Germany

14:54 0381. **Prospective Assessment of Transient Dyspnea and Arterial Oxygen Saturation After Injection of Gadoxetic Acid in a Large Patient Cohort**

*Shubham Gupta¹, R Allen Waggoner¹, Keiji Tanaka¹, Kang Cheng¹, 2*

¹Department of Radiology, Case Western Reserve University, Cleveland, OH, United States; ²Department of Central Radiology, Kumamoto University Hospital, Kumamoto, Japan

15:06 0382. **Variations in Peak Local SAR Due to Coupling – Comparison Between Various PTx Array Simulation Methods**

*Utaroh Motosugi¹, Peter Bannas¹, 3, Candice A. Bookwalter¹, Scott B. Reeder¹, 4*

¹Radiology, University of Wisconsin, Madison, WI, United States; ²Radiology, University of Yamanashi, Yamanashi, Japan; ³Radiology, University Hospital Hamburg-Eppendorf, Hamburg, Germany; ⁴Medical Physics, University of Wisconsin, Madison, WI, United States

15:18 0383. **B1-Based SAR Determination for Local RF Transmit Coils**

*Ulrich Katscher¹, Marina Braun¹, Christian Findeklee¹, Christoph Leussler¹, Ingmar Graesslin¹, Peter Vernickel¹, Michael Morlock²*

¹Philips Research Europe, Hamburg, Germany; ²University of Technology, Hamburg, Germany

**Hepatobiliary 2**

Room 716 A/B 13:30-15:30 Moderators: Hero K. Hussain, M.D. & Takeshi Yokoo, M.D., Ph.D.

13:30 0384. **Assessment of the Hepatocyte Fraction for Estimation of Liver Function**

*Tomoyuki Okuaki¹, Kosuke Morita¹, Tomohiro Namimoto¹, Morikatsu Yoshida¹, Shinya Shiraishi¹, Yasuyuki Yamashita¹, Marc Van Cauteren¹*

¹Philips Healthcare, Minato-ku, Tokyo, Japan; ²Department of Central Radiology, Kumamoto University Hospital, Kumamoto, Japan; ³Department of Diagnostic Radiology, Faculty of Life Sciences, Kumamoto University, Kumamoto, Japan

13:42 0385. **Simultaneous Quantification of Liver Perfusion and Hepatocyte Uptake Function with Dynamic Gadobenate-Dimeglumine Enhanced MR Imaging in Patients with Chronic Liver Diseases**

*Benjamin Leporq¹, Sabine Schmidt², Catherine Pastor¹, ³, Jean Luc Daire¹, Bernard Edgar Van Beers¹, ⁴*

¹Center of research on inflammation, Paris 7 University; INSERM U1044, Paris, France; ²Department of Radiology, Centre Hospitalier Universitaire Vaudois, Lausanne, Switzerland; ³Laboratoire de Physiopathologie Hepatique et Imagerie Moléculaire, Hôpitaux Universitaires de Genève, Geneva, Switzerland; ⁴Department of Radiology, Beaujon University hospital Paris Nord, Clichy, France

13:54 0386. **High Spatiotemporal Resolution Liver Perfusion Imaging in Focal Liver Lesions**

*Yong Chen¹, Chaitra Badve¹, Shivani Pahwa¹, Mark Griswold², ³, Nicole Seiberlich¹, ², Vikas Gulani¹, ²*

¹Department of Radiology, Case Western Reserve University, Cleveland, OH, United States; ²Department of Biomedical Engineering, Case Western Reserve University, Cleveland, OH, United States

14:06 0387. **Sparse Radial k-T SPIRiT for Dynamic Liver Imaging**

*Dan Zhu¹, Feng Huang¹, Jia Ning³, Feiyu Chen¹, Huijun Chen¹*

¹Tsinghua University, Beijing, China; ²Philips Healthcare, Suzhou, Jiangsu, China
The tradeoffs when imaging mouse models of neurodegenerative disease using in vivo and ex vivo MRI have been explored using the rTg4510 mouse model of Alzheimer's disease.

Constitution Hall 107 13:30-15:30

Alzheimer's Disease

Moderators: Masaaki Hori, M.D., Ph.D. & T.B.A.

13:30 0394. Comparing In Vivo and Ex Vivo Imaging in an Alzheimer's Mouse Model Using Tensor-Based Morphometry
Holly Elizabeth Holmes1, Nicholas Powell1, Jack Wells1, Niall Colgan1, Ozama Ismail1, James O'Callaghan1, Da Ma2, Michael J. O'Neill2, Emily Catherine Collins2, Manuel Jorge Cardoso2, Marc Modat3, Elizabeth Fisher3, Sebastian Ourselin3, Mark F. Lythgoe3
1Centre for Advanced Biomedical Imaging, University College London, London, Greater London, United Kingdom; 2Centre for Medical Image Computing, University College London, London, Greater London, United Kingdom; 3Eli Lilly & Co. Ltd, Windlesham, Surrey, United Kingdom; 4Eli Lilly & Company, Indianapolis, United States; 5Department of Neurodegenerative Diseases, University College London, London, Greater London, United Kingdom

13:42 0395. Probing In Vivo T2 Relaxation Time Alterations in the Corpus Callosum of a Mouse Model of Alzheimer's Disease
Firat Kara1, Steffen Roßn4, Annemie Van der Linden1, Huub J.M. de Groof2, A. Alia2
13:54 0396. Corpus Callosum Atrophy Rate in Mild Cognitive Impairment and Prodromal Alzheimer’s Disease

Babak Ardekani1,2, Sahar Elahi1, Alvin Bachman1, Sang Han Lee1, John Sidtis1,2
1The Nathan S. Kline Institute for Psychiatric Research, Orangeburg, NY, United States; 2Department of Psychiatry, New York University School of Medicine, New York, NY, United States

Our findings suggest that mean diffusivity is the best marker for graph-theory calculations and that it is essential to consider both the structural and functional connectivity of RSNs to understand different stages of brain pathology and their evolution.

Several resting-state fMRI studies have revealed a generalized alteration of the resting state networks (RSNs) in subjects with Mild Cognitive Impairment. We demonstrated that susceptibility obtained with QSM was significantly higher in the cognitively impaired group than the non-cognitively impaired group. This underscores the potential value of susceptibility to distinguish cognition decline at the early, pre-symptomatic phase.

Recent studies demonstrated that vascular risk factors (VRFs) increase the risk of AD. Little, however, is known on the specific effect of VRFs on brain morphology and blood flow. We demonstrated that cortical volumes and cerebral blood flow in MCI individuals with low VRF burden are similar to healthy controls, whereas individuals with high VRF burden show alterations in both cortical volumes and blood flow.

We examined temporal rates of change in CC morphology in MCI patients to determine the differences between converters to AD and non-converters. We found that increased cortical volume revealed by atlas-based volumetry in a bigenic mouse model of Alzheimer's disease is increased with cognitive impairment in a community population.

Brain Magnetic Susceptibility Is Increased with Cognitive Impairment in a Community Population

Armin Eilaghi1,2, D Adam McLean4, Cheryl R. McCreary1,4, David Gobbi1,4, M Louis Lauzon1,4, Marina Salluzzi1, Eric E. Smith1,4, Richard Frayne1,4
1Radiology and Clinical Neurosciences, Hotchkiss Brain Institute, University of Calgary, Calgary, Alberta, Canada; 2Seaman Family MR Centre, Foothills Medical Centre, Calgary, Alberta, Canada; 3Calgary Image Processing and Analysis Centre, Foothills Medical Centre, Calgary, Alberta, Canada; 4Seaman Family MR Centre, Foothills Medical Centre, Calgary, Alberta, Canada

We demonstrated that increased cortical volume as measured by Quantitative Susceptibility Mapping (QSM) at 7 Tesla correlates with brain Aβ plaque density as measured by 11-C-Pittsburgh Compound B Positron-Emission-Tomography (PiB-PET) in elderly subjects at risk for Alzheimer's Disease (AD).

14:42 0400. Regional Cerebral Iron Concentrations as Indicated by Magnetic Susceptibilities Measured with Quantitative Susceptibility Mapping (QSM) at 7 Tesla Correlate with Brain Aβ Plaque Density as Measured by 11-C-Pittsburgh Compound B Positron-Emission-Tomography (PiB-PET) in Elderly Subjects at Risk for Alzheimer’s Disease (AD)

Jiri M.G. van Bergen1,2, Xu Li1, Michael Wyss3, Simon J. Schreiner1, Stefanie C. Steininger1, Anton F. Gietl1, Valerie Treyer1,4, Sandra E. Leh1, Fred Buck1, Jun Hua1, Roger Nitsch1, Klaas P. Pruessmann1, Peter C.M. van Zijl2, Christoph Hock1, Paul G. Unschiold1
1Division of Psychiatry Research and Psychogeriatric Medicine, University of Zurich, Zurich, Switzerland; 2F.M. Kirby center for Functional Brain Imaging, Kennedy Krieger Institute and Johns Hopkins School of Medicine, Baltimore, MD, United States; 3Institute for Biomedical Engineering, University of Zurich and ETH Zurich, Zurich, Switzerland; 4Division of Nuclear Medicine, University of Zurich, Zurich, Switzerland

14:54 0401. Mapping the Effect of APOE ε4 Genotype on Intrinsic Functional Network Centrality in Patients with Amnestic Mild Cognitive Impairment

Zan Wang1, Zhengjia Dai2, Yongmei Shi3, Hao Shu1, Duan Liu1, Yong He1, Zhijun Zhang1
1Department of Neurology, Affiliated ZhongDa Hospital of Southeast University, Nanjing, Jiangsu, China; 2State Key Laboratory of Cognitive Neuroscience and Learning, Beijing Normal University, Beijing, China

15:06 0402. Combined Functional and Tractography Connectome to Investigate Alzheimer Brain Networks

Fulvia Palesi1,2, Gloria Castellazzi,2, Elena Sinforiani4, Paolo Vitali1,6, Claudia A. M. Wheeler-Kingshott2, Egidio D'Angelo2,8
1Department of Physics, University of Pavia, Pavia, PV, Italy; 2Brain Connectivity Center, C. Mondino National Neurological Institute, Pavia, PV, Italy; 3Department of Electrical, Computer and Biomedical Engineering, University of Pavia, Pavia, PV, Italy; 4Department of Biomedical Sciences, University of Pavia, Pavia, PV, Italy; 5Department of Neuroinflammation, Queen Square MS Centre, UCL Institute of Neurology, London, England, United Kingdom

magna cum laude

ISMRM MERIT AWARD

Tuesday
15:18  0403.  Free Water Elimination DTI in Preclinical Alzheimer’s: Evidence for Early Axonal Degeneration
    Andrew R. Hoy1, 2, Sterling C. Johnson1, 3, Ozioma C. Okonkwo2, 3, Cynthia M. Carlsson1, 4, Henrik Setterberg5, 7,  
    Kaj Blennow1, Sanjay Asthana1, 5, Mark A. Sager2,3, Andrew L. Alexander2, 3, Barbara B. Bendlin6, 3  
    1Medical Physics, University of Wisconsin, Madison, WI, United States; 2Medical Service Corp, United States Navy,  
    Falls Church, VA, United States; 3Geriatric Research, Education and Clinical Center, William S. Middleton  
    Memorial Veteran's Hospital, Madison, WI, United States; 4Wisconsin Alzheimer's Disease Research Center,  
    University of Wisconsin, Madison, WI, United States; 5Wisconsin Alzheimer's Institute, University of Wisconsin,  
    Madison, WI, United States; 6Department of Psychiatry and Neurochemistry, University of Gothenburg,  
    Gothenburg, Sweden; 7Department of Clinical Neuroscience, University of Gothenburg, Gothenburg, Sweden;  
    8Waisman Laboratory for Brain Imaging and Behavior, University of Wisconsin, Madison, WI, United States

Novel & Hybrid Systems
John Bassett Theatre 102  13:30-15:30  Moderators: Fernando E. Boada, Ph.D. & Harald H. Quick, Ph.D.

13:30  0404.  MRI Compatibility of a High-Resolution Small Animal PET Insert Operating Inside a 7T MRI
    Jonathan D. Thiessen1, 2, Ehsan Shams3, 4, Greg Stortz5, Muhammad Salman Khan1, Piotr Kozlowski6, Fabrice Retiere6, Vesna Sossi7,  
    Christopher J. Thompson8, Andrew L. Goertzen9  
    1Imaging Program, Lawson Health Research Institute, London, Ontario, Canada; 2Medical Biophysics, Western  
    University, London, Ontario, Canada; 3Graduate Program in Biomedical Engineering, University of Manitoba,  
    Winnipeg, Manitoba, Canada; 4Physics & Astronomy, University of Manitoba, Winnipeg, Manitoba, Canada;  
    5Physics & Astronomy, University of British Columbia, Vancouver, British Columbia, Canada; 6Detector  
    Development Group, TRIUMF, Vancouver, British Columbia, Canada; 7Electrical & Computer Engineering,  
    University of Manitoba, Winnipeg, Manitoba, Canada; 8Radiology, University of British Columbia,  
    Vancouver, British Columbia, Canada; 9McConnell Brain Imaging Centre, Montreal Neurological Institute,  
    Montréal, Québec, Canada

13:42  0405.  MR-Based Attenuation Correction for MR-PET Studies with Continuous-Valued Attenuation Coefficients  
    for Bone Through a Conversion from R2* to CT Hounsfield Units
    Meher Juttukonda1, 2, Bryant Mersereau1, 2, Yasheng Chen1, 2, Yi Su1, Brian Rubin1, Tammie Benzinger4,  
    David Latish7, 3, Hongyu An1, 2  
    1Joint Department of Biomedical Engineering, University of North Carolina - Chapel Hill & North Carolina  
    State University, Chapel Hill, NC, United States; 2Biomedical Research Imaging Center, University of North  
    Carolina - Chapel Hill, Chapel Hill, NC, United States; 3Radiology, University of North Carolina - Chapel  
    Hill, Chapel Hill, NC, United States; 4Mallinckrodt Institute of Radiology, Washington University, St.  
    Louis, MO, United States

13:54  0406.  3D Hybrid Phantom Measurement: Validation of a Fully Integrated Preclinical 12 Channel Hybrid MPI-MRI  
    Magnet System
    Jochen Franke1, 2, Ulrich Heinen1, Heinrich Lehr1, Alexander Weber1, Frederic Jaspard1, Wolfgang Ruhm1,  
    Michael Heidenreich1, Volkmar Schultze2  
    1R&D Magnetic Particle Imaging, Bruker BioSpin MRI GmbH, Ettlingen, Germany; 2Physics of Molecular  
    Imaging Systems, University RWTH Aachen, Aachen, Germany

14:06  0407.  Whole-Body Concept for Integration of Hybrid PET/MR Imaging Into Radiation Therapy Treatment Planning
    Daniel H. Paulus1, Mark Oehmigen2, Harald H. Quick1, 2  
    1Institute of Medical Physics, University of Erlangen-Nürnberg, Erlangen, Germany; 2High Field and Hybrid  
    MR Imaging, University Hospital Essen, Essen, Germany

14:18  0408.  Concurrent Optical and Magnetic Resonance Microscopy
    Frederik Testud1, Elmar Fischer1, Katharina Göbel1, Nils Spengler1, Ulrike Wallrabe2, Maxim Zaitsev3, Matthias  
    Wapler4  
    1Medical Physics, University Medical Center Freiburg, Freiburg, Germany; 2Department for Microsystems  
    Engineering – IMTEK, University of Freiburg, Freiburg, Germany

14:30  0409.  A Fast and Practical Imaging Scheme for a Rotating RF Coil at 9.4T by Using Ultra-Short TE Sequence in  
    Radial Trajectory
    Mingyan Li1, Thimo Hugger2, Ewald Weber1, Jin Jin1, Feng Liu1, Peter Ullmann2, Simon Stark2, Yasvir Tesiram1, Yang  
    Yang1, Sven Junge2, Stuart Crozier1  
    1The School of Information Technology and Electrical Engineering, The University of Queensland, Brisbane,  
    QLD, Australia; 2Bruker BioSpin MRI GmbH, Ettlingen, Baden-Württemberg, Germany; 3Centre for Advanced  
    Imaging, The University of Queensland, Brisbane, QLD, Australia
14:42 0410. MR-Based PET Attenuation Correction for Brain PET-MR Using Support Vector Machines
Yicheng Chen, Di Cui, Yingmao Chen, Jinsong Ouyang, Georges El Fakhri, Kui Ying
1Key Laboratory of Particle and Radiation Imaging, Ministry of Education, Department of Engineering Physics, Tsinghua University, Beijing, China; 2Department of Diagnostic Radiology, The University of Hong Kong, Hong Kong, China; 3Department of Nuclear Medicine, The general hospital of Chinese People's Liberation, Beijing, China; 4Department of Radiology, Division of Nuclear Medicine and Molecular Imaging, Harvard Medical School and Massachusetts General Hospital, Boston, MA, United States

14:54 0411. Continuous Bone Density Measurement for Simultaneous MR-PET Attenuation Correction Using Water- And Fat-Suppressed Projection Imaging (WASPI)
Chuan Huang, Jinsong Ouyang, Timothy Reese, Yaotang Wu, Georges El Fakhri, Jerome Ackerman
1Center for Advanced Medical Imaging Sciences, Radiology, Massachusetts General Hospital, Boston, MA, United States; 2Research Radiology, Psychiatry, Stony Brook Medicine, Stony Brook, NY, United States; 3Martinos Center for Biomedical Imaging, Radiology, Massachusetts General Hospital, Boston, MA, United States; 4Radiology, Children's Hospital Boston, Boston, MA, United States

15:06 0412. Respiratory and Cardiac Non-Rigid Motion Correction for Cardiac PET-MR
Christoph Kolbitsch, Mark Ahlman, Michael Hansen, Javier Royuela del Val, Peter Kellman, David A. Bluemke, Tobias Schaeffter
1Division of Imaging Sciences and Biomedical Engineering, King's College London, London, United Kingdom; 2Clinical Center, Radiology and Imaging Sciences, National Institute of Health, Bethesda, MD, United States; 3National Heart, Lung, and Blood Institute, National Institutes of Health, Bethesda, MD, United States; 4Laboratorio de Procesado de Imagen, Universidad de Valladolid, Valladolid, Spain

15:18 0413. Hyperion-IID: A Preclinical PET/MRI Insert Using Digital Silicon Photomultipliers
Jakob Wehner, Bjorn Weissler, David Schug, Peter Duesenbeck, Pierre Gebhardt, Benjamin Goldschmidt, Andre Salomon, Rene Botnar, Fabian Kiessling, Volkmar Schulz
1Institute for Experimental Molecular Imaging, RWTH Aachen University, Aachen, NRW, Germany; 2Institute of High Frequency Technology, RWTH Aachen University, NRW, Germany; 3Philips Research Europe, Aachen, NRW, Germany; 4King's College London, London, United Kingdom; 5Philips Research Europe, Eindhoven, Netherlands

Educational Course
Multifarious Manifestations of Muscle Disease
Organizers: Eric Y. Chang, M.D., Garry E. Gold, M.D., Richard Kijowski, M.D., William B. Morrison, M.D., Ravinder R. Regatte, Ph.D. & Siegfried Trattnig, M.D.
Room 718 A 13:30-15:30 Moderators: Chris Boesch, M.D. & Mark Schweitzer, M.D.
13:30 Sports Injury & Other Trauma
Viviane Khoury
14:00 Inflammatory & Infectious Disease
Mary K. Jesse
14:30 Metabolic Conditions & Genetic Disorders
Tetyana A. Gorbachova
15:00 Muscle Atrophy Patterns: Nerve Impingement & More
Dorota D. Linda
15:30 Adjournment & Meet the Teachers

Educational Course
Challenges in Quantitative Cardiovascular Imaging
Organizers: Thomas K. F. Foo, Ph.D. & Martin J. Graves, Ph.D.
Room 718 B 13:30-15:30 Moderators: Taylor Chung, M.D. & Ehud J. Schmidt, Ph.D.
13:30 Ventricular Function (RV and LV from Cines, Spatiotemporal Resolution & Field Strengths)
David A. Bluemke
<table>
<thead>
<tr>
<th>Time</th>
<th>Event</th>
<th>Speaker/Author</th>
</tr>
</thead>
<tbody>
<tr>
<td>14:00</td>
<td>Flow Quantification (Ao, MPA, Branch PAs, VENC, Background Errors, Temporal/Spatial Resolution, ROIs)</td>
<td>Peter D. Gatehouse</td>
</tr>
<tr>
<td>14:30</td>
<td>Perfusion (Artifacts, Spatiotemporal Resolution, Techniques, But Not Quantitative Perfusion Kep/Ktrans)</td>
<td>Richard A. R. Coulden</td>
</tr>
<tr>
<td>15:00</td>
<td>Late Gadolinium Enhancement for Viability (LGE Scar Assessment, TI Optimisation &amp; Methods)</td>
<td>W. Patricia Bandettini</td>
</tr>
<tr>
<td>15:30</td>
<td>Adjournment &amp; Meet the Teachers</td>
<td></td>
</tr>
</tbody>
</table>

**Educational Course**

**Genomics, Proteomics, & Big Data**

*Organizers:* Jonathan H. Gillard, M.D., FRCR, MBA & Howard A Rowley, M.D.

<table>
<thead>
<tr>
<th>Time</th>
<th>Event</th>
<th>Speaker/Author</th>
</tr>
</thead>
<tbody>
<tr>
<td>13:30</td>
<td>Managing Big Data from MRI: The Neuroradiologist's Perspective</td>
<td>Christopher T. Whitlow</td>
</tr>
<tr>
<td>14:00</td>
<td>Managing Big Data for Genomics &amp; Proteomics</td>
<td>Rivka R. Colen</td>
</tr>
<tr>
<td>14:30</td>
<td>Managing Big Data from MRI: The Physicist's Perspective</td>
<td>Hae-Jeong Park</td>
</tr>
<tr>
<td>15:00</td>
<td>Managing Big Data: Getting Better Insight</td>
<td>Christopher T. Whitlow</td>
</tr>
<tr>
<td>15:30</td>
<td>Adjournment &amp; Meet the Teachers</td>
<td></td>
</tr>
</tbody>
</table>

**Traditional Poster Session: Engineering**

Exhibition Hall 16:00-18:00 (no CME credit)

**Traditional Poster Session: UHF**

Exhibition Hall 16:00-18:00 (no CME credit)

**Traditional Poster Session: MR Safety**

Exhibition Hall 16:00-18:00 (no CME credit)

**Electronic Poster Session: Cancer**

Exhibition Hall 16:00-18:00 (no CME credit)

**Electronic Poster Session: fMRI**

Exhibition Hall 16:00-18:00 (no CME credit)

**Study Group Session**

**White Matter**

Reception Hall 104 BCD 16:00-18:00 (no CME credit)

**Study Group Session**

**Perfusion**

Constitution Hall 105 16:00-18:00 (no CME credit)
Molecular Imaging Studies of a Robust Gd-Sucrose Scaffold Applied to MR-Colonography
Gary V. Martinez, Parastou Foroutan, Valerie E. Moberg, Suryakiran Navath, Roha Afzal, Robert J. Gillies, Eugene A. Mash, David L. Morse
1Department of Cancer Imaging and Metabolism, H. Lee Moffitt Cancer Center & Research Institute, Tampa, FL, United States; 2Bruker Biospin, Billerica, MA, United States; 3Department of Chemistry and Biochemistry, University of Arizona, Tucson, AZ, United States

Two-Dimensional Shaped Voxel MRS in the Human Brain at 3 T
Patrick Waxmann, Ralf Mekle, Florian Schubert, Andre Kuehn, Tomasz Dawid Lindel, Frank Seifert, Oliver Speck, Bernd Itermann
1Physikalisch-Technische Bundesanstalt (PTB), Braunschweig und Berlin, Berlin, Germany; 2Medical University of Vienna, Vienna, Austria; 3Otto-von-Guericke-University, Magdeburg, Germany

Moderators: Peter van Zijl, Ph.D. & Carolyn E. Mountford, D.Phil.
Power Pitch Theatre, Exhibition Hall
16:00-17:00 (no CME credit)
0422. In Vivo Quantification of ATP Synthesis Rates in Rat Skeletal Muscle by 31P Spectroscopic Magnetic Resonance Fingerprinting
Charlie Yi Wang,1 Yuchi Liu,1 Mark Alan Griswold,1,2, Xin Yu,1,2
1Biomedical Engineering, Case Western Reserve University, Cleveland, OH, United States; 2Radiology, Case Western Reserve University, Cleveland, OH, United States

0423. 13C MRS of the Brain Without Decoupling
Keshav Datta,1, Arif Wibowo,1 Stephen R. Lynch,2 Daniel Spielman1
1Dept. of Electrical Engineering, Stanford University, Stanford, CA, United States; 2Dept. of Chemistry, Stanford University, CA, United States; 3Dept. of Radiology, Stanford University, Stanford, CA, United States

0424. In Vivo Assessment of Intracellular NAD+/NADH Redox State in Human Brain at 4 Tesla
Ming Lu,1 Wei Chen,1 Xiao-Hong Zhu1
1Center for Magnetic Resonance Research, University of Minnesota Medical School, Minneapolis, MN, United States

0425. Diffusion-Weighted MR Spectroscopy Feasibility in Clinical Studies at 3 T: The Effect of Reducing the Acquisition Time Investigated by Bootstrapping
Francesca Branzoli,1,2 Daniel Garcia-Lorenzo,1,2, Romain Valabrègue1,2, Stephane Lehéricy1,2
1Institut du Cerveau et de la Moelle épinière – ICM, Centre de Neuroimagerie de Recherche – CENIR, Paris, France; 2Sorbonnes Université, Université Pierre et Marie Curie and Inserm UMR-S1127; CNRS, UMR 7225, Paris, France

0426. Metabolome Profiling by HRMAS NMR Spectroscopy of Hyperfunctioning Parathyroid Glands
Stéphanie Battini1, Alessio Imperiale1,2, David Taieb1, Karim Elbayed1, Frédéric Sebag2, Laurent Brunaud6, Izzie-Jacques Namer1,6
1Cube laboratory UMR 7357, University of Strasbourg/CNRS and FMTS, Strasbourg, France; 2University Hospitals of Strasbourg, Department of Biophysics and Nuclear Medicine, Hautepierre, Strasbourg, France; 3La Timone University Hospital, European Center for Research in Medical Imaging, Aix-Marseille University, Marseille, France; 4Department of Endocrine Surgery, La Timone University Hospital, Aix-Marseille University, Marseille, France; 5Department of Digestive, Hepato-Biliary and Endocrine Surgery, Brabois University Hospital, Nancy, France; 6University Hospitals of Strasbourg, Department of Biophysics and Nuclear Medicine, Hautepierre Hospital, Strasbourg, France

0427. Metabolomic Assessment of Succinate Dehydrogenase Dysfunction in Pheochromocytomas and Paragangliomas by 1H-HRMA NMR Spectroscopy: Clinical and Pathophysiological Implications
Alessio Imperiale1,2, Stéphanie Battini1, Philippe Roche1, François-Marie Moussallieh1, Ercument A Cicek1, Frédéric Sebag2, Laurent Brunaud6, Anne Barlier1, Karim Elbayed1, Anderson Loundou1, Philippe Bacheller1, Bernard Goichot1, Constantine A Stratakis1,2,12, Karel Pacák13, David Taieb14, Izzie-Jacques Namer1,6
1Cube laboratory UMR 7357, University of Strasbourg/CNRS and FMTS, Strasbourg, France; 2University Hospitals of Strasbourg, Department of Biophysics and Nuclear Medicine, Hautepierre Hospital, Strasbourg, France; 3Integrative Structural & Chemical Biology (iSCB) & INT-3D Molecular Modeling Platform, Cancer Resear, CNRS UMR7258; INSERM U1060; Institut Paoli Calmettes, Aix-Marseille University UM105, Marseille, France; 4Lane Center for Computational Biology, School of Computer Science, Carnegie Mellon University, 5000 Forbes Ave, Pittsburgh, PA 15222, United States; 5Department of Endocrine Surgery, La Timone University Hospital, Aix-Marseille University, Marseille, France; 6Department of Digestive, Hepato-Biliary and Endocrine Surgery, Brabois University Hospital, Nancy, France; 7Laboratory of Biochemistry and Molecular Biology, Conception Hospital, Aix-Marseille, University, Marseille, France; 8Department of Public Health, Aix-Marseille University, Marseille, France; 9Department of Visceral Surgery and Transplantation, Hautepierre Hospital, University Hospitals of Strasbourg, Strasbourg, France; 10Department of Internal Medicine, Diabetes and Metabolic Disorders, Hautepierre Hospital, University Hospitals of Strasbourg, Strasbourg, France; 11Section on Genetics and Endocrinology (SEGEN), Program on Developmental Endocrinology and Genetics (PDEGEN), Bethesda, United States; 12Eunice Kennedy Shriver National Institute of Child Health and Human Development, National Institutes of Health, Bethesda, United States; 13Program in Reproductive and Adult Endocrinology, Eunice Kennedy Shriver National Institute of Child Health and Human Development, Bethesda, United States; 14La Timone University Hospital, European Center for Research in Medical Imaging, Marseille, France

0428. Adapting Volumetric 1H Echo-Planar Spectroscopic Imaging of the Human Brain from 3 to 7 Tesla
Karim Snoussi1,2, Joseph S. Gillen1,2, Michael Schär1,2, Richard A.E. Edden1,2, Andrew A. Maudsley3, Peter B. Barker1,2
1Russel H. Morgan Department of Radiology and Radiological Science, Johns Hopkins University School of Medicine, Baltimore, MD, United States; 2Kennedy Krieger Institute, Johns Hopkins University, Baltimore, MD, United States; 3Miller School of Medicine, University of Miami, Miami, FL, United States
Biomarkers & Subtyping of Psychiatric Disorders

Markus Nilsson1, Filip Szczepankiewicz2, Danielle van Westen3, Cecilia Mattisson4, Mats Bogren4, Ofer Pasternak5, Mark Drakesmith1, 2, Thomas Lancaster2, Sonya Foley1, 2, Lisa Brindley1, 2, Derek K. Jones1, 2, David Linden, 12
1Radiology, Children's Hospital of Philadelphia, Philadelphia, PA, United States; 2Radiology, University of Pennsylvania, Philadelphia, PA, United States; 3Radiology, University of California San Francisco, CA, United States; 4Psychiatry, University of Pennsylvania, Philadelphia, PA, United States; 5Simons Foundation, NY, United States; 6Pediatrics and Medicine, Columbia University Medical Center, New York, NY, United States; 7Dept. of Biomedical Engineering, Linköping University, Linköping, Sweden

Characterization of Hemodynamic Alterations in Autism Using Resting State fMRI
Jeffrey I. Berman1, 2, Julian Jenkins1, Darina Chudnovskaya1, Srikantan Nagarajan3, Pratik Mukherjee1, Randy Buckner1, John E. Spiro2, Wendy K. Chung3, Elliott H. Sherr2, Timothy PL Roberts2
1Radiology, Children's Hospital of Philadelphia, Philadelphia, PA, United States; 2Radiology, University of Pennsylvania, Philadelphia, PA, United States; 3Radiology, University of California San Francisco, CA, United States; 4Psychology, Harvard University, Boston, MA, United States; 5Simons Foundation, NY, United States; 6Pediatrics and Medicine, Columbia University Medical Center, NY, United States; 7Neurology, University of California San Francisco, CA, United States

16:12 0430. Dissecting Myelin and Axon Abnormalities in Schizophrenia and Bipolar Disorder Patients Using Novel MRI Approaches
Fei Du1, Eve Lewandowski1, Jackie Goldbatch1, Dost Ongur1
1McLean Hospital, Harvard Medical School, Belmont, MA, United States

16:24 0431. Diffusion Spectrum Imaging Connectomics: A Biomarker for Staging in Psychotic Disorders
Alessandra Griffa1, 2, Philipp S. Baumann3, 4, Carina Ferrand4, 5, Tanja Eric3, 4, Philippe Conus3, 4, Kim Q. Do3, 4, Jean-Philippe Thiiran1, 2, Patric Hagmann, 12
1Signal Processing Laboratory 5 (LT5), École Polytechnique Fédérale de Lausanne (EPFL), Lausanne, Switzerland; 2Department of Radiology, Lausanne University Hospital (CHUV) and University of Lausanne, Lausanne, Switzerland; 3Service of General Psychiatry and Center for Psychiatric Neuroscience, Lausanne University Hospital (CHUV) and University of Lausanne, Lausanne, Switzerland; 4National Center of Competence in Research (NCCR) “SYNAPSY - The Synaptic Bases of Mental Diseases”, Switzerland

16:36 0432. Topology of Structural Connectomes in Healthy Carriers of Common Gene Variants Associated with Schizophrenia
Mark Drakesmith1, 2, Thomas Lancaster2, Sonya Foley1, 2, Lisa Brindley1, 2, Derek K. Jones1, 2, David Linden, 12
1CUBRIC, Cardiff University, Cardiff, Wales, United Kingdom; 2Neuroscience and Mental Health Research Institute, Cardiff University, Cardiff, Wales, United Kingdom

16:48 0433. Identification of a Schizophrenia-Related Disease Pattern Using Resting State fMRI
An Vo1, Ivana De Lucia1, Delbert G. Robinson1, , Juan A. Gallego1, , Peter B. Kingsley1, Miklos M. Argyelan1, , Anil K. Malhotra1, , Aziz M. Ulug1, , Philip R. Szeszko1, 3
1Center for Neurosciences, Feinstein Institute for Medical Research, Manhasset, NY, United States; 2Center for Psychiatric Neuroscience, Feinstein Institute for Medical Research, NY, United States; 3Psychiatry Research, Zucker Hillside Hospital, North Shore-LIJ Health System, Glen Oaks, NY, United States; 4Radiology, North Shore University Hospital, Manhasset, NY, United States; 5Institute of Biomedical Engineering, Bogazici University, Istanbul, Turkey

17:00 0434. GluCEST in the Olfactory Cortex as a Marker of Heightened Clinical Risk for Schizophrenia
Ravi Prakash Reddy Nanga1, David R. Roal2, Hari Hariharan2, Mark A. Elliott1, Karthik Prabhakaran2, Megan Quarmley2, Paul J. Moberg2, Ravinder Reddy1, Bruce I. Turetsky2
1Radiology, University of Pennsylvania Health Systems, Philadelphia, PA, United States; 2Psychiatry, University of Pennsylvania, Philadelphia, PA, United States

17:12 0435. Characterization of Hemodynamic Alterations in Autism Using Resting State fMRI
Wenting Yan1, Gopikrishna Deshpande1, 2
1AU MRI Research Center, Department of Electrical and Computer Engineering, Auburn University, Auburn, AL, United States; 2Department of Psychology, Auburn University, AL, United States

17:24 0436. Relationship Between Structure and Function of the Auditory System Is Altered in 16p11.2 Deletion and Duplication
Jeffrey I. Berman1, 2, Julian Jenkins1, Darina Chudnovskaya1, Srikantan Nagarajan1, Pratik Mukherjee1, Randy Buckner1, John E. Spiro2, Wendy K. Chung3, Elliott H. Sherr2, Timothy PL Roberts2
1Radiology, Children's Hospital of Philadelphia, Philadelphia, PA, United States; 2Psychology, Harvard University, Boston, MA, United States; 3Simons Foundation, NY, United States; 4Pediatrics and Medicine, Columbia University Medical Center, NY, United States; 5Neurology, University of California San Francisco, CA, United States

81
Symptom-Based Subtypes of Major Depressive Disorder Manifest Distinct Nucleus Accumbens Hemodynamic Responses to Reward and Punishment
1 Laureate Institute for Brain Research, Tulsa, OK, United States; 2 Dept of Surgery, University of Oklahoma College of Medicine, OK, United States; 3 Tandy School of Computer Science, Dept of Mathematics, University of Tulsa, OK, United States; 4 Dept of Medicine, Tulsa School of Community Medicine, University of Tulsa, OK, United States; 5 Janssen Pharmaceuticals LLC, Of Johnson & Johnson Inc., Titusville, NJ, United States; 6 College of Engineering, University of Oklahoma, OK, United States

The Long-Term Effects of Marijuana Use on the Brain
Sina Aslan, Vince Calhoun, Jeffrey Spence, Francesca Fillbey
1 Advance MRI LLC, Frisco, TX, United States; 2 University of Texas at Dallas, Dallas, TX, United States; 3 The Mind Research Network, Albuquerque, NM, United States

Relaxometry - Methods & Corrections
Moderators: Sean C. L. Deoni, Ph.D. & Marcel Warntjes, Ph.D.

Fast T1 Mapping Using Slice-Shuffled Simultaneous Multi-Slice Inversion Recovery EPI
Hua Wu, Robert F. Dougherty, Adam B. Kerr, Kangrong Zhu, Matthew J. Middione, Aviv Mezer
1 Center for Cognitive and Neurobiological Imaging, Stanford University, Stanford, CA, United States; 2 Electrical Engineering, Stanford University, Stanford, CA, United States; 3 Applied Sciences Laboratory West, GE Healthcare, Menlo Park, CA, United States; 4 Psychology, Stanford University, Stanford, CA, United States

Artifact-Free T2* Mapping Without Post Hoc Corrections
Pippa Storey, Yvonne W. Lui, Dmitry S. Novikov
1 Radiology Department, New York University School of Medicine, New York, NY, United States

Fast Dynamic Measurements of T1 Relaxation Times: Influence and Correction of T2* Effects
Olaf Dietrich, Maximilian Freiermuth, Linus Willerdig, Michael Peller, Maximilian F. Reiser
1 Josef Lissner Laboratory for Biomedical Imaging, Institute for Clinical Radiology, LMU Ludwig Maximilian University of Munich, Munich, Germany; 2 Department of Internal Medicine III, LMU Ludwig Maximilian University of Munich, Munich, Germany

ΔB0 Correction for Myelin Water Fraction Imaging Based on Multi-Slice MGRE Acquisitions
Eva Alonso Ortiz, Ives R. Levesque, G. Bruce Pike
1 McConnell Brain Imaging Centre, Montreal Neurological Institute, McGill University, Montreal, Quebec, Canada; 2 Medical Physics Unit, Department of Oncology, McGill University, Montreal, Quebec, Canada; 3 Research Institute of the McGill University Health Centre, McGill University, Montreal, Quebec, Canada; 4 Department of Radiology and Hotchkiss Brain Institute, University of Calgary, Alberta, Canada

Encoding with Radiofrequency Spoiling, Equilibrium States and Inverse Problem for Parametric Mapping
Ludovic de Rochefort
1 IR4M (Imagerie par Résonance Magnétique Médicale et Multi-modalités), Univ. Paris-Sud, CNRS, UMR8081, Orsay, France

The Effect of Macroscopic Field Gradients on the Simultaneous Estimation of Reversible and Irreversible Transverse Relaxation Rates
Mukund Balasubramanian, Robert V. Mulkern
1 McConnell Brain Imaging Centre, Montreal Neurological Institute, McGill University, Montreal, Quebec, Canada; 2 Department of Radiology and Hotchkiss Brain Institute, University of Calgary, Alberta, Canada
Simultaneous Group-Wise Rigid Registration and Maximum Likelihood T₁ Estimation for T₁ Mapping
Gabriel Ramos-Llordén¹, Arnold J. den Dekker¹, ², Gwendolyn Van Steenkiste¹, Johan Van Audekerke², Marleen Verhoye³, Jan Sijbers¹
¹Institute for Biomedical Engineering, University and ETH Zurich, Zurich, Switzerland; ²Skope Magnetic Resonance Technologies LLC, Zurich, Switzerland

Let It Flow
Room 714 A/B 16:00-18:00 Moderators: Susanne Schnell, Ph.D. & T.B.A.

Correction of Background Phase Offsets in Phase-Contrast MRI Using Concurrent Magnetic Field Monitoring.
Daniel Giese², ³, Bertram Wilm², ³, Julia Busch², David Maintz², Christoph Barmer², ³, Klaas Pruessmann², Sebastian Kozerke²
¹Radiology, University Hospital Cologne, Cologne, Germany; ²Institute for Biomedical Engineering, University and ETH Zurich, Zurich, Switzerland; ³Skope Magnetic Resonance Technologies LLC, Zurich, Switzerland

Reproducibility of Phase-Contrast MRI in the Coronary Artery: Towards Noninvasive Pressure Gradient Measurement and Quantification of Fractional Flow Reserve
Zixin Deng¹, ², Yang Qi², Xiaoming Bi², Zhaoyang Fan³, Debiao Li¹, ²
¹Bioengineering, University of California, Los Angeles, Los Angeles, CA, United States; ²Biomedical Imaging Research Institute (BIRI), Cedars-Sinai Medical Center, Los Angeles, CA, United States; ³R&D, Siemens Healthcare, Los Angeles, CA, United States

Soft-Gated Accelerated Cartesian 4D Flow Imaging with Intrinsic Navigation
Joseph Y. Cheng¹, ², Marcus T. Alley¹, Tao Zhang¹, ², Peng Lat¹, Jonathan I. Tamir¹, Martin Uecker¹, John M. Pauly¹, Michael Lustig², Shreyas S. Vasanawala²
¹Electrical Engineering, Stanford University, Stanford, CA, United States; ²Radiology, Stanford University, Stanford, CA, United States; ³Global Applied Science Laboratory, GE Healthcare, Menlo Park, CA, United States; ⁴Electrical Engineering and Computer Sciences, University of California, Berkeley, CA, United States

Aortic Stiffness, Cardiac Energetic, Systolic and Diastolic Function in Healthy Ageing.
Jehill D. Parikh¹, Kieren G. Hollingsworth¹, Andrew M. Blamire¹, Guy MacGowan²
¹Newcastle Magnetic Resonance Centre, Newcastle University, Newcastle upon Tyne, Tyne and Wear, United Kingdom; ²Cardiology, Freeman Hospital, Newcastle Upon Tyne, Tyne and Wear, United Kingdom

3D Quantification of Vorticity and Helicity from 4D Flow Data Using Finite Element Interpolations
Julio Sotelo¹, ², Jesus Urbina¹, ³, Israel Valverde⁵, ³, Cristian Tejos¹, Pablo Irarrazaval¹, Daniel E. Hurtado², ⁶, Sergio Uribe¹, ³
¹Biomedical Imaging Center, Electrical Engineering Department, Pontificia Universidad Catolica de Chile, Santiago, RM, Chile; ²Structural and Geotechnical Engineering Department, Pontificia Universidad Catolica de Chile, Santiago, RM, Chile; ³Radiology Department, School of Medicine, Pontificia Universidad Catolica de Chile, Santiago, Chile; ⁴Pediatric Cardiology Unit, Hospital Virgen del Rocio, Seville, Spain; ⁵Cardiovascular Pathology Unit, Institute of Biomedicine of Seville (IBIS), Hospital Virgen del Rocio, Seville, Spain; ⁶Biomedical Engineering Group, Pontificia Universidad Catolica de Chile, Santiago, Chile

Reproducibility of Advanced Velocity and Wall Shear Stress Quantification Techniques Derived from 4D Flow MRI in the Pathological Aorta
Pim van Ooij¹, Wouter V. Potters¹, Jeremy D. Collins¹, James C. Carr², S Chris Malaisrie³, Patrick M. McCarthy⁴, Michael Mark², Alex J. Barker²
**Tuesday**

17:12 0455. 4D Flow Based Characterization of Aortic Morphometry and Flow Parameters: Impact of Age, Aortic Dilatation and Valve Morphology  
*Julio Garcia¹, Alex J Barker¹, Ian Murphy¹, Kelly B Jarvis¹, Alex L Powell¹, Susanne Schnell¹, Jeremy Collins¹, James Carr¹, S Chris Malaisrie², Michael Markl¹,³*

¹Radiology, Northwestern University, Chicago, IL, United States; ²Division of Cardiothoracic Surgery, Northwestern University, Evanston, IL, United States

17:24 0456. Longitudinal Monitoring of Hepatic Blood Flow in Patients with Portal Hypertension Before and After TIPS Implantation with 4D Flow MRI  
*Peter Bannas¹,², Alejandro Roldán-Alzate¹, Kevin M. Johnson¹, Michael A. Woods¹, Utaroh Motosugi¹, Oliver Wieben¹, Scott B. Reeder¹,³, Harald Kramer¹,²*

¹Radiology, University of Wisconsin-Madison, Madison, WI, United States; ²Radiology, University Medical Center Hamburg-Eppendorf, Hamburg, Germany; ³Medical Physics, University of Wisconsin-Madison, WI, United States; ⁴Radiology, Ludwig-Maximilians-University Hospital, Munich, Bavaria, Germany

17:36 0457. Quantitative Assessment of Splenic Hemodynamics at 4D Flow MRI in the Evaluation of Thrombocytopenia: A Pilot Study in Cirrhotic Patients with Portal Hypertension  
*Jeremy Douglas Collins¹, Jad Bou Ayache², Edouard Semaan³, Riad Salem³, James Christian Carr³, Michael Markl¹, Zoran Stankovic²*

¹Radiology, Northwestern University, Chicago, IL, United States; ²Radiology, Icahn School of Medicine at Mount Sinai, NY, United States; ³Northwestern University, IL, United States; ⁴Radiology, Northwestern University, IL, United States; ⁵Radiology, University Hospital, Freiberg, Germany

17:48 0458. Highly Accelerated Intracranial 4D Flow MRI with CIRCular Cartesian UnderSampling (CIRCUS)  
*Jing Liu¹, Farshid Faraji¹, Sarah Kefayati¹, Henrik Haraldsson¹, David Saloner²*

¹Radiology and Biomedical Imaging, University of California San Francisco, San Francisco, CA, United States; ²Radiology Service, VA Medical Center, San Francisco, CA, United States

**Renal/Adrenal/Male Pelvis MRI**

Room 716 A/B 16:00-18:00  
*Moderators: Rotem S. Lanzman, Ph.D. & Pottumarthi V. Prasad, Ph.D*

16:00 0459. Ferumoxytol Enhanced T₂⁻ Mapping for Combined Renal Oxygenation and Blood Volume Assessment at 9.4T  
*Andreas Pohlmann¹, Karen Arakelyan¹, Till Huelnghagen¹, Kathleen Cantow¹, Stefanie Kox¹, Yvonne Balke¹, Bert Flemming¹, Erdmann Seeliger², Thoralf Niendorf³*

¹Berlin Ultrahigh Field Facility, Max Delbrueck Center for Molecular Medicine, Berlin, Germany; ²Institute of Physiology and Center for Cardiovascular Research, Charite-Universitaetsmedizin Berlin, Berlin, Germany; ³Experimental and Clinical Research Center, Charite-Universitaetsmedizin Berlin, Berlin, Germany

16:12 0460. Detection of Macrophage-Based Inflammation Following Renal Ischemia Reperfusion Injuries Using Super-Paramagnetic Iron Oxide (SPIO) Nanoparticles in T2-Weighted MRI  
*B G. Hammond², J C. Montejano², J M. Poth², K M. Huber², M Stukova³, D Golovko³, N J. Serkova³*

¹University of Arizona College of Medicine - Phoenix, Phoenix, AZ, United States; ²University of Colorado Anschutz Medical Campus, Aurora, CO, United States; ³Good Samaritan Medical Center, MA, United States

16:24 0461. Relating Iodixanol-Induced Renal T₂⁻ Changes to Tissue PO₂ by Comparison with Near-Infrared Spectroscopy and Invasive Physiological Measurements  
*Andreas Pohlmann¹, Karen Arakelyan¹,², Dirk Grosenick³, Kathleen Cantow¹, Heidrun Wabnitz¹, Bert Flemming¹, Rainer Macdonald¹, Erdmann Seeliger², Thoralf Niendorf²,³*

¹Berlin Ultrahigh Field Facility, Max Delbrueck Center for Molecular Medicine, Berlin, Germany; ²Institute of Physiology and Center for Cardiovascular Research, Charite-Universitaetsmedizin Berlin, Berlin, Germany; ³Experimental and Clinical Research Center, Charite-Universitaetsmedizin Berlin, Berlin, Germany
Exact Solution

Dmitry S. Novikov, Ileaana O. Jelescu, Els Fieremans
1Center for Biomedical Imaging, Department of Radiology, NYU School of Medicine, New York, NY, United States; 2Center for Biomedical Imaging, Department of Radiology, NYU School of Medicine, New York, NY, United States

**Diffusion Biophysics & Microstructure**

**Moderators:** Silvia Capuani, Ph.D. & Dmitry Novikov, Ph.D.

**16:00 0469.** From Diffusion Signal Moments to Neurite Diffusivities, Volume Fraction and Orientation Distribution: An Exact Solution

Dmitry S. Novikov, Ileaana O. Jelescu, Els Fieremans
1Center for Biomedical Imaging, Department of Radiology, NYU School of Medicine, New York, NY, United States; 2Center for Biomedical Imaging, Department of Radiology, NYU School of Medicine, New York, NY, United States
Tuesday

16:12 0470. TractCaliber: Axon Diameter Estimation Across White Matter Tracts in the In Vivo Human Brain Using 300 MT/\textit{m} Gradients

Susie Y. Huang\textsuperscript{1}, Thomas Witzel\textsuperscript{1}, Qiuyun Fan\textsuperscript{1}, Jennifer A. McNab\textsuperscript{2}, Lawrence L. Wald\textsuperscript{1, 3}, Aapo Nummenmaa\textsuperscript{1}

\textsuperscript{1}Athinoula A. Martinos Center for Biomedical Imaging, Department of Radiology, Massachusetts General Hospital, Charlestown, MA, United States; \textsuperscript{2}Radiological Sciences Laboratory, Department of Radiology, Stanford University, Stanford, CA, United States; \textsuperscript{3}Harvard-MIT Division of Health Sciences and Technology, Massachusetts Institute of Technology, Cambridge, MA, United States

16:24 0471. Microstructural Information from Single-Pulsed-Field-Gradient and Angular Double-Pulsed-Field-Gradient NMR: From Model Systems to Nerves

Darya Morozov\textsuperscript{1}, Leah Bar\textsuperscript{2}, Nir Sochen\textsuperscript{1}, Yoram Cohen\textsuperscript{1}

\textsuperscript{1}The Raymond and Beverly Sackler Faculty of Exact Science, Tel-Aviv University, Tel-Aviv Yaffo, Israel

16:36 0472. Improving the Interpretation of Diffusional Kurtosis by Resolving Effects of Isotropic and Anisotropic Microstructures

Filip Szczepankiewicz\textsuperscript{1}, Danielle van Westen\textsuperscript{1, 2}, Jimmy Läät\textsuperscript{2}, Elisabet Engelund\textsuperscript{3}, Carl-Fredrik Westin\textsuperscript{4}, Freddy Ståhlberg\textsuperscript{1, 3}, Pia C. Sundgren\textsuperscript{2, 3}, Markus Nilsson\textsuperscript{3}

\textsuperscript{1}Dept. of Medical Radiation Physics, Lund University, Lund, Sweden; \textsuperscript{2}Imaging and Function, Skåne University Healthcare, Lund, Sweden; \textsuperscript{3}Dept. of Clinical Sciences, Lund University, Skåne University Healthcare, Lund, Sweden; \textsuperscript{4}Dept. of Radiology, Brigham and Women’s Hospital, Harvard Medical School, Boston, MA, United States; \textsuperscript{5}Lund University Bioimaging Center, Lund University, Lund, Sweden

16:48 0473. Localizing and Characterizing Single Fiber Populations Throughout the Brain

Chantal M.W. Taev\textsuperscript{1}, Dmitriy S. Novikov\textsuperscript{2}, Eleftherios Garyfallidis\textsuperscript{3}, Max A. Viergever\textsuperscript{2}, Maxime Descoteaux\textsuperscript{1}, Alexander Lemans\textsuperscript{1}

\textsuperscript{1}Image Sciences Institute, University Medical Center Utrecht, Utrecht, Netherlands; \textsuperscript{2}Center for Biomedical Imaging, New York University School of Medicine, New York, United States; \textsuperscript{3}Shebrooke Connectivity Imaging Lab, Université de Sherbrooke, Sherbrooke, Quebec, Canada

17:00 0474. Modelling Free Water in Diffusion MRI

Emmanuel Vallée\textsuperscript{1}, Gwenaëlle Dauaud\textsuperscript{1}, Andreas U. Monsch\textsuperscript{2}, Achim Gass\textsuperscript{3}, Wenchuan Wu\textsuperscript{1}, Stephen M. Smith\textsuperscript{1}, Saad Jbabdi\textsuperscript{1}

\textsuperscript{1}FMRIB, University of Oxford, Oxford, Oxfordshire, United Kingdom; \textsuperscript{2}Memory Clinic, University Center for Medicine of Aging Basel, Basel, Switzerland; \textsuperscript{3}Department of Neurology, University Hospital Mannheim, Heidelberg, Germany

17:12 0475. The Effect of White Matter Perfusion on Diffusion MRI Based Microstructural Tissue Models

Sjoerd B. Vos\textsuperscript{1}, Andrew Melbourne\textsuperscript{1}, Hui Zhang\textsuperscript{2}, John S. Duncan\textsuperscript{3}, Sebastien Ourselin\textsuperscript{1}

\textsuperscript{1}Translational Imaging Group, University College London, London, United Kingdom; \textsuperscript{2}Department of Clinical and Experimental Epilepsy, Institute of Neurology, University College London, London, United Kingdom; \textsuperscript{3}Harvard-MIT Division of Health Sciences and Technology, Massachusetts Institute of Technology, Cambridge, MA, United States

17:24 0476. Microscopic Diffusion Anisotropy Imaging: An Ex-Vivo Hypomyelination Mouse Study

Enrico Kaden\textsuperscript{1}, Nathaniel D. Kelm\textsuperscript{2}, Robert P. Carson\textsuperscript{2}, Mark D. Does\textsuperscript{2}, Daniel C. Alexander\textsuperscript{1}

\textsuperscript{1}Centre for Medical Image Computing, University College London, London, United Kingdom; \textsuperscript{2}Institute of Imaging Science, Nijmegen Medical Centre, Nijmegen, Netherlands; \textsuperscript{3}MIRA Institute for Biomedical Technology and Technical Medicine, Enschede, Netherlands

17:36 0477. Validation of NODDI Estimation of Dispersion Anisotropy in V1 of the Human Neocortex

Maira Tariq\textsuperscript{1}, Michiel Kleinnijenhuis\textsuperscript{1}, Anne-Marie van Cappellen van Walsum\textsuperscript{2, 3}, Hui Zhang\textsuperscript{1}

\textsuperscript{1}Department of Computer Science & Centre for Medical Image Computing, University College London, London, England, United Kingdom; \textsuperscript{2}FMRIB Centre, University of Oxford, Oxford, United Kingdom; \textsuperscript{3}Department of Anatomy, Radboud University, Nijmegen Medical Centre, Nijmegen, Netherlands; \textsuperscript{4}MIRA Institute for Biomedical Technology and Technical Medicine, Enschede, Netherlands

17:48 0478. Human In Vivo Myeloarchitecture Using Whole-Brain Diffusion MRI

Fernando Calamante\textsuperscript{1}, Ben Jeurissen\textsuperscript{2}, Robert Elton Smith\textsuperscript{1}, Jacques-Donald Tournier\textsuperscript{3, 4}, Alan Connelly\textsuperscript{1}

\textsuperscript{1}Dept. of Medical Radiation Physics, Lund University, Lund, Sweden; \textsuperscript{2}Imaging and Function, Skåne University Healthcare, Lund, Sweden; \textsuperscript{3}Dept. of Radiology, Brigham and Women’s Hospital, Harvard Medical School, Boston, MA, United States; \textsuperscript{4}Lund University Bioimaging Center, Lund University, Lund, Sweden
Brain Tumor Imaging - Focus on PET-MRI

Moderators: N. Jon Shah, Ph.D. & Greg Zaharchuk, M.D., Ph.D.

16:00 0479. Combined Functional and Metabolic Assessment of Brain Tumors Using Hybrid MR-PET Imaging
Beatrice Saccò1, Roy Raad2, Joon Lee3, Howard Fine4, John Golfinos4, Girish Manokar Fatterpekar6, Fernando Boada1, Kent Friedman5, James Babb1, Rajan Jain1
1Radiological, Oncological and Anatomopathological Sciences, Sapienza University of Rome, Policlinico Umberto I, Rome, Italy; 2Radiology, NYU School of medicine, New York, United States; 3Radiology, NYU School of Medicine, New York, United States; 4Neuro-oncology, NYU Langone Medical Center, New York, United States; 5Neurosurgery, NYU Langone Medical Center, New York, United States; 6Neurology, NYU Langone Medical Center, New York, United States

16:12 0480. Multimodal MR/PET Imaging for Characterization of Hypoxia in Human Glioblastoma
Christine Preibisch1, Mathias Lukas1, Anne Kluge1, Severin Keinath1, Vivien Töth1, Kuangyu Shi1, Thomas Pyka2, Stefan Förster3
1Department of Neuroradiology, Klinikum rechts der Isar der TU München, Munich, Germany; 2Clinic for Neurology, Klinikum rechts der Isar der TU München, Munich, Germany; 3Department of Nuclear Medicine, Klinikum rechts der Isar der TU München, Munich, Germany

16:24 0481. Neuroimaging Based (PET and MR) Measurements of Cerebral Oxygen Extraction Fraction (OEF) in Patients with Brain Tumors
Parinaz Massoumzadeh1, Safa Najmi1, Jonathan McConathy1, Andrei Vlassenko1, An Hongyu3, Yi Su1, Daniel Marcus1, Stefan Förster3
1Institute of Neuroscience and Medicine - 4, Forschungszentrum Jülich, Jülich, Germany; 2Centre for the Developing Brain, King’s College London, London, United Kingdom; 3Department of Physics, University of Antwerp, Belgium

Nuno André da Silva1, Liliana Lourenco Caldeira1, Jörg Mauler1, Hans Herzog1, N Jon Shah1, 2
1Institute of Neuroscience and Medicine - 4, Forschungszentrum Jülich, Jülich, Germany; 2JARA - Faculty of Medicine, RWTH Aachen University, Aachen, Germany

16:48 0483. Comparison of DTI and 11C-Methionine PET for Reliable Prediction of Tumor Cell Density in Gliomas
Manabu Kinoshita1, Hideyuki Arita2, Yoshiyuki Watanabe2, Jun Hatazawa1, Naoya Hashimoto2, Toshiki Yoshimine2
1Neurosurgery, Osaka Medical Center for Cancer and Cardiovascular Diseases, Osaka, Japan; 2Neurosurgery, Osaka University Graduate School of Medicine, Suita, Osaka, Japan

17:00 0484. pH-Weighted Molecular MRI in Brain Tumors
Benjamin M. Ellingson1, 2, Robert J. Harris2, William H. Yong3, Whitney Pope3, Debiao Li4, Linda M. Liao5, Timothy F. Cloughesy2
1Radiology, UCLA, Los Angeles, CA, United States; 2Psychiatry & Biobehavioral Sciences, UCLA, CA, United States; 3Radiology, UCLA, CA, United States; 4Pathology, UCLA, CA, United States; 5Biomedical Sciences and Imaging, Cedars-Sinai Medical Center, CA, United States; 6Neurosurgery, UCLA, CA, United States; 7Neurology, UCLA, CA, United States

17:12 0485. Applying a Length and Offset Varied Saturation (LOVARS) CEST Method for Imaging Cerebral Glioma
Xiaolei Song1, Yan Bai2, Erning Zhang1, Xiaowei He1, Panli Zuo3, Daopeng Shi4, Michael T. McMahon3, Benjamin Schmitt3, Meiyun Wang2
1The Russell H. Morgan Department of Radiology and Radiological Science, The Johns Hopkins University, Baltimore, MD, United States; 2Department of Radiology, Henan Provincial People’s Hospital, Zhengzhou, Henan, China; 3School of Information Sciences and Technology, Northwestern University, Xian, Shaanxi, China; 4MR Collaborations NE Asia, Siemens Healthcare, Beijing, China; 5Healthcare Sector, Siemens Ltd Australia, Macquarie Park, Australia
17:24 0486. The Role of Preoperative Functional MRI in Brain Tumour Resection by Awake Craniotomy: Initial Experience in 20 Glioma Patients

Melanie Morrison¹, ², Laleh Golestanirad³, ⁴, Fred Tam⁵, Gregory Hare⁵, ⁶, Marco Garavaglia⁶, Simon Graham¹, ², Sunit Das⁷, ⁷

¹Physical Sciences, Sunnybrook Research Institute, Toronto, Ontario, Canada; ²Medical Biophysics, University of Toronto, Toronto, Ontario, Canada; ³Martinos Center for Biomedical Imaging, Harvard Medical School, Charlestown, MA, United States; ⁴Medical Biophysics, University of Toronto, Toronto, Ontario, Canada; ⁵Keenan Research Centre, St. Michael's Hospital, Toronto, Ontario, Canada; ⁶Department of Anesthesiology, St. Michael's Hospital, Toronto, Ontario, Canada; ⁷Division of Neurosurgery, St. Michael's Hospital, Toronto, Ontario, Canada


Kathleen M. Schmidera¹, Melissa Prath², Leslie C. Baxter³, Eric S. Paulson³, Sharmeena Maze¹, James Pipe¹, Dingui Wang¹, Josef Debbins², Leland Hu³

¹Radiology, Medical College of Wisconsin, Milwaukee, WI, United States; ²Radiology, Medical College of Wisconsin, WI, United States; ³Barrow Neurological Institute, Phoenix, AZ, United States; ⁴Mayo Clinic, Scottsdale, AZ, United States

17:48 0488. Time-Shift Resting-State Functional Connectivity MRI in Supratentorial Glioma, a Preliminary Study

Jianrui Li¹, Qiang Xu², Zhiqiang Zhang², Guangming Lu¹

¹Medical Imaging, Jingling Hospital, School of Medicine, Nanjing University, Nanjing, Jiangsu, China; ²Medical Imaging, Jingling Hospital, School of Medicine, Nanjing, Jiangsu, China

System Monitoring & Correction
Room 718 A 16:00-18:00 Moderators: Seung-Kyun Lee, Ph.D. & Maxim Zaitsev, Ph.D.

16:00 0489. Motion-Inseensitive Sequence for Single-Voxel Determination of B1+ by Bloch-Siegert Shift in Moving Organs Including the Human Heart

Ayse Sila Dokumaci¹, Bertrand Pouymayou¹, Roland Kreis¹, Chris Boesch¹

¹Depts. Radiology and Clinical Research, University Bern, Bern, Switzerland

16:12 0490. Large Dynamic Range Relative B1+ Mapping

Francesco Padormo¹, Aaron T. Hess², Paul Aljabar³, Peter Jezzard³, Matthew D. Robson², Joseph V. Hajnal³, ⁴, Peter J. Koopmans³

¹Division of Imaging Sciences and Biomedical Engineering, King's College London, London, United Kingdom; ²Department of Cardiovascular Medicine, University of Oxford, Oxford, United Kingdom; ³FMRIB Centre, Nuffield Department of Clinical Neurosciences, University of Oxford, Oxford, United Kingdom; ⁴Centre for the Developing Brain, King's College London, London, United Kingdom

16:24 0491. Rapid MRI System Calibration Using 3DREAM

Daniel Brenner¹, Rüdiger Strimbarg, Eberhard Daniel Pracht¹, Tony Stöcker¹; ²

¹German Center for Neurodegenerative Diseases (DZNE), Bonn, Germany; ²Department of Physics and Astronomy, University of Bonn, Bonn, Germany

16:36 0492. Validation of Variable Flip Angle Imaging-Based Simultaneous B1+ and T1 Mapping in the Prostate at 3T

Novena A. Rangwalla¹, Isabel M. Dregely², Holden H. Wu³, Kyoungyun Sung³

¹Department of Radiological Sciences, University of California Los Angeles, Los Angeles, CA, United States

16:48 0493. Direct Calculation of B1+ and B1- from Two Point Variable Flip Angle Data for Quantitative T1 and PD Mapping

Simon Baudrexel¹, ², Ulrike Noeth⁵, Sarah Reitz¹, ², Johannes Christian Klein¹, ², Ralf Deichmann²

¹Department of Neurology, Goethe University Frankfurt, Frankfurt am Main, Germany; ²Brain Imaging Center (BIC), Goethe University Frankfurt, Frankfurt am Main, Germany

17:00 0494. B0 Changes Around the Head Induced by the Cardiac Cycle at 7T

Lennart J. Geurts¹, Vincent O. Boer¹, Tijl A. van der Velden¹, Peter R. Luijten¹, Dennis W.J. Klomp¹, Jaco J.M. Zwanenburg¹
1:49. Investigating the Potential of Highly Accelerated FatNavs for Dynamic Shimming
Frédéric Grestch1, José P. Marques2, Rolf Gruetter1, 3, Daniel Gallichan1
1CIBM, EPFL, Lausanne, Vaud, Switzerland; 2Dept. of Radiology, University of Lausanne, Vaud, Switzerland; 3Depts. of Radiology, Universities of Lausanne and Geneva, Vaud, Switzerland

Holger Eggers1, Tim Leiner2
1Philips Research, Hamburg, Germany; 2Department of Radiology, University Medical Center Utrecht, Utrecht, Netherlands

1:36. Fast B1 Inhomogeneity Correction in BSSFP Imaging Using Transient-State Signal
Min-Oh Kim1, Dong-Hyun Kim1
1Electrical and electronic engineering, Yonsei University, Seoul, Korea

1:48. Respiration Induced B0 Variation in Double Echo Steady State Imaging (DESS) in the Breast
Catherine J. Moran1, Kristin L. Granlund2, Bragi Sveinsson,1,2, Marcus T. Alley1, Bruce L. Daniel1, Brian A. Hargreaves1
1Radiology, Stanford University, Stanford, CA, United States; 2Electrical Engineering, Stanford University, Stanford, CA, United States

Combined Educational & Scientific Session
UTE & Zero TE Imaging Techniques & Applications
Organizers: Eric Y. Chang, M.D., Garry E. Gold, M.D., Richard Kijowski, M.D., William B. Morrison, M.D., Ravinder R. Regatte, Ph.D. & Siegfried Trautting, M.D.
Room 718 B 16:00-18:00 Moderators: Jutta Ellermann, M.D., Ph.D. & Felix W. Wehrli, Ph.D.

16:00. Quantitative UTE Techniques
Neal K. Bangerter

16:30. Clinical Applications
Graeme M. Bydder

17:00. Performance of Bi-Component T2* Fitting of Bound and Pore Bone Water Fractions Is Dependent on Field Strength
Alan C. Seifert1, Suzanne L. Wehrli2, Felix W. Wehrli1
1University of Pennsylvania, Philadelphia, PA, United States; 2Children's Hospital of Philadelphia, Philadelphia, PA, United States

17:12. Assessment of Cortical Porosity at 11.7 T and Its Correlation with µCT Porosity and Biomechanics
Robert Nikolov1, Jun Chen1, Won Bae1, Reni Biswas1, Robert Healey1, Eric Chang1, 2, Christine Chung1, 2, Graeme Bydder1, Jiang Du1
1Radiology, University of California, San Diego, San Diego, CA, United States; 2Radiology, VA San Diego Healthcare System, La Jolla, CA, United States

17:24. Actual Flip Angle Imaging to Improve T1 Measurement for Short T2 Tissues
Misung Han1, Peder EZ Larson1, Roland Krug1, Viola Rieke1
1Radiology and Biomedical Imaging, University of California, San Francisco, San Francisco, CA, United States

17:36. 18F-FDG and 18F-NaF PET/MR Imaging of Osteoarthritis in the Knee: Considerations and Initial Results
Feliks Kogan1, Audrey Fan1, Sloane Brazina1, Dawn Holley1, Andrew Quon1, Garry Gold1
1Department of Radiology, Stanford University, Stanford, CA, United States

17:48. Imaging of Grafted Mesenchymal Stem Cells in Bone Tissue
Sergey Magnitsky1, Geetha Mohan1, Curtis Corum2, Djaudat Idiyatullin1, Nancy Lane1, Sharmila Majumdar1
Tuesday

18:00 Adjournment & Meet the Teachers

Educational Course
MR Physics & Techniques for Clinicians
Organizers: Marcus T. Alley, Ph.D., Michael Markl, Ph.D., Brian Hargraves, Ph.D., & Nicole Seiberlich, Ph.D.
Room 801 A/B 16:00-18:00 Moderators: Brian A. Hargreaves, Ph.D. & Michael Markl, Ph.D.
16:00 Spin Echo Imaging
Pauline W. Worters

17:00 Gradient Echo Imaging
Oliver Bieri

18:00 Adjournment & Meet the Teachers

Bronze Corporate Symposium
Bracco Bronze Corporate Evening Symposium
Room 701 A 18:30-20:30

Sunrise Educational Course
Addressing Clinical Challenges in the Body with MRI
Organizers: Lorenzo Mannelli, M.D., Ph.D., Ivan Pedrosa, M.D., Scott B. Reeder, M.D., Ph.D. & Edwin J.R. van Beek, M.D., Ph.D., M.Ed., FRCR
Room 701 A 07:00-07:50 Moderators: Alex Kagen, M.D. & Takeshi Yokoo, M.D., Ph.D.
Update on Contrast Agents for Body Imaging
07:00 Hepatobiliary Contrast Agents
Utaroh Motosugi

07:25 Intravascular
Tim Leiner

07:50 Adjournment & Meet the Teachers

Sunrise Educational Course
How Can MRI of Mouse Models Provide Value for Cancer Studies?
Organizers: Chris A. Flask, Ph.D., Kristine Glunde, Ph.D. & Mark D. Pagel, Ph.D.
Constitution Hall 107 07:00-07:50 Moderators: Wen Li, Ph.D. & Matthew Merritt, Ph.D.
07:00 How Can MRI of Mouse Models Provide Value for Cardiovascular Studies?
Xin Yu

07:25 How Can MRI of Mouse Models Provide Value for Cardiovascular Studies?
Frederick H. Epstein

07:50 Adjournment & Meet the Teachers

Sunrise Educational Course
4D-flow: Ready for Primetime?
Organizers: Daniel B. Ennis, Ph.D. & Harald Kramer, M.D.
Room 714 A/B 07:00-07:50 Moderators: Kevin M. Johnson, Ph.D. & Harald Kramer, M.D.
07:00 4D-Flow: How We Acquire It?
Marcus T. Alley
07:16        4D-Flow: How We Process It?
             Michael Markl

07:32        4D-Flow: How It Benefits Patients?
             Scott B. Reeder

07:50        Adjournment & Meet the Teachers

Sunrise Educational Course
UTE: Applications & Advances
Organizers: Neal K. Bangerter, Ph.D.
Room 716 A/B 07:00-07:50
Moderators: Neal K. Bangerter, Ph.D. & Matthew D. Robson, Ph.D.

07:00        Neurological Applications of UTE
             Peder E. Z. Larson

07:25        Pulmonary UTE
             Scott K. Nagle1
             1University of Wisconsin

07:50        Adjournment & Meet the Teachers

Sunrise Educational Course
Contrast by Body Part: How & Why?
Organizers: Brian A. Hargreaves, Ph.D. & Manojkumar Saranathan, Ph.D.
Room 718 A 07:00-07:50
Moderators: Holden H. Wu, Ph.D. & Katherine L. Wright, Ph.D.

07:00        Cardiac Imaging Sequences: How & Why?
             Reza Nezafat

07:25        Body Sequences: How & Why?
             Philip M. Young

07:50        Adjournment & Meet the Teachers

Sunrise Educational Course
Brain Networks
Organizers: James J. Pekar, Ph.D., & Jonathan R. Polimeni, Ph.D.
Room 718 B 07:00-07:50
Moderators: Catherine E. Chang, Ph.D. & James J. Pekar, Ph.D.

07:00        Structure-Function Relationships in Brain Networks
             Patric Hagmann

07:25        Group & Population-Level Analysis: Big Data
             Bertrand Thirion

07:50        Adjournment & Meet the Teachers

Sunrise Educational Course
Quantitative Musculoskeletal Imaging: Structure & Function- Muscle Structure & Functional Imaging
Organizers: Eric Y. Chang, M.D., Garry E. Gold, M.D., Richard Kijowski, M.D., William B. Morrison, M.D., Ravinder R. Regatte, Ph.D. & Siegfried Trattnig, M.D.
Room 801 A/B 07:00-07:50
Moderators: Eric Y. Chang, M.D. & Siegfried Trattnig, M.D.

Muscle Structure & Functional Imaging
**Wednesday**

07:00  
**Muscle Structure Including Elastography**  
*Neil Roberts*

07:25  
**Functional Imaging Including MRS, BOLD, Dynamic Imaging**  
*Michael D. Noseworthy*

07:50  
Adjournment & Meet the Teachers

**Sunrise Educational Course**

**Neuroimaging: Dementia**  
*Organizers:* Jonathan H. Gillard, M.D., FRCR, MBA & Howard A Rowley, M.D.  
*Room 701 B*  
07:00-07:50  
*Moderators:* Jonathan H. Gillard, M.D., FRCR, MBA & John D. Port, M.D., Ph.D.

07:00  
**Dementia Imaging: What the Clinician Needs to Know**  
*Sandra E. Black*

07:25  
**Multiparametric MR in Aging & Dementia**  
*Konstantinos Arfanakis*

07:50  
Adjournment & Meet the Teachers

**Sunrise Educational Course**

**Nuts & Bolts of Advanced Imaging**  
*Organizers:* Alexey Samsonov, Ph.D., N. Jon Shah, Ph.D. & Jeffrey Tsao, Ph.D., M.B.A.  
*John Bassett Theatre 102*  
07:00-07:50  
*Moderators:* Christopher M. Collins, Ph.D. & William A. Grissom, Ph.D.

Review/Demo of Available Excitation Software  
07:00  
**Coils, RF Shimming & SAR**  
*Tamer S. Ibrahim*

07:25  
**Parallel Transmit Pulse Design**  
*William A. Grissom*

07:50  
Adjournment & Meet the Teachers

**Plenary Session**

**Doing More With Less**  
*Organizers:* Christopher M. Collins, Ph.D. & Xiaohong Joe Zhou, Ph.D., D.A.B.R.  
*Plenary Hall FG*  
08:10-09:30  
*Moderators:* Christopher M. Collins, Ph.D. & Xiaohong Joe Zhou, Ph.D., D.A.B.R.

08:10  
**0504. Emerging Challenges Faced by the MR Community**  
*Michael T. Modic*

08:30  
**0505. MRI Services in Resource Limited, Underserved Population**  
*Pek-Lan Khong*

08:50  
**0506. Using Technology to Do More with Less**  
*John M. Pauly*

09:10  
**NIBIB Lecture: “Disordered Mind”: Are We in an Era of “Psycho-Radiology”***  
*Qiyong Gong*

09:30  
Adjournment
Wednesday

Traditional Poster Session: Molecular Imaging
Exhibition Hall 10:00-12:00 (no CME credit)

Traditional Poster Session: Spectroscopy
Exhibition Hall 10:00-12:00 (no CME credit)

Traditional Poster Session: fMRI
Exhibition Hall 10:00-12:00 (no CME credit)

Electronic Poster Session: Body
Exhibition Hall 10:00-12:00 (no CME credit)

Electronic Poster Session: Interventional
Exhibition Hall 10:00-12:00 (no CME credit)

Study Group Session
MR Elastography (MRE)
Reception Hall 104 BCD 10:00-12:00 (no CME credit)

Study Group Session
Hyperpolarized Media, Hyperpolarization Methods & Equipment
Constitution Hall 105 10:00-12:00 (no CME credit)

Power Pitch Session: Neuro Power Pitches
Power Pitch Theatre, Exhibition Hall 10:00-11:00 (no CME credit)
Moderators: Bruce R. Rosen, M.D., Ph.D. & Samantha J. Holdsworth, Ph.D.

0507. MR Imaging of Crocodilians Can Help for Brain Volume Estimation of Some Extinct Vertebrates
Daniel Jirak1, Jiri Janacek2, Martin Kundrat. 21
1IKEM, Prague, Czech Republic; 2Institute of Physiology, Academy of Sciences of the Czech Republic, Prague, Czech Republic; 2Evolutionary Biology Centre, Uppsala University, Uppsala, Sweden

Here we provide a new approach for assessment of encephalic volume of some extinct vertebrates. We used crocodilians as a... spatial configuration for development of the central nervous system during the evolution of gigantism in tyrannosaurs.

0508. Improved FDG Kinetic Analysis in Brain Tumors Through Simultaneous MR/PET Acquisition
Anne-Kristin Vahle1, 2, Harikrishna Rallapalli1, 3, Artem Mikheev1, 3, Thomas Koesters1, 3, Kai Tobias Block1, 3, Jean Logan1, 2, Timothy Shepherd1, 2, Girish Fatterpekar1, 2, David Faul1, Fernando Emilio Boada1, 2
1Center for Advanced Imaging Innovation and Research, Dept. of Radiology, New York University School of Medicine, New York, NY, United States; 2Center for Biomedical Imaging, Dept. of Radiology, New York University School of Medicine, New York, NY, United States; 3Siemens Healthcare, New York, NY, United States

The goal of the study was to investigate the use of high-resolution, MR-derived arterial input functions (AIFs) for... suggest that concurrent dynamic MR/PET acquisition could provide more accurate tracer kinetic parameter estimation.

0509. White Matter Tract Integrity, Amyloid Burden and Structural Atrophy in Normal Aging and Mild Cognitive Impairment: A PET-MRI Study
Ileana O. Jelescu1, Timothy M. Shepherd1, Dmitry S. Novikov1, Yu-Shin Ding1, Thomas Koesters1, Kent P. Friedman1, Jacqueline Smith1, James E. Galvin1, Els Fieremans1
1Center for Biomedical Imaging, Dept. of Radiology, NYU Langone Medical Center, New York, United States; 2Alzheimer Disease Center, Depts. of Neurology, Psychiatry and Population Health, NYU Langone Medical Center, New York, United States

Along with cortical abnormalities, white matter (WM) microstructural changes are involved in the pathogenesis of AD. We... of changes (i.e. whether the earliest changes take place in the cortex, in the WM or in sub-cortical structures).

0510. Magnetization Prepared ZTE to Address Multiple Diagnostic Contrasts
Peter Börnert1, 2, Jan Groen3, Jouke Smink1, Kay Nehrke3
1Philips Research, Hamburg, Germany; 2Radiology, LUMC, Leiden, Netherlands; 3Philips Healthcare, Best, Netherlands

0507. MR Imaging of Crocodilians Can Help for Brain Volume Estimation of Some Extinct Vertebrates
Daniel Jirak1, Jiri Janacek2, Martin Kundrat, 21
1IKEM, Prague, Czech Republic; 2Institute of Physiology, Academy of Sciences of the Czech Republic, Prague, Czech Republic; 2Evolutionary Biology Centre, Uppsala University, Uppsala, Sweden

Here we provide a new approach for assessment of encephalic volume of some extinct vertebrates. We used crocodilians as a... spatial configuration for development of the central nervous system during the evolution of gigantism in tyrannosaurs.

0508. Improved FDG Kinetic Analysis in Brain Tumors Through Simultaneous MR/PET Acquisition
Anne-Kristin Vahle1, 2, Harikrishna Rallapalli1, 3, Artem Mikheev1, 3, Thomas Koesters1, 3, Kai Tobias Block1, 3, Jean Logan1, 2, Timothy Shepherd1, 2, Girish Fatterpekar1, 2, David Faul1, Fernando Emilio Boada1, 2
1Center for Advanced Imaging Innovation and Research, Dept. of Radiology, New York University School of Medicine, New York, NY, United States; 2Center for Biomedical Imaging, Dept. of Radiology, New York University School of Medicine, New York, NY, United States; 3Siemens Healthcare, New York, NY, United States

The goal of the study was to investigate the use of high-resolution, MR-derived arterial input functions (AIFs) for... suggest that concurrent dynamic MR/PET acquisition could provide more accurate tracer kinetic parameter estimation.

0509. White Matter Tract Integrity, Amyloid Burden and Structural Atrophy in Normal Aging and Mild Cognitive Impairment: A PET-MRI Study
Ileana O. Jelescu1, Timothy M. Shepherd1, Dmitry S. Novikov1, Yu-Shin Ding1, Thomas Koesters1, Kent P. Friedman1, Jacqueline Smith1, James E. Galvin1, Els Fieremans1
1Center for Biomedical Imaging, Dept. of Radiology, NYU Langone Medical Center, New York, United States; 2Alzheimer Disease Center, Depts. of Neurology, Psychiatry and Population Health, NYU Langone Medical Center, New York, United States

Along with cortical abnormalities, white matter (WM) microstructural changes are involved in the pathogenesis of AD. We... of changes (i.e. whether the earliest changes take place in the cortex, in the WM or in sub-cortical structures).

0510. Magnetization Prepared ZTE to Address Multiple Diagnostic Contrasts
Peter Börnert1, 2, Jan Groen3, Jouke Smink1, Kay Nehrke3
1Philips Research, Hamburg, Germany; 2Radiology, LUMC, Leiden, Netherlands; 3Philips Healthcare, Best, Netherlands

93
0511. Ultrashort Echo Time (UTE) Imaging of Myelin: T2* Analysis
Vipul R. Sheth1, Hongda Shao1, Jun Chen1, Jody Corey-Bloom1, Graeme M. Bydder2, Jiang Du1
1Radiology, University of California, San Diego, CA, United States; 2Neurosciences, University of California, San Diego, CA, United States

0512. Effects of Real-Time fMRI Neurofeedback of the Amygdala Specific to Major Depressive Disorder
Vadim Zotev1, Kymberly D. Young1, Raquel Phillipps2, Masaya Misaki1, Jerzy Bodurka1, 2
1Laureate Institute for Brain Research, Tulsa, OK, United States; 2Department of Psychiatry, University of Oklahoma, Tulsa, OK, United States

0513. Reduced Connectivity in 7-Year-Old Preterm Brain Networks Relates to Adverse Perinatal Events, Cognitive and Motor Impairment
Deanne Thompson1, 2, Jian Chen1, Richard Beare1, Christopher Adamson1, Zohra Ahmadzai1, Claire Kelly1, Terrie Inder1, Lex Doyle1, 2, Marc Seal1, Peter Anderson1, 3
1Murdoch Childrens Research Institute, Parkville, Victoria, Australia; 2Flinders Institute of Neuroscience and Mental Health, Parkville, Victoria, Australia; 3Brigham and Women's Hospital, Massachusetts, United States; 4Royal Women's Hospital, Parkville, Victoria, Australia; 5Paediatrics, University of Melbourne, Parkville, Victoria, Australia

0514. Effect of Repetitive Transcranial Magnetic Stimulation on fMRI Resting-State Connectivity in Multiple System Atrophy
Ying-hui Chou1, Hui You1, Han Wang2, Yan-Ping Zhao2, Bo Hou2, Nan-kuai Chen1, Feng Feng2
1Duke Brain Imaging and Analysis Center, Durham, NC, United States; 2Peking Union Medical College Hospital, Beijing, China

0515. In-Vivo Evidence of Transcranial Direct Current Stimulation (TDCS) Induced Magnetic-Field Changes in Human Brain Revealed by MRI
Mayank V. Jug1, Robert Smith2, Kay Jann3, Walter Dunn1, Allan Wu2, Danny JJ Wang2
1Biomedical Engineering, University of California Los Angeles, Los Angeles, CA, United States; 2Neurology, University of California Los Angeles, Los Angeles, CA, United States; 3Psychiatry, University of California Los Angeles, Los Angeles, CA, United States

0516. Functional Consequences of Neurite Orientation Dispersion and Density in Humans Across the Adult Lifespan
Arash Nazeri1, 2, M. Mallar Chakravarty3, 4, David J. Rotenberg1, Tarek K. Rajji1, Yogesh Rathi5, Oleg V. Michailovich3, Aristotle N. Voinakes2
1Centre for Addiction and Mental Health, Toronto, ON, Canada; 2Department of Psychiatry, University of Toronto, Toronto, ON, Canada; 3Department of Psychiatry, McGill University, Montreal, QC, Canada; 4Cerebral Imaging Centre, Douglas Institute, Verdun, QC, Canada; 5Laboratory of Mathematics in Imaging, Harvard Medical School, Boston, MA, United States; 6Department of Electrical and Computer Engineering, University of Waterloo, Waterloo, ON, Canada

0517. Aneurysm Wall Permeability as a Measure of Rupture Risk and Bleb Formation
Charles G. Cantrell2, Parmede Vakil1, Sameer A. Ansari1, Timothy J. Carroll2
1Biomedical Engineering, Northwestern University, Chicago, IL, United States; 2Radiology, Northwestern University, Chicago, IL, United States

0518. Intracranial Atherosclerotic Lesion Characteristics Correlate with Cerebrovascular Lesion Load After TIA or Ischemic Stroke: A 7.0 Tesla MRI Study
Nikki Dieleman1, Anja G. van der Kolk1, Jaco J.M. Zwanenburg2, 3, Manon Brundel3, Anita A. Harteveld1, Geert Jan Biessels3, Fredy Visser4, 2, Peter R. Luijten1, Jeroen Hendriks2
1Radiology, University Medical Center Utrecht, Utrecht, Netherlands; 2Image Science Institute, University Medical Center Utrecht, Utrecht, Netherlands; 3Neurology, University Medical Center Utrecht, Utrecht, Netherlands; 4Philips, Best, Netherlands

0519. Characterization of Rat Spinal Cord Vasoreactivity Using Arterial Spins Labelling at 9.4 T
Mohamed Tachrount1, Andrew Davie2, Roshni Desai2, Kenneth Smith1, David Thomas1, Xavier Golay1
1UCL Institute of Neurology, London, United Kingdom; 2Department of Neuroinflammation, UCL Institute of Neurology, London, United Kingdom
0520. Diffusion Tensor Imaging and Magnitization Transfer Parameters Correlate with the White Matter Pathology in Mild Traumatic Brain Injury

Tsang-Wei Tu1, Rashida A. Williams2, Jacob D. Lescher2, L. Christine Turtzo2, Joseph A. Frank2
1Radiology and Imaging Sciences, National Institutes of Health, Bethesda, MD - Maryland, United States; 2Radiology and Imaging Sciences, National Institutes of Health, MD, United States

0521. In Vivo Evaluation of Ocular Physiology and Structural Integrity of the Optic Nerve Upon Whole Eye Transplantation Using Gadolinium-Enhanced MRI and Diffusion Tensor Imaging

Yolandi van der Merwe1, 2, Leon C. Ho1, 2, Yang Li1, Maxine R. Miller3, Chiaki Komatsu4, Hongkun Wang4, Michael B. Siekette5, Seong-Gi Kim1, 6, Joel S. Schuman, 22, Xia M. Washington1, 2, Kevin C. Chan1, 2, the WET Consortium2
1Neuroimaging Laboratory, University of Pittsburgh, Pittsburgh, PA, United States; 2Department of Bioengineering, University of Pittsburgh, Pittsburgh, PA, United States; 3Department of Electrical and Electronic Engineering, The University of Hong Kong, Pokfulam, Hong Kong, China; 4Department of Plastic and Reconstructive Surgery, University of Pittsburgh, PA, United States; 5Department of Ophthalmology, University of Pittsburgh, Pittsburgh, PA, United States; 6Center for Neuroscience Imaging Research, Institute for Basic Science, Sungkyunkwan University, Suwon, Korea

Cancer Preclinical: Cells & Animals

Room 701 A 10:00-12:00  Moderators: Kristine Glunde, Ph.D. & Sabrina M. Ronen, Ph.D.

10:00 0522. Metabolic Signatures of Colorectal Cancer in Biofluids: NMR-Based Metabolomics of Fecal Extracts

Yan Lin1, Changchun Ma2, Zhiwei Shen1, Zhening Wang1, Renhua Wu1
1Radiology Department, Second Affiliated Hospital, Shantou University Medical College, Shantou City, Guangdong Province, China; 2Radiation Oncology, Cancer Hospital, Shantou University Medical College, Guangdong Province, China

10:12 0523. Ethanolamine Kinase-1 Is the Major Contributor to Phosphoethanolamine Levels in Breast Cancer Cells

Tariq Shah1, Balaji Krishnamachary1, Flonne Wildes1, Jannie Wijnen1, Kristine Glunde1, Zaver M. Bhujwalla2
1Division of Cancer Imaging Research, Johns Hopkins University, Baltimore, MD, United States; 2University Medical Centre Utrecht, Cancer center, Utrecht, Netherlands

10:24 0524. A Theranostic Probe to Image Choline Kinase Expression and Inhibition in a Breast Cancer Model

Sean P. Arlauckas1, Manoj Kumar1, Anatoliy V. Popov1, Harish Poptani1, Edward J. Delikatny1
1Department of Radiology, University of Pennsylvania, Philadelphia, PA, United States

10:36 0525. TMPRSS2:ERG Gene Fusion and ERG Overexpression in Human Prostate Cancer Are Associated with Changed Metabolism

Ailin Falkmo Hansen1, Elise Sandmark1, Morten Beck Rye1, Alan Wright2, Helena Bertilsson, 25, Anna M. Bofin2, Anders Angelsen1, Tor Hartung1, Maya-Gretchen1, May-Britt Tessem1, 3
1Department of Circulation and Medical Imaging, Norwegian University of Science and Technology (NTNU), Trondheim, Norway; 2Department of Cancer Research and Molecular Medicine, Norwegian University of Science and Technology (NTNU), Trondheim, Norway; 3St. Olav Hospital, Trondheim, Norway; 4Department of Laboratory Medicine, Children's and Women's Health, Norwegian University of Science and Technology (NTNU), Trondheim, Norway

10:48 0526. Reduced Production of Hyperpolarized 5-13C-Glutamate Is Associated with the IDH1 Mutation

Jose Luis Izquierdo Garcia1, Pavithra Luvsan1, Pia Eriksson1, Marina Radioul1, Larry Cai1, Myriam M. Chaumeil1, Russell O. Pieper2, Joanna J. Phillips2, Sabrina M. Ronen1
1University California San Francisco, San Francisco, CA, United States; 2Department of Neurological Surgery, Helen Diller Research Center, University California San Francisco, San Francisco, CA, United States

11:00 0527. Tumor Invasion Visualized by Neurochemical Profile Modification in Human GBM Induced by Cancer Stem Cells in Mice: 1H-MRS Longitudinal Study

Mor Mishkovsky1, Cristina Cudalbu1, Irene Vassallo1, Marie-France Hamoir1, Arnaud Comment1, Monika Hegi1, Rolf Gruetter2
1Laboratory of Functional and Metabolic Imaging, Ecole Polytechnique Fédérale de Lausanne (EPFL), Lausanne, Switzerland; 2Center of biomedical imaging (CIBM), Ecole Polytechnique Fédérale de Lausanne (EPFL), Lausanne, Switzerland; 3Laboratory of Brain Tumor Biology and Genetics, Department of Neurosurgery, Lausanne University Hospital, Lausanne, Switzerland; 4Institute of the Physics of Biological Systems, Ecole Polytechnique Fédérale de Lausanne (EPFL), Lausanne, Switzerland; 5Laboratory of Functional and Metabolic Imaging, Ecole Polytechnique Fédérale de Lausanne (EPFL), Lausanne, Switzerland
11:12 0528. Breast Cancer Cells Can Be Rescued by Matrigel from the Growth Inhibitory Effects of HIF-1α and HIF-2α Silencing
Santosh Kumar Bhatt1, Balaji Krishnamachary1, Wenlian Zhu1, Flonne Wildes1, Samata M. Kakkaad2, Yelena
Mironchik1, Dmitri Artemov1, Zaver M. Bhujwalla1
1Div. of Cancer Imaging Research, The Russell H. Morgan Dept. of Radiology and Radiological science, Johns Hopkins University, School of Medicine, Baltimore, MD, United States

11:24 0529. Selective Acidification and De-Energization of WM983B Melanoma Xenografts and Sensitization to Doxorubicin Following Lonidamine Administration
Kavindra Nath1, David S. Nelson1, Daniel F. Heitjan1, Rong Zhou1, Dennis B. Leeper2, Jerry D. Glickson1
1University of Pennsylvania, Philadelphia, PA, United States; 2Thomas Jefferson University, PA, United States

11:36 0530. Hyperpolarized 13C MRSI Is a Better Predictor of Survival Than Tumor Size in Treated Glioblastoma
Marina Radouè1, Myriam M. Chaumeil1, Pia Eriksson1, Sabrina M. Ronen1
1Radiology and Biomedical Imaging, UCSF, San Francisco, CA, United States

11:48 0531. In Vivo 19F MRI to Study ERK1 as a Target for Dendritic Cell Migration in High Grade Glioma
Min-Chi Ku1, Helmar Waiczies1, Andreas Pohlmann1, Susanne Wolf1, Helmut Kettenmann1, Sonia Waiczies1, Thoralf
Niedorf1
1Berlin Ultrahigh Field Facility (B. U. F.), Max Delbrück Center for Molecular Medicine, Berlin, Germany; 2MRI TOOLS GmbH, Berlin, Germany, Berlin, Germany; 3Cellular Neurosciences, Max Delbrück Center for Molecular Medicine, Berlin, Germany

ASL Methods: From the Neck Down
Room 701 B 10:00-12.00 Moderators: T.B.A. & T.B.A.

10:00 0532. Separation of Arterial and Portal Blood Supply to Mouse Liver and Tumour Tissue Using Pseudo-Continuous Arterial Spin Labelling (PCASL)
Rajiv Ramasawmy1, Jack Anthony Wells1, Magdalena Sokalska1, James A. Meakin1, Sean Peter Johnson1, Adrienne E. Campbell-Washburn1, Rosamund Barbara Pedley1, Mark Francis Lythgoe9, Simon Walker-Samuel1
1Centre for Advanced Biomedical Imaging, University College London, London, Greater London, United Kingdom; 2Institute of Neurology, University College London, London, Greater London, United Kingdom; 3Radiation Oncology, University College London, London, Greater London, United Kingdom; 4Department of Radiology, Xuanwu Hospital of Capital Medical University, Beijing, China; 5Department of Engineering Physics, Tsinghua University, Beijing, China

10:12 0533. Quantification of Liver Perfusion Using Multi-Delay Pseudo-Continuous Arterial Spin Labeling
Xinlei Pant1, Robert Smith2, Mayank Jog1, Tianyi Qin1, Holden H Wu1, Kyunghyun Sung1, Kuncheng Li1, Kui Ying1, Danny JJ Wang1
1Department of Biomedical Engineering, Tsinghua University, Beijing, China; 2Department of Bioengineering, UCLA, CA, United States; 3Siemens Healthcare, MR Collaboration NE Asia, Beijing, China; 4Department of Radiology, Xuanwu Hospital of Capital Medical University, Beijing, China; 5Department of Engineering Physics, Tsinghua University, Beijing, China

Joshua S. Greer1, Yue Zhang1, Ivan Pedrosa1, Ananth J. Madhuranthakam1, 2, 3
1Bioengineering, UT Dallas, Dallas, TX, United States; 2Radiology, UT Southwestern Medical Center, Dallas, TX, United States; 3Advanced Imaging Research Center, UT Southwestern Medical Center, Dallas, TX, United States

10:36 0535. Free-Breathing Perfusion Measurement Using Respiratory Motion Prediction
Hao Song1, Wenyong Liu1, Dan Roan1, Shengjun Jang1, H Michael Gach1, 2
1Radiology, University of Pittsburgh, Pittsburgh, PA, United States; 2Bioengineering, University of California, Los Angeles, Los Angeles, CA, United States; 3Radiation Oncology, University of California, Los Angeles, Los Angeles, CA, United States; 4Statistics, University of Pittsburgh, Pittsburgh, PA, United States; 5Bioengineering, University of Pittsburgh, Pittsburgh, PA, United States

10:48 0536. The Feasibility of ASL Spinal Bone Marrow Perfusion Imaging with Optimized TI
Dong Xing1, Yunfei Zha1, Lei Hu1, Jiao Wang1, Yuan Lin1, Hui Lin1
1Department of Radiology, Renmin Hospital of Wuhan University, Wuhan, Hubei, China; 2MR Research, GE Healthcare China, Shanghai, China
11:00 0537. Quantitative Rat Lumbar Spinal Cord Blood Flow Measurements Using Multi-Slice Arterial Spin Labelling at 9.4T
Mohamed Tachrount1, Andrew Davies2, Roshni Desai2, Kenneth Smith2, David Thomas, Xavier Golay1, Roshni Desai2
1Department of brain repair and rehabilitation, UCL Institute of Neurology, London, United Kingdom; 2Department of Neuroinflammation, UCL Institute of Neurology, London, United Kingdom

Charlotte E. Buchanan1, Eleanor F. Cox1, Claire Grant1, Nick M. Selby2, Chris W. McIntyre1, Maarten W. Taat1, Susan T. Francis1
1SPMIC, University of Nottingham, Nottingham, Nottinghamshire, United Kingdom; 2Division of Medical Sciences and Graduate Entry Medicine, Royal Derby Hospital, Nottingham, United Kingdom; 3Schulich School of Medicine and Dentistry, University of Western Ontario, London, Ontario, Canada

11:24 0539. Feasibility and Repeatability of Human Brown Adipose Tissue Volume and Perfusion Activity Using MRI
Weiying Dai1, Lauren S. Weiner2, David C. Alsop1, Aaron M. Cypess2
1Radiology, Beth Israel Deaconess Medical Center & Harvard Medical School, Boston, MA, United States; 2Section of Integrative Physiology and Metabolism, Joslin Diabetes Center, Boston, MA, United States

11:36 0540. Large Intramuscular Vessel Artifact in ASL: Effect on Calf Muscle Perfusion Measurements and a Velocity-Selective Solution
Jeff L. Zhang1, Christopher J. Hanrahan1, Jason Mendes1, Gwenael Layec2, Corey Hart1, Kristi Carlston1, Michelle Mueller3, Russell S. Richardson2, Vivian S. Lee1
1Radiology, University of Utah, Salt Lake City, UT, United States; 2Division of Geriatrics, University of Utah, UT, United States; 3Vascular Surgery, University of Utah, UT, United States

11:48 0541. Arterial Spin Labeling in Exercising Calf Muscle with Prospective Motion Correction
Céline Giradeau1, Benjamin R. Knowles1, Thomas Lange1, Michael Herbst1, Maxim Zaitsev3, Pierre Carlier1,2
1NMR Laboratory, Institute of Myology, Paris, France; 2NMR Laboratory, CEA, I2BM, MIRCen, Fontenay-aux-Roses, France; 3Department of Radiology, University Medical Center Freiburg, Freiburg, Germany; 4John A. Burns School of Medicine, Unil Hawaii, Honolulu, HI, United States

Parallel Transmission Strategies
Room 714 A/B 10:00-12:00 Moderators: Ulrich Katscher, Ph.D. & Mark E. Ladd, Ph.D.

10:00 0542. Slab-Selective PTX Multiband TOF Angiography at 7 Tesla
Sebastian Schmitter1, Xiapiao Wu1, Steen Moeller1, Edward John Auerbach1, Gregor Adriany1, Pierre-Francois Van de Moortele1, Kamil Uğurbil1
1Center for Magnetic Resonance Research, University of Minnesota, Minneapolis, MN, United States

10:12 0543. IMPULSE: A Generalized and Scalable Algorithm for Joint Design of Minimum SAR Parallel Transmit RF Pulses
Mihir Pendse1, Brian Rutt1
1Radiology, Stanford University, Stanford, CA, United States

Bastien Guerin1, Jason Stockmann1, Mehran Baboli2, Andrew V. Stenger1, Lawrence L. Wald4
1Department of Radiology, Massachusetts General Hospital, Charlestown, MA, United States; 2Physics department, Harvard University, Cambridge, MA, United States; 3John A. Burns School of Medicine, University of Honolulu, Honolulu, United States; 4Division of Health Sciences Technology, Harvard-MIT, Cambridge, MA, United States

10:36 0545. RF Shimming Via Efficient Modes for Massively Parallel Transmit Coils
Christian Findeklee1, Christoph Leussler1, Peter Vernickel1, Ulrich Katscher1
1Research Laboratories Hamburg, Philips GmbH Innovative Technologies, Hamburg, Germany
Wednesday

10:48 0546. High Resolution GRE at 9.4T Using Spokes Pulses
Desmond Ho Yen Tse1, 2, Daniel Brenner1, Bastien Guerin2, Benedikt A Poser3
1Faculty of Psychology and Neuroscience, Maastricht University, Maastricht, Netherlands; 2Department of Radiology, Maastricht University Medical Centre, Maastricht, Netherlands; 3German Centre for Neurodegenerative Diseases (DZNE), Bonn, Germany;
Martinos Center for Biomedical Imaging, Massachusetts General Hospital, Boston, MA, United States

11:00 0547. Array-Compressed Parallel Transmit Pulse Design
Zhipeng Cao1, 2, William A. Grissom1, 2
1Biomedical Engineering, Vanderbilt University, Nashville, TN, United States; 2Vanderbilt University Institute of Imaging Science, Nashville, TN, United States

11:12 0548. Direct Control of the Temperature Rise in Parallel Transmission Via Temperature Virtual Observation Points: Simulations at 10.5 T
Nicolas Boulan1, Xiaoping Wu2, Gregor Adriany2, Sebastian Schmitter2, Kamil Ugarbi2, Pierre-Francois Van de Moortele2
1NeuroSpin, CEA, Saclay, Ile de France, France; 2Center for Magnetic Resonance Research, University of Minnesota, Minneapolis, MN, United States

11:24 0549. Non-Iterative Parallel Transmission RF Pulse Design with Strict Temperature Constraints
Cem M. Deniz1, 2, Giuseppe Carluccio1, 2, Daniel K. Sodickson1, 2, Christopher M. Collins1, 2
1Center for Advanced Imaging Innovation and Research (CAI2R), Department of Radiology, New York University School of Medicine, New York, NY, United States; 2The Sackler Institute of Graduate Biomedical Sciences, New York University School of Medicine, New York, NY, United States

11:36 0550. Comparison of Local and Remote Transmit Arrays for Body Imaging at 7T Under Power and Local SAR Constraints
Martina Flöser1, 2, Andreas K. Bitz1, Stephan Orzada2, Klaus Solbach2, Mark E. Ladd1, 2
1Medical Physics in Radiology, German Cancer Research Center (DKFZ), Heidelberg, Germany; 2Erwin L. Hahn Institute for MRI, University Duisburg-Essen, Essen, Germany; 3High Frequency Engineering, University Duisburg-Essen, Duisburg, Germany

Mathias Davids1, 2, Bastien Guerin2, Lawrence L. Wald3, 4, Lothar R. Schad4
1NeuroSpin, CEA, Saclay, Ile de France, France; 2Center for Biomedical Imaging, Dept. of Radiology, Massachusetts General Hospital, Charlestown, MA, United States; 3Harvard-MIT Division of Health Sciences Technology, Cambridge, MA, United States

Vessel Wall Imaging
Room 716 A/B 10:00-12:00

10:00 0552. High Resolution Three Dimensional Imaging of Extracranial and Intracranial Arteries
Lei Zhang1, Yongjian Tao1, Xiaoping Hu1, Jun Wu1, Xin Liu1, Yiu-Cho Chung1
1Computer Assisted Clinical Medicine, Medical Faculty Mannheim, Heidelberg University, Mannheim, BW, Germany; 2Martinos Center for Biomedical Imaging, Massachusetts General Hospital, Charlestown, MA, United States; 3Harvard-MIT Division of Health Sciences Technology, Cambridge, MA, United States

10:12 0553. Ultrahigh-Resolution MRI Imaging of Intracranial Atherosclerosis at 17.6 Tesla: An Ex Vivo Study with Histological Comparison
Shuqian Zhang1, Kazuyuki Yahagi2, li liu1, Jiadi Xu3, Frank D. Kolodgie2, Remo Virmani2, Babara Crain2, Bruce A. Wasserman1, Ye Qiao1
1Radiology, Johns Hopkins, Baltimore, MD, United States; 2CVPath Institute, Inc., Gaithersburg, MD, United States; 3Kennedy Krieger Institute, MD, United States; 4Pathology, Johns Hopkins, Baltimore, MD, United States

10:24 0554. Intraplaque Hemorrhage Detection and Threshold Selection for Simultaneous Noncontrast Angiography and IntraPlaque Hemorrhage (SNAP) Images
Jin Liu1, Marina S. Ferguson1, Jinnan Wang2, Daniel S. Hippe2, Niranjan Bahu1, William S. Kerwin1, Thomas S. Hatsukami1, Chun Yuan1
1Faculty of Psychology and Neuroscience, Maastricht University, Maastricht, Netherlands; 2Department of Radiology, Maastricht University Medical Centre, Maastricht, Netherlands; 3German Centre for Neurodegenerative Diseases (DZNE), Bonn, Germany; 4Pathology, Johns Hopkins, Baltimore, MD, United States
Focused Discussion Session - Fusion with Diffusion

Constitution Hall 107  10:00-12:00  Moderators: Maxime Descoteaux, Ph.D. & Karla L. Miller, Ph.D.

10:00  0562.  Fusing 3 and 7 Tesla HCP Datasets for Improved Brain Connectivity Analysis
Stamatios N. Sotiropoulos1, Saad Jbabdi2, An T. Vu2, Jesper L. Andersson3, Steen Moeller2, Christophe Lenglet3, Essa Yacoub4, Kamil Ugurbil5, Timothy Behrens6
1FMRIB Centre, University of Oxford, Oxford, United Kingdom; 2Center for Magnetic Resonance Research, University of Minnesota, Minneapolis, MN, United States

Wednesday

10:36  0555.  Motion-Robust 3D Black-Blood Carotid Wall Imaging Using Flow-Sensitive Dephasing Preparation and Stack-Of-Stars Trajectory
Xiaoming Bi1, Yutaka Natsuaki1, Zhaoyang Fan1, Peter Speier2, Debiao Li2, Gerhard Laub1
1Siemens Healthcare, Los Angeles, CA, United States; 2Cedars-Sinai Medical Center, Los Angeles, CA, United States; 3Siemens Healthcare, Erlangen, Germany

10:48  0556.  Velocity Selective RF Pulse Prepared Inversion Recovery (VSIR) for Carotid Artery Vessel Wall Imaging
Yunduo Li1, Shuo Chen1, Zechen Zhou2, Rui Li1, Chun Yuan1, 2
1Center for Biomedical Imaging Research, Beijing, China; 2Department of Radiology, University of Washington, Seattle, WA, United States

11:00  0557.  Time-Efficient Whole-Heart Coronary Plaque Characterization with Simultaneously Acquired MRA
Yibin Xie1, 2, Young Jin Kim1, Jianing Pang1, Jung-Sun Kim1, Qi Yang1, Zhaoyang Fan1, Hyuk-Jae Chang1, Debiao Li1
1Biomedical Imaging Research Institute, Cedars-Sinai Medical Center, Los Angeles, CA, United States; 2University of California, Los Angeles, Los Angeles, CA, United States; 3Department of Radiology, Severance Hospital, Yonsei University College of Medicine, Seoul, Korea; 4Division of Cardiology, Yonsei Cardiovascular Center, Yonsei University College of Medicine, Seoul, Korea

11:12  0558.  3D-Black-Blood 3T-MRI for the Diagnosis of Thoracic Large Vessel Vasculitis: A Feasibility Study
Karla Maria Treitl1, Stefan Maurias1, Hendrik Kooijmann-Kurfuerst2, Eva Coppenrath3, Nora N. Kammer1, Marcus Treitl1, Maximilian Reiser1, Tobias Saam1
1Institute for clinical radiology, LMU Munich, Munich, Bavaria, Germany; 2Philips Healthcare, Philips GmbH, Hamburg, Germany

11:24  0559.  Simultaneous Acquisition of Spatially-Registered Gray- And Black-Blood Images of Peripheral Arteries with 3D Double-Echo Steady-State (DESS) at 3T
Michael C. Langham1, Benoît Desjardins1, Erin K. Englund2, Emile R. Mohler2, Thomas F. Floyd2, Felix W. Wehrli1
1Radiology, University of Pennsylvania, Philadelphia, PA, United States; 2Medicine, University of Pennsylvania, Philadelphia, PA, United States; 3Anesthesiology, Stony Brook University Medical Center, Stony Brook, NY, United States

11:36  0560.  Self-Gated Dynamic Contrast Enhanced (DCE) MRI with Compressed Sensing Acceleration to Quantify Permeability in the Aortic Root of Atherosclerotic Mice
Claudia Calzagno1, Chiara Giannarelli2, Abdallah G. Moataal1, Matthias Nahrendorf1, Willem JM Mulder2, 3, Zahi A. Fayad1, Gustav J. Strijkers3
1Department of Radiology, Icahn School of Medicine at Mount Sinai, New York, NY, United States; 2Department of Cardiology, Icahn School of Medicine at Mount Sinai, New York, NY, United States; 3Department of Biomedical Engineering and Physics, Academic Medical Center, Amsterdam, The Netherlands, Netherlands; 4Center for Systems Biology, Massachusetts General Hospital, Boston, MA, United States; 5Department of Radiology, Academic Medical Center, Amsterdam, The Netherlands, Netherlands

11:48  0561.  Large Coverage HOMologous Black-Bright Blood Interleaved Imaging Sequence (LaHOBBI) for 3D Dynamic Contrast Enhanced MRI of Vessel Wall
Hakun Qi1, Shuo Chen1, Zechen Zhou2, Jinnan Wang1, Peter Koken3, Niranjan Bala4, Huijun Chen1
1Department of Biomedical Engineering, School of Medicine, Tsinghua University, Beijing, China; 2Philips Research North America, Briarcliff Manor, NY, United States; 3Innovative Technologies, Research Laboratories, Philips Technologies GmbH, Hamburg, Germany; 4Radiology, University of Washington, Seattle, WA, United States
It is well known that dynamic MRI performance can be improved by employing constrained reconstruction that leverages the ... -angle radial sampling patterns, compared to current state-of-art constrained reconstruction methods such as k-t SLR.

In this work we address the problem of undersampled dynamic MR image reconstruction from the general point-of-view of ... a very general yet computational tractable and well-studied motion model for a wide range of dynamic MR applications.

Dynamic MRI can provide quantitative assessment on the anatomy and dynamics of the articulators in real time, but usually ... temporal behaviors of the articulator motion and fine 3D anatomy of the vocal tract are well captured and analyzed.

The Inversion Recovery DTI technique was recently introduced to provide fibre-specific estimates of the relaxation time ... and show that different fibre systems have distinct values of T1, reflecting their different myelination properties.

Diffusion weighted imaging (DWI) acquisitions typically suffer from a lower spatial resolution, compared to their T1 ... is striking and allows for easy identification of various anatomical structures beyond the resolution of the DWI data.

We propose a Multi-resolution Discrete Search method to estimate white matter microstructure based on three key ideas: ... Information Criterion and 3) A Simultaneous Denoising and Fitting procedure to achieve robustness with respect to noise.

Mapping the cortico-cortical brain connections relies on the accurate characterization of the axonal structures in both ... resolution diffusion data on the MGH-USC Connectom scanner. We demonstrated that different brain structures require ... different imaging parameters to be resolved, and diffusion tractography can be improved by fusing the two datasets.
10:48 0572. Single Breath Hold Whole Heart Cine MRI with Iterative Groupwise Cardiac Motion Compensation and Sparse Regularization (Kt-WiSE)
Javier Royuela-del-Val1, Muhammad Usman2, Lucilio Cordero-Grande2, Federico Simmross-Wattenberg1, Marcos Martin-Fernández1, Claudia Prieto2, Carlos Alberola-López2
1Laboratorio de Procesado de Imagen, Universidad de Valladolid, Valladolid, Spain; 2Division of Imaging Sciences and Biomedical Engineering, King's College London, London, United Kingdom

11:00 0573. Highly Accelerated Brain DCE MRI with Direct Estimation of Pharmacokinetic Parameter Maps
Yi Guo1, Yinghua Zhu1, Sajan Goud Lingala1, R. Marc Lebel2, Krishna S. Nayak1
1Department of Electrical Engineering, University of Southern California, Los Angeles, CA, United States; 2GE Healthcare, Calgary, Alberta, Canada

11:12 0574. Clinically Practical Sparse Reconstruction for 4D Prostate DCE-MRI: Algorithm and Initial Experience
Joshua Treasko1, Eric Borisch1, Akira Kawashima1, Adam Froemming1, Roger Grimm1, Armando Manduca1, Phillip Young1, Stephen Riederer1
1Mayo Clinic, Rochester, MN, United States

11:24 0575. Beyond Low Rank + Sparse: Multi-Scale Low Rank Reconstruction for Dynamic Contrast Enhanced Imaging
Frank Ong1, Tao Zhang2, Joseph Cheng2, Martin Uecker3, Michael Lustig1
1Electrical Engineering and Computer Sciences, University of California, Berkeley, Berkeley, CA, United States; 2Stanford University, CA, United States; 3University of California, Berkeley, CA, United States

11:36 0576. k-T SPARKS: Dynamic Parallel MRI Exploiting Sparse Kalman Smoother
Suhyang Park1, Jaeseok Park2
1Center for Neuroscience Imaging Research, Institute for Basic Science (IBS), Sungkyunkwan University, Suwon, Gyeong Gi-Do, Korea; 2Biomedical Imaging and Engineering Lab., Department of Global Biomedical Engineering, Sungkyunkwan University, Suwon, Gyeong Gi-Do, Korea

Ukash Nakarmi1, Yanhua Wang1, Jingyan Lyu1, Jie Zheng1, Leslie Ying1,3
1Dept. of Electrical Engineering, State University of New York at Buffalo, Buffalo, NY, United States; 3Dept. of Radiology, Washington University, School of Medicine, MO, United States; 3Dept. of Biomedical Engineering, State University of New York at Buffalo, NY, United States

Educational Course
MRI & Radiation Therapy
Organizers: Lorenzo Mannelli, M.D., Ph.D., Ivan Pedrosa, M.D., Scott B. Reeder, M.D., Ph.D. & Edwin J.R. van Beek, M.D., Ph.D., M.Ed., FRCR
Room 718 A 10:00-12:00
Moderators: Michael Bock, Ph.D. & Jessica Robbins, M.D.

10:00 Patient Preparation, Safety & MRI Protocol Considerations
Jessica Robbins

10:30 Imaging Needs for Radiation Therapy
Uulke A. van der Heide

11:00 MRI for Motion Management in Radiation Therapy
Amit Sawant

11:30 MRI Guided Radiation Therapy
Jan J.W. Lagendijk

12:00 Adjournment & Meet the Teachers
Wednesday

Combined Educational & Scientific Session
Cartilage-Imaging Techniques
Organizers: Eric Y. Chang, M.D., Garry E. Gold, M.D., Richard Kijowski, M.D., William B. Morrison, M.D., Ravinder R. Regatte, Ph.D. & Siegfried Trattnig, M.D.

Room 718 B  10:00-12:00  Moderators: Richard Kijowski, M.D. & Ravinder Reddy, Ph.D.

10:00  Advanced Quantitative Imaging Techniques
Feliks Kogan

10:30  Clinical Applications
Siegfried Trattnig

11:00  0578. T2 Texture Change to Articular Cartilage Over 6 Months Is Associated with Change to Knee Health and Cartilage Thickness Over 2 Years Following ACL Injury and Reconstruction
Ashley A. Williams1, Carl S. Winalski2, Constance R. Chu1
1Orthopaedic Surgery, Stanford University, Stanford, CA, United States; 2Imaging Institute and Department Biomedical Engineering, Lerner Research Institute, Cleveland Clinic, Cleveland, OH, United States

11:12  0579. Quantitative ADC Mapping Using DESS with Decreased T1 and Noise Sensitivity
Bragi Sveinsson1, Catherine Moran1, Daehyun Yoon1, Garry Gold1, Brian Hargreaves1
1Radiology, Stanford University, Stanford, CA, United States

Arttu Peunat1, Joonas Heikkala1, Marianne Haapea1, Jana Podlipska, 11, Miika T. Nieminen1, 3, Simo Saarakkala, 23, Eveliina Lammentausa11, 3
1Medical Research Center Oulu, Oulu University Hospital and University of Oulu, Oulu, Finland; 2Department of Medical Technology, University of Oulu, Oulu, Finland; 3Department of Diagnostic Radiology, Oulu University Hospital, Oulu, Finland

11:36  0581. Analysis of the Relationship Between 3D Knee Bone Shape and the Progression of T1ρ and T2 6 Month and 1 Year After ACL Reconstruction
Valentina Pedoia1, Favian Su1, Drew Lansdown1, Richard Souza1, Benjamin Ma1, Xiaojuan Li1
1UCSF, San Francisco, CA, United States

11:48  0582. Evaluation of Meniscal Pathology Using Quantitative Magnetic Resonance Imaging
Eric Y. Chang1, 2, Reni Biswas3, Betty Tran4, Sheronda Statum5, Jiang Du6, Won C. Bae6, Christine B. Chung1, 2
1Radiology Service, VA San Diego Healthcare System, San Diego, CA, United States; 2Department of Radiology, University of California, San Diego Medical Center, San Diego, CA, United States

12:00  Adjournment & Meet the Teachers

Combined Educational & Scientific Session
"Please Hold Still Next Time," Challenges & Solutions in Patient Adherence
Organizers: Ben A. Kennedy, B.App.Sc., Mst. & James G. Pipe, Ph.D.
Room 801 A/B  10:00-12:00  Moderators: Jalal B. Andre, M.D. & Ryan K. Robison, Ph.D.

10:00  Vendor & Research Solutions
Julian Maclaren

10:24  Imaging in the Trenches: The Technologist's Perspective
Vera K. Kimbrell

10:48  0583. Prospective Motion Correction with FID-Triggered Image Navigators
Maryna Babayeva1, 2, Pavel Falkovsky1, 2, Tom Hilbert1, 2, Guillaume Bonnier1, 2, Bénédicte Maréchal1, 2, Reto Meuli, Jean-Philippe Thiran1, 2, Rolf Gruetter1, 2, Gunnar Krueger1, 2, Tobias Kober1, 2
1Siemens ACIT - CHUV Radiology, Siemens Healthcare IM BM PI, & Department of Radiology, University Hospital (CHUV), Lausanne, Switzerland; 2LTS5, Ecole Polytechnique Fédérale de Lausanne, Lausanne, Switzerland; 3CIBM, Ecole Polytechnique Fédérale de Lausanne and University of Geneva, Switzerland
In this work, we propose a method for prospective motion correction in MRI using a novel image navigator module, which is ... through automated brain segmentation and an image quality index whose results are sensitive to motion artifacts.

Projection-Based 2D/3D Registration of Collapsed FatNav Data for Prospective Motion Correction
Enrico Avventi1, Mathias Engström1, 2, Ola Norbeck1, Magnus Mårtensson3, Stefan Skare1, 2
1Dept. of Neuroradiology, Karolinska University Hospital, Stockholm, Sweden; 2Dept. of Clinical Neuroscience, Karolinska Institutet, Stockholm, Sweden; 3EMEA Research & Collaboration, GE Science Laboratory, GE Healthcare, Stockholm, Sweden

A Correlation Based Approach to Respiratory Self Navigation for Multi Channel Non-Cartesian MRI
Gregory R. Lee1, 2, Yong Chen1, Vikas Gulani3
1Radiology, Cincinnati Children's Hospital Medical Center, Cincinnati, OH, United States; 2University of Cincinnati, Cincinnati, OH, United States; 3Radiology, University Hospitals Case Medical Center, Cleveland, OH, United States

Autofocusing Motion Correction with 3D Image-Based Navigators for Abdominal Imaging
Jieying Luo1, Nii Okai Addy1, R. Reeve Ingle1, Joseph Y. Cheng1, Bob S. Hu2, Dwight G. Nishimura1
1Electrical Engineering, Stanford University, Stanford, CA, United States; 2Palo Alto Medical Foundation, Palo Alto, CA, United States

Markerless Motion Correction in MRI
Rasmus Ramsboel Jensen1, 2, Claus Benjaminsen1, 2, Adam Espe Hansen1, Rasmus Larsen1, Oline Vinter Olesen1, 2
1DTU Compute, Technical University of Denmark, Lyngby, Copenhagen, Denmark; 2Department of Clinical Physiology, Nuclear Medicine & PET, Rigshospitalet, Copenhagen, Denmark

Technical Feasibility and Potential Applications of an Optical Time-Of-Flight Camera Mounted Inside the MR Scanner
Guido P. Kudielka1, 2, Anne Menini1, Pierre-André Vuissoz2, 3, Jacques Felblinger4, Florian Wiesinger1
1GE Global Research, Munich, BY, Germany; 2Imagerie Adaptative Diagnostique et Interventionnelle, Université de Lorraine, Nancy, Lorraine, France; 3U947, INSERM, Nancy, Lorraine, France; 4CIC-IT 1433, INSERM, Nancy, Lorraine, France

Gold Corporate Symposium
GE Healthcare Gold Corporate Symposia
Plenary Hall FG 12:15-13:15 (no CME credit)

Traditional Poster Session: Neuro B
Exhibition Hall 13:30-15:30 (no CME credit)

Traditional Poster Session: Perfusion
Exhibition Hall 13:30-15:30 (no CME credit)
Wednesday

Electronic Poster Session: Musculoskeletal
Exhibition Hall 13:30-15:30 (no CME credit)

Study Group Session
Musculoskeletal MR
Reception Hall 104 BCD 13:30-15:30 (no CME credit)

Study Group Session
MR Engineering
Constitution Hall 105 13:30-15:30 (no CME credit)

Power Pitch Session: Advances in fMRI
Power Pitch Theatre, Exhibition Hall 13:30-14:30 (no CME credit)

Moderators: Karla L. Miller, Ph.D. & T.B.A.

0589. Individual-Subject Mapping of Functional Networks from Sparse Spontaneous BOLD Events
Cesar Caballero Gaudes¹, Ziad Saad², Matthijs Raemaekers², Nick F. Ramsey³, Natalia Petridou⁴
¹BCBL, Basque Center on Cognition, Brain and Language, Donostia, Guipuzcoa, Spain; ²Statistical and Scientific Computing Core, National Institute of Mental Health, National Institutes of Health, Bethesda, MD, United States; ³Brain Center Rudolf Magnus, Department of Neurology and Neurosurgery, UMC Utrecht, Utrecht, Netherlands; ⁴Radiology, Imaging Division, UMC Utrecht, Utrecht, Netherlands

While most analysis approaches assume temporal stationarity in the study of brain functional connectivity, there is a need for methods that can be applied to shorter timescales. To address this, we present a novel approach for individual-subject mapping of functional networks from sparse spontaneous BOLD signals. The method exploits the spatio-temporal nature of the BOLD signal to infer functional connectivity patterns. By applying this approach to a dataset of about 100 individuals, we demonstrate the feasibility of mapping individual-specific functional connectivity networks from sparse BOLD data. The results show consistent patterns across subjects, validating the approach for future studies.

0590. A Machine Learning Case for a Higher Order Control Plexus in the Frontal Pole Cortex
Nishant Zachariah¹, Zhihao Li², ³, Jason Langley², Shiyang Chen², Mark Davenport¹, Justin Romberg¹, Xiaoping Hu²
¹Department of Electrical and Computer Engineering, Georgia Institute of Technology, Atlanta, GA, United States; ²Department of Biomedical Engineering, Emory University and Georgia Institute of Technology, Atlanta, GA, United States; ³Institute of Affective and Social Neuroscience, Shenzhen University, Shenzhen, Guangdong, China

In this study, we demonstrate a previously undiscovered function of Frontal Pole Cortex (FPC) in the regulation of higher order control. Using a machine learning approach, we identify a hidden structure in the FPC that is involved in the regulation of higher order control. The FPC is shown to exert significant control over higher order executive functions, such as decision-making and planning. The findings suggest that the FPC plays a key role in the regulation of higher order control, which has implications for understanding the neural mechanisms underlying these functions.

0591. Calibrating BOLD Latency with High Temporal Resolution Precision Using Magnetic Resonance Inverse Imaging
Ruo-Ning Sun¹, Ying-Hua Chu¹, Yi-Cheng Hsu¹, Wen-Jui Kuo¹, Fa-Hsuan Lin¹
¹Institute of Biomedical Engineering, National Taiwan University, Taipei, Taiwan; ²Institute of Neuroscience, National Yang Ming University, Taipei, Taiwan

The spatial resolution of MR inverse imaging (InI) was empirically tested at 3T and 7T. By using a coil array of the same configuration, the InI maps were compared with those from 3D -PRESTO and 3D -PRESTO 5. The B1+ shimmed EPI sequence is applied to BOLD fMRI scans. The results show that the B1+ shimmed EPI sequence can achieve high temporal resolution precision, which is quantified by the average point spread function at 7T improved by about 65% and 90% at SNR = 0.1 and 1, respectively.

0592. Cortical Depth Dependence of Physiological Fluctuations and Whole-Brain Resting-State Functional Connectivity at 7T
Jonathan R. Polimeni¹, Marta Bianciardi¹, Boris Keil¹, Lawrence L. Wald¹, ²
¹Athinoula A. Martinos Center for Biomedical Imaging, Department of Radiology, Harvard Medical School, Massachusetts General Hospital, Charlestown, MA, United States; ²Harvard-MIT Division of Health Sciences and Technology, Massachusetts Institute of Technology, Cambridge, MA, United States

Physiological noise fluctuations are driven by several mechanisms, and their effects have been shown to vary across brain regions. In this study, we investigate the depth dependence of physiological fluctuations and whole-brain resting-state functional connectivity at 7T. We find that there is a depth-dependent seed-based analysis of the Default Mode Network showed only a modest effect of sampling depth. The results suggest that physiological fluctuations are more pronounced in superficial layers of the brain, which may have implications for understanding the underlying mechanisms.

0593. 2D EPI at 9.4T with Slice-Specific Spokes Pulse RF Excitation for B1+ Homogenisation
Benedikt A Poser¹, Desmond HY Tse¹, ²
¹Faculty of Psychology and Neuroscience, Maastricht University, Maastricht, Netherlands; ²Department of Radiology, Maastricht University, Maastricht, Netherlands

Slice-specific spokes pulses were designed for and applied to high resolution 2D EPI imaging at 9.4T in order to mitigate B1+ inhomogeneity. These spokes RF pulses instead of the coil’s CP mode excitations. The B1+ shimmed EPI sequence is applied to BOLD fMRI scans.

0594. Relationships Between Excitation-Inhibition Balance and Whole-Brain Oxygen Extraction Fraction in Human Brain
Swati Rane¹, Brandon Ally², Emily Mason², Subechhya Pradhan¹, Erin Hussey², Kevin Waddell¹, Hanzhang Lu¹, ², Manus Donahue, ²³
¹Radiology and Radiological Sciences, Vanderbilt University Institute of Imaging Science, Nashville, TN, United States; ²Neurology, Vanderbilt University, Nashville, TN, United States; ³Radiology and Radiological Sciences, Vanderbilt University, Nashville, TN, United States; ⁴Radiology, UT Southwestern, Dallas, TX, United States; ⁵Psychiatry, UT Southwestern, Dallas, TX, United States

We investigated the relation between brain neurotransmitter concentrations, venous oxygen saturation, and oxygen extraction fraction. We show that venous oxygen saturation is inversely proportional to the ratio of GABA/Glx.
Introduction

0595. **Dynamic Brain States Sequential Modelling Based on Spontaneous Brain Activity of Resting-State fMRI**

*Shiyang Chen¹, Jason Langley¹, Xiaoping Hu²*

¹The Wallace H. Coulter Department of Biomedical Engineering, Georgia Institute of Technology and Emory University, Atlanta, GA, United States

0596. **Failure of the “standard” fMRI Analysis in the Visual Cortex Using a Smooth Visual Stimulus**

*David Provencher¹, Andreas Bartels², Yves Bérubé-Lauzière³, ⁴, Kevin Whittingstall,⁵*

¹Department of Nuclear Medicine and Radiobiology, Université de Sherbrooke, Sherbrooke, QC, Canada; ²Werner Reichardt Centre for Integrative Neuroscience, Tübingen, Germany; ³Department of Electrical and Computer Engineering, Université de Sherbrooke, Sherbrooke, QC, Canada; ⁴Centre d’imagerie moléculaire de Sherbrooke (CIMS), Université de Sherbrooke, Sherbrooke, QC, Canada; ⁵Department of Diagnostic Radiology, Université de Sherbrooke, Sherbrooke, QC, Canada

0597. **BOLD Calibration with Interleaved Susceptometry-Based Oximetry**

*Zachary B. Rodgers¹, Erin K. England², Maria A. Fernandez-Seard³, Felix W. Wehrli¹*

¹Radiology, University of Pennsylvania, Philadelphia, PA, United States; ²Department of Bioengineering, University of Pennsylvania, Philadelphia, PA, United States; ³Neuroimaging Laboratory, Center for Applied Medical Research, University of Navarra, Pamplona, Navarra, Spain

0598. **Multimodal Validation of Physiological MRI: Triple Oxygen PET and NIRS**

*Daniel Bude¹, Hannah Hare¹, Nazween Sadhan², Joanna Simpson², Joseph Donnelly², Xiuyun Liu², Jonathan Coles²*

¹FMRIB, University of Oxford, Oxford, Oxfordshire, United Kingdom; ²WBIC, University of Cambridge, Cambridge, Cambridgeshire, United Kingdom

0599. **Measurement of µ-Opioid Receptor Driven Neurovascular Coupling Signals Using Simultaneous PET/MRI**

*Hsiao-Ying Wey¹, Jacob M. Hooker², Michael S. Placzek², ², Bruce R. Rosen¹, Joseph B. Mandeville¹*

¹A. A. Martinos Center, Department of Radiology, Massachusetts General Hospital, Harvard Medical School, Charlestown, MA, United States; ²McLean Hospital, Harvard Medical School, Belmont, MA, United States

0600. **Simultaneous Multi-Slice Functional CBV Measurements at 7 T**

*Laurentius Huber¹, Dimo Ivanov², Maria Guidi³, Robert Turner³, Kamil Utuda⁴#²³, Harald E. Möller⁵, Benedikt A. Poser²*

¹Max Planck Institute for Human Cognitive & Brain Sciences, Leipzig, Germany; ²Maastricht Brain Imaging Centre, Netherlands

0601. **Distinct Neurophysiological Correlates of Global Vs. Local Resting State fMRI Networks**

*Haiguang Wen¹, Zhongming Liu²*

¹Electrical and Computer Engineering, Purdue University, West Lafayette, IN, United States; ²Biomedical Engineering, Purdue University, West Lafayette, IN, United States

0602. **Functional Pathways in Monkey Brain Mapped Using Resting State Correlation Tensors**

*Tung-Lin Wu¹, Feng Wang¹, ², Li Min Chen,²², Adam W. Anderson,²², Zhaohua Ding,²,² John C. Gore,²²¹*

¹Vanderbilt University Institute of Imaging Science, Nashville, TN, United States; ²Radiology and Radiological Sciences, Vanderbilt University, Nashville, TN, United States; ²Vanderbilt University Institute of Imaging Science, Nashville, TN, United States

0603. **Subcortical Grey Matter Susceptibility Mapping from Standard fMRI Studies**

*Hongfu Sun¹, Peter Seres², Alan H. Wilman¹*

¹Biomedical Engineering, University of Alberta, Edmonton, Alberta, Canada

---

Cancer: Therapy Response & Perfusion

**Moderators:** Nandita M. DeSouza, M.D., F.R.C.R. & Natalie J. Serkova, Ph.D.

**Room 701 A 13:30-15:30**

**13:30 Introduction**
Wednesday

Alina Tudorica1, Karen Y. Oh1, Stephen Y-C Chui1, Nicole Roy1, Megan L. Troxell1, Arpana Naik1, Kathleen A. Kemmer1, Yiyi Chen1, Megan L. Holtorf1, Aneela Afzal1, Charles S. Springer1, Xin Li1, Wei Huang1
1Oregon Health & Science University, Portland, OR, United States

13:54  0605. Dynamic-Contrast-Enhanced MRI and Dynamic Tensor Imaging (DTI) for the Early Detection of Anti-Angiogenic Effect and Vessel “Normalization” in Human Breast Cancer Treated with Neoadjuvant Chemotherapy
Thian Ng1, 2, Bo Zhang1, Dennis Cheong1, Limiao Jiang1, Bingwen Zheng1, Soo Chin Lee1, 2
1National University of Singapore, S'pore, Singapore, Singapore; 2CIRC/A*STAR, S'pore, Singapore, Singapore

14:06  0606. Optimization of DCE-MRI Measurement Parameters for Predicting Response to Neoadjuvant Chemotherapy by Breast Cancer Subtype
Wen Li1, Wei-Ching Lo1, Ella F. Jones1, David C. Neveitt1, John Kornak2, Lisa J. Wilmes1, Nola M. Hylton1
1Radiology and Biomedical Imaging, UCSF, San Francisco, CA, United States; 2Epidemiology and Biostatistics, UCSF, San Francisco, CA, United States

14:18  0607. 3D Texture Analysis of DCE-MRI Pharmacokinetic Parametric Maps for Early Prediction of Breast Cancer Therapy Response
Guillaume Thibault1, Alina Tudorica1, Aneela Afzal1, Stephen Y-C Chui1, Arpana Naik1, Megan L. Troxell1, Kathleen A. Kemmer1, Karen Y. Oh1, Nicole Roy1, Megan L. Holtorf1, Wei Huang1, Xubo Song1
1Oregon Health & Science University, Portland, OR, United States

14:30  0608. Neoadjuvant Chemotherapy Treatment Prediction: A Classification Model Based Approach Utilising Pre-Treatment DCE-MRI
Martin D. Pickles1, Peter Gibbs1, Martin Lowry1, Lindsay W. Turnbull1
1Centre for Magnetic Resonance Investigations, Hull York Medical School at University of Hull, Hull, East Yorkshire, United Kingdom

14:42  0609. Improved Fitting of Breast Pharmacokinetic Parameters Using Dispersion Models
Subashini Srinivasan1, Brian A. Hargreaves1, Bruce L. Daniel1
1Department of Radiology, Stanford University, Palo Alto, CA, United States

14:54  0610. High Plasma Flow as Measured Using DCE-MRI and the 2CXM Is Associated with Increased Disease-Free Survival in Patients with Carcinoma of the Cervix
Ben R. Dickie1, Lucy E. Kershaw1, Stephanie Withey1, Bernadette M. Carrington2, Catharine M. West3, Chris J. Rose5
1Medical Physics and Engineering, Christie NHS Foundation Trust, Manchester, United Kingdom; 2RRPPS, University Hospitals Birmingham NHS Foundation Trust, Birmingham, United Kingdom; 3Department of Radiology, Christie NHS Foundation Trust, Manchester, United Kingdom; 4Institute of Cancer Sciences, University of Manchester, Manchester, United Kingdom; 5Centre for Imaging Sciences, University of Manchester, Manchester, United Kingdom

15:06  0611. Outcome Results of In-Bore MRI-Guided Laser Ablation for Malignant Renal Neoplasms: 1-Year Median Follow Up Analysis of 23 Treated Tumors
Sherif G. Nour1, 2, Andrew David Nicholson, Tracy E. Powell, 2, Viraj Master
1Emory University, Atlanta, GA, United States; 2Interventional MRI Program, Emory University, GA, United States

15:18  0612. Noninvasive Assessment of Functional Tumor Microvasculature and Drug Delivery Associated with Angiotsin Receptor Blockade in Pancreatic Cancer
Vidhya Kumar1, 2, Yves Boucher1, Diego Ferreira1, Hao Liu3, Rakesh Jain3, Alexander R. Guimaraes4
1Radiology, Martins Center for Biomedical Imaging, Charlestown, MA, United States; 2The Ohio State University, Columbus, OH, United States; 3Radiation Oncology/Steele Lab for Tumor Biology, Massachusetts General Hospital, Charlestown, MA, United States; 4Radiology, Oregon Health Sciences University, Portland, OR, United States
Noam Shemesh, 1, 2 Jens T. Rosenberg, 1, 2 Jean-Nicolas Dumez, 1, 2 Lucio Frydman, 1, 2 Samuel C. Grant, 1, 2
1Champalimaud Neuroscience Programme, Champalimaud Centre for the Unknown, Lisbon, Portugal; 2National High Magnetic Field Laboratory, Florida State University, Tallahassee, FL, United States; 3Chemical & Biomedical Engineering, Florida State University, Tallahassee, FL, United States; 4Institut de Chimie des Substances Naturelles, CNRS, UPR2301, Gif-sur-Yvette, France; 5Chemical Physics, Weizmann Institute of Science, Rehovot, Israel

13:54  0614. Single-Shot Diffusion Tensor Spectroscopic Imaging in Human Brain
Stefan Posse, 1 2 Kevin F. Tagné, 1 2 Stephen R. Dager, 3
1Neurology, U New Mexico, Albuquerque, NM, United States; 2Physics and Astronomy, U New Mexico, Albuquerque, NM, United States; 3Neurology, U New Mexico, Albuquerque, NM, United States; 4Radiology, U Washington, Seattle, WA, United States

14:06  0615. Quantification of Mean Cell Size and Intracellular Volume Fraction Using Temporal Diffusion Spectroscopy
Xiaoyu Jiang, 1 Hua Li, 1 Ping Zhao, 1 Jingping Xie, 1 John C. Gore, 1 Junzhong Xu, 1
1Institute of Imaging Science, Vanderbilt University, Nashville, TN, United States

14:18  0616. Probing Metabolite Diffusion at Ultra-Short Diffusion Times in the Mouse Brain Using Optimized Oscillating Gradients and a “short” Echo Time Strategy
Clémence Ligneul, 1 2 Chloé Najac, 1 2 Julien Flamant, 1 2 Julien Valette, 1 2
1CEA/DSV/I2BM/MIRCen, Fontenay-aux-Roses, France; 2CNRS URA 2210, Fontenay-aux-Roses, France; 3Inserm US27, CRC-MIRCen, Fontenay-aux-Roses, France

14:30  0617. Diffusion-Weighted Spectroscopy of N-Acetylaspartate: A Novel Technique to Specifically Explore Neuroaxonal Damage in Multiple Sclerosis
Francesca Branzoli, 1 2 Benedetta Bodini, 1 2 Romain Valabrègue, 1 2 Itamar Ronen, 1 2 Daniel Garcia-Lorenzo, 1 2 Bruno Stankoff, 1 2 Stephane Lehéry, 1 2
1Institut du Cerveau et de la Moelle épinière – ICM, Centre de Neuroimagerie de Recherche – CENIR, Paris, France; 2Sorbonnes Université, Université Pierre et Marie Curie and Inserm UMR-S1127; CNRS, UMR 7225, Paris, France; 3C. J. Gorter Center for High Field MRI, Department of Radiology, Leiden University Medical Center, Leiden, Netherlands, Netherlands

14:42  0618. Separating Water and Olefinic Fat Peaks Using Diffusion-Weighted MRS and Diffusion Constraint Fitting to Measure Vertebral Bone Marrow Fat Saturation
Stefan Ruschke, 1 Michael Dieckmeyer, 1 Hendrik Kooijman, 1 Axel Haase, 1 Ernst J. Rummeny, 1 Jan S. Bauer, 4 Thomas Baum, 1 Dimitrios C. Karampinos
1Department of Diagnostic and Interventional Radiology, Technische Universität München, Munich, Bayern, Germany; 2Philips Healthcare, Hamburg, Germany; 3Zentralinstitut für Medizintechnik, Technische Universität München, Garching, Bayern, Germany; 4Neuroradiology, Technische Universität München, Munich, Bayern, Germany

14:54  0619. In Vivo MR Imaging and Spectroscopy Provides Insight Into Malignant Transformation and IDH-Mutation Status in Diffuse, Low-Grade Glioma
Llewellyn Jalbert, 1 Evan Neill, 1 Joanna Phillips, 1 Annette Molinaro, 1 Susan Chang, 1 Sarah Nelson, 1 2
1Joint Graduate Program in Bioengineering, UCSF, San Francisco, CA, United States; 2Radiology & Biomedical Imaging, UCSF, CA, United States; 3Neurological Surgery, UCSF, CA, United States

15:06  0620. Towards a Refined Bi-Compartmental Model of Brain Metabolism Using Bonded Cumomers Analysis of 13C MRS Spectra
Brice Tiret, 1, 2 Vincent Lebon, 1, 2 Julien Valette, 1, 2 Pierre Gilles Henry, 1
1CEA/DSV/I2BM/MIRCen, Fontenay-aux-Roses, France; 2CNRS, URA 2210, Fontenay-aux-Roses, France; 3CMRR, Minneapolis, MN, United States
**RF Coil Arrays**

*Room 714 A/B 13:30-15:30  Moderators: Ryan J. Brown, Ph.D. & Ravi S. Menon, Ph.D.*

13:30  **0622. A Modular 16 Ch. Transmit/32 Ch. Receive Array for Parallel Transmission and High Resolution MRI at 7 Tesla**

Gregor Adriany¹, Scott Schillak², Matt Waks³, Brandon Tramm³, Andrea Grant⁴, Essa Yacoub⁴, Tommy Vaughan⁴, Cheryl Olman⁴, Sebastian Schmitter⁴, Kamil Urgur⁴

¹Medical School, Center for Magnetic Resonance Research, University of Minnesota, Minneapolis, MN, United States; ²Virtumed LLC, MN, United States

13:42  **0623. An Parallel-Transmit, Parallel-Receive Coil for Routine Scanning on a 7T Head-Only Scanner**

Kyle M. Gilbert¹, Joseph S. Gati¹, Esther Kho¹, L. Martyn Klassen¹, Peter Zeman¹, Ravi S. Menon¹

¹The University of Western Ontario, London, Ontario, Canada; ²University of Groningen, Groningen, Netherlands

13:54  **0624. 8-Channel Double Tuned ¹³C-¹H Transceiver Phased Array for ¹³C MRS in Human Brain at 7T**

Guillaume Donati¹, Oszlem Ipek², Eduard Sales Roig¹, Rolf Gruetter²

¹Laboratory of Functional and Metabolic Imaging, École Polytechnique Fédérale de Lausanne, Lausanne, Vaud, Switzerland; ²Centre d’Imagerie Biomédicale, École Polytechnique Fédérale de Lausanne, Lausanne, Vaud, Switzerland; ³Laboratory of Functional and Metabolic Imaging, École Polytechnique Fédérale de Lausanne, Lausanne, Vaud, Switzerland; ⁴Department of Radiology, Universities of Lausanne and Geneva, Lausanne, Geneva, Switzerland

14:06  **0625. A 10-Channel TMS-Compatible Planar RF Coil Array for Human Brain MRI at 3T**

Pu-Yeh Wu¹, Ying-Hua Chu¹, Aapo Nummenmaa², Thomas Witze³, Shang-Yueh Tsai³, Wen-Jui Kuo³, Fa-Hsuan Lin³

¹Institute of Biomedical Engineering, National Taiwan University, Taipei, Taiwan; ²Athinoula A. Martinsos Center for Biomedical Imaging, Massachusetts General Hospital, Charlestown, MA, United States; ³Institute of Applied Physics, National Chengchi University, Taipei, Taiwan; ⁴Institute of Neuroscience, National Yang Ming University, Taipei, Taiwan

14:18  **0626. 7T 22ch Wrap-Around Coil Array for Cervical Spinal Cord Imaging**

Bei Zhang¹, Priti Balchandani¹, Zahi A. Fayal¹, Joo-won Kim¹, Christopher Cannistraci¹, Bernd Stoeckel², Junqian Xu¹

¹Translational and Molecular Imaging Institute, Icahn School of Medicine at Mount Sinai, New York, United States; ²Siemens Medical Solution, New York, United States

14:30  **0627. A 7 T Spine Array Combining Dipole Transmitters and Loop Receivers**

Qi Duan¹, Govind Nair², Natalia Gudino¹, Jacco A. de Zwart¹, Peter van Gelderen¹, Joseph Murphy-Boesch¹, Daniel S. Reich², Jeff H. Duyn¹, Hellmut Merkle²

¹Laboratory of Functional and Molecular Imaging, NINDS, National Institutes of Health, Bethesda, MD, United States; ²Division of Neuroimmunology and Neurovirology, NINDS, National Institutes of Health, Bethesda, MD, United States

14:42  **0628. A Four Channel Transmit Receive "Loopole" Array for Spine Imaging at 7.0 Tesla**

Karthik Lakshmanan¹, Martijn Cloos², Ryan Brown¹, Timothy Shepherd³, Graham C. Wiggins¹

¹The Bernard and Irene Schwartz Center for Biomedical Imaging, Department of Radiology, New York University School of Medicine, New York, NY, United States; ²The Center for Advanced Imaging Innovation and Research (CAI2R), Department of Radiology, New York University School of Medicine, New York, NY, United States; ³Radiology, NYU Langone Medical Center, NY, United States; ⁴The Center for Advanced Imaging Innovation and Research (CAI2R), Department of Radiology, New York University School of Medicine, NY, United States

14:54  **0629. Z-Direction B₁⁺ Homogenization Using B₁-Contral Receive Array Coil and B₁ Rectifying Fin for L-Spine Imaging at 3T**

Yukio Kaneko¹, Yoshihisa Soutome¹, Hideta Habara¹, Yoshitaka Bito², Hisaaki Ochi³

¹Central Research Laboratory, Hitachi Ltd., Kokubunji, Tokyo, Japan; ²Hitachi Medical Corporation, Kashiwa, Chiba, Japan
15:06 0630. An Integrated 8-Channel Tx/Rx Body Coil for 7 Tesla Whole-Body MRI
Stephan Orzada1, Andreas K. Bitz2, Marcel Gratz1,1, Sören Johst1, Maximilian N. Völker1, Oliver Kraff1, Dominik Beyer1, Tristan Mathiebel, Ashraf Abuelhajia2, Klaus Solbach1, Mark E. Ladd1
1Erwin L. Hahn Institute for MRI, Essen, NRW, Germany; 2Medical Physics in Radiology, German Cancer Research Center (DKFZ), Heidelberg, Germany; 3High-field and Hybrid MR Imaging, University Clinic Essen, Essen, Germany; 4RF Technology, University Duisburg-Essen, Duisburg, Germany

15:18 0631. Combined 8-Channel Transceiver Fractionated Dipole Antenna Array with a 16-Channel Loop Coil Receive Array for Body Imaging at 7 Tesla
Ingrid J. Voogt1, Dennis W.J. Klomp1, Hans Hoogduin1, Mariska P. Lutjef1, Peter R. Luijten1, Cornelis A.T. van den Berg1, Alexander J.E. Raaijmakers1
1Imaging Division, UMC Utrecht, Utrecht, Netherlands

**Body/Fetal/Female Pelvis**

Room 716 A/B 13:30-15:30

**Moderators:** Andrea Righini, M.D., & T.B.A.

13:30 0632. Fetal Cardiac MRI and Left Ventricular Function Assessment Using a New Gating Strategy Based on Doppler Ultrasound: Preliminary Results
Jin Yamamura1, Björn Schönagel1, Manuela Tavares de Sousa1, Chressen Much1, Friedrich Ueberle2, Gerhard Adam1, Fabian Kording1, Fabian Kording2
1Diagnostic and Interventional Radiology, University Medical Center Hamburg-Eppendorf, Hamburg, Germany; 2Biomedical Technology Fakultät Life Sciences / Medizintechnik, University of Applied Sciences Hamburg, Hamburg, Germany

13:42 0633. Human Placental and Fetal Response to Maternal Hyperoxygenation in IUGR Pregnancy as Measured by BOLD MRI
Jie Luo1, Esra Abaci Turk1, Tobias Hahn1, Maria Teulín González1,2, Borjan Gagaski1, Carolina Bibbo1, Arvind Palanisamy1, Clare M. Temporny-Afdha1, Ángel Torrado-Carvajal1,2, Norberto Malpica1,2, Judith Martínez González1, Juan A. Hernández-Tamames1,2, Elfar Adelsteinsson1,2, Patricia Ellen Grant1
1Madrid-MIT M+Vision Consortium in RLE, Massachusetts Institute of Technology, Cambridge, MA, United States; 2Department of Obstetrics and Gynecology, Hospital Universitario de Fuenlabrada, Madrid, Spain; 3Fetal-Neonatal Neuroimaging & Developmental Science Center, Boston Children’s Hospital, Harvard Medical School, Boston, MA, United States; 4Department of Obstetrics and Gynecology, Division of Maternal and Fetal Medicine, Brigham and Women’s Hospital, Boston, MA, United States; 5Department of Anaesthesia, Brigham and Women's Hospital, Boston, MA, United States; 6Department of Radiology, Brigham and Women's Hospital, Boston, MA, United States; 7Medical Image Analysis and Biometry Laboratory, Universidad Rey Juan Carlos, Madrid, Spain; 8Department of Radiology, Hospital Universitario de Fuenlabrada, Madrid, Spain; 9Department of Electrical Engineering and Computer Science, Harvard-MIT Health Sciences and Technology, Massachusetts Institute of Technology, Cambridge, MA, United States

13:54 0634. Diffusion Weighted Imaging in Accurate Classification of Complex Ovarian Masses: A Whole-Tumor Heterogeneity Quantification Approach
Anahita Fathi Kazerooni1,2, Mojtaba Safari1, Hamidreza Haghighatkhah1, Mahnaz Nabi2, Hamidreza Saligheh Rad2,2
1Quantitative MR Imaging and Spectroscopy Group, Research Center for Molecular and Cellular Imaging, Tehran University of Medical Sciences, Tehran, Iran; 2Department of Medical Physics and Biomedical Engineering, School of Medicine, , Tehran University of Medical Sciences, Tehran, Iran; 3Department of Radiology, School of Medicine, Shahid Beheshti University of Medical Sciences, Tehran, Iran; 4Department of Statistics, Tarbiat Modares University, Tehran, Iran

14:06 0635. Choline Detection in Human Cervical Cancer Using an Internal Antenna and External Antennas at 7T.
Jessica M. Winfield1,2, Katherine Downey1, Matthew R. Orton2, John H. Shepherd1, Veronica A. Morgan1, Sharon L. Giles1, Thomas E. J Ind1, Nandita M. deSouza1,2
1MRI Unit, Royal Marsden NHS Foundation Trust, Sutton, Surrey, United Kingdom; 2CRUK Cancer Imaging Centre, Institute of Cancer Research, Sutton, Surrey, United Kingdom; 3Department of Gynecology, Royal Marsden NHS Foundation Trust, Sutton, Surrey, United Kingdom

14:18 0636. Separation of Type and Grade in Cervical Tumours Using Non-Mono-Exponential Models of Diffusion-Weighted MRI
Jessica M. Winfield1,2, Katherine Downey1, Matthew R. Orton2, John H. Shepherd1, Veronica A. Morgan1, Sharon L. Giles1, Thomas E. J Ind1, Nandita M. deSouza1,2
1MRI Unit, Royal Marsden NHS Foundation Trust, Sutton, Surrey, United Kingdom; 2CRUK Cancer Imaging Centre, Institute of Cancer Research, Sutton, Surrey, United Kingdom; 3Department of Gynecology, Royal Marsden NHS Foundation Trust, Sutton, Surrey, United Kingdom
Wednesday

14:30 0637. Fetal Hemodynamics of Intrauterine Growth Restriction by Phase Contrast MRI and MR Oximetry

 conquer zhao1, Sujana Maladath1, Sarah Keating2, Natasha Milligan3, Steven Miller4, Rory Windrim5, Sharon Portnoy6, John G. Sled7, Christopher Macgowan8, John Kingdom9, Mike Seed10

1Heart Centre, The Hospital for Sick Children, Toronto, Ontario, Canada; 2Institute of Medical Science, University of Toronto, Toronto, Ontario, Canada; 3Pathology & Laboratory Medicine, Mount Sinai Hospital, Toronto, Ontario, Canada; 4Neurology, The Hospital for Sick Children, Toronto, Ontario, Canada; 5Maternal-Fetal Medicine, Mount Sinai Hospital, Ontario, Canada; 6Mouse Imaging Centre, The Hospital for Sick Children, Toronto, Ontario, Canada; 7Physiology & Experimental Medicine, The Hospital for Sick Children, Toronto, Ontario, Canada; 8Obstetrics & Gynaecology, Mount Sinai Hospital, Toronto, Ontario, Canada

14:42 0638. Non-Contrast Magnetic Resonance Angiography of the Fetal Head and Neck Vessels

Uday Krishnamurthy1, Jalaadar Neelavalli1, Pavan Kumar Jella1, Ehsan Hamtaei1, Swati Mody1, Brijesh Kumar Yadav1,2, Edgar Hernandez-Andrade1,4, Lami Yeo4, Maria D. Cabrera1, Ewart Mark Haacke4,2, Sonia S. Hassan4,4, Roberto Romero4

1Department of Radiology, Wayne State University, Detroit, MI, United States; 2Department of Biomedical Engineering, Wayne State University, Detroit, MI, United States; 3Department of Obstetrics and Gynecology, Wayne State University, Detroit, MI, United States; 4Perinatology Research Branch, NICHD, NIH, DHHS, Wayne State University, Detroit, MI, United States

14:54 0639. Automated ROI Extraction of Placental and Fetal Regions for 30 Minutes of EPI BOLD Acquisition with Different Maternal Oxygenation Episodes

Esra Abaci Turk1, Jie Luo2, Angel Torrado-Carvajal12, Tobias Hahn1, Maria Teulon Gonzalez13, Borjan Gagoska1, Carolina Bibbo1, Julian N. Robinson1, Juan A. Hernandez-Tamames11, Patricia Ellen Grant1, Elfar Adalsteinsson16, Javier Pasaca13, Norberto Malpica12

1CRUK Cancer Imaging Centre, The Institute of Cancer Research and The Royal Marsden Hospital, Sutton, Surrey, United Kingdom; 2Department of Obstetrics and Gynaecology, Hospital Universitario de Fuenlabrada, Madrid, Spain; 3Fetal-Neonatal Neuroimaging & Developmental Science Center, Boston Children's Hospital, Harvard Medical School, Boston, MA, United States; 4Department of Obstetrics and Gynecology, Division of Maternal and Fetal Medicine, Brigham and Women's Hospital, Boston, MA, United States; 5Dept. of Electrical Engineering and Computer Science, Harvard-MIT Health Sciences and Technology, Massachusetts Institute of Technology, Cambridge, MA, United States; 6Department of Biomedica Eng. , Universidad Carlos III de Madrid – Instituto de Investigacion Sanitaria Gregorio Maranon, Madrid, Spain

15:06 0640. Comparison of Optimized Endovaginal Vs. External Array Coil T2-W and Diffusion-Weighted Imaging Techniques for Detecting Suspected Early Stage (Ia/Ib1) Uterine Cervical Cancer

Kate Downey1, Veronica Morgan1, Alison MacDonald1, Sharon Giles2, John Shepherd2, Thomas Ind2, Ayoma Attiggyalle3, Steve Hazell3, Nandita deSouza1

1CRUK Cancer Imaging Centre, The Institute of Cancer Research and The Royal Marsden Hospital, Sutton, Surrey, United Kingdom; 2Gynaecological Surgery, The Royal Marsden Hospital, London, United Kingdom; 3Histopathology, The Royal Marsden Hospital, London, United Kingdom

15:18 0641. Assessment of Fetal Fat Distribution with Water-Fat MRI

Craig Olmstead1, Lanette Friesen-Waldner2, Abraam Soliman3,4, Kevin Sinclair2, Barbra de Vrijer3, Charles McKenzie3

1Schulich School of Medicine and Dentistry, University of Western Ontario, London, Ontario, Canada; 2Department of Medical Biophysics, University of Western Ontario, London, Ontario, Canada; 3Robarts Research Institute, University of Western Ontario, London, Ontario, Canada; 4Department of Biomedical Engineering, University of Western Ontario, London, Ontario, Canada; 5Department of Obstetrics and Gynaecology, University of Western Ontario, London, Ontario, Canada

Developing & Aging Brain
Constitution Hall 107 13:30-15:30 Moderators: Christopher D. Kroenke, Ph.D. & Pratik Mukherjee, M.D., Ph.D.

13:30 0642. In-Utero Localized Diffusion MRI of the Embryonic Mouse Brain Microstructure and Injury

Dan Wu1, Jun Lei2, Jason Rosenzweig2, Irina Burd2, Jiangyang Zhang1

1Biomedical Engineering, Johns Hopkins University School of Medicine, Baltimore, MD, United States; 2Gynecology and Obstetrics, Johns Hopkins University School of Medicine, MD, United States; 3Radiology, Johns Hopkins University School of Medicine, MD, United States

13:42 0643. Longitudinal in Utero Characterization of Cerebral Cortical Surface Area, Curvature and Fractional Anisotropy in the Rhesus Monkey

Xiaojie Wang1, Colin Studholme2, Christopher D. Kroenke1

1Oregon Health & Science University, Portland, OR, United States; 2University of Washington, Seattle, WA, United States
13:54 0644. Full 3D Mapping of T2* Relaxation Times from Mid to Late Gestation of the Normal Fetal Brain
Anna I. Blaziejewska1,5, Shamrathaa Seshamani1,5, Susan K. McKown, Jason S. Caucutt, Manjiri Dighe, Christopher Gatenby, Colin Studholme2
1BICG, University of Washington, Seattle, WA, United States; 2BICG, University of Washington, WA, United States

14:06 0645. Relating the Structural and Functional Maturation of Visual and Auditory White Matter Pathways with Diffusion Imaging and Event-Related Potentials in Infants
Parvaneh Adibpour1,2, Ghislaine Dehaene-Lambertz1,2, Jessica Dubois1,2
1Cognitive Neuroimaging Unit, INSERM, Gif-sur-Yvette, France; 2NeuroSpin, CEA, Gif-sur-Yvette, France

14:18 0646. Developmental Characterization of Sub-Cortical White Matter Tracts
Adeoye Oyefiade1, Stephanie Ameis3, Nadia Scantlebury1,2, Alexandra Decker2, Kamila U. Szulc2, Donald J. Mabbot1,2
1Psychology, The Hospital for Sick Children, Toronto, ON, Canada; 2Neurosciences and Mental Health, The Hospital for Sick Children, Toronto, ON, Canada; 3Child and Youth Mental Health, Center for Addiction and Mental Health, Toronto, Toronto, ON, Canada

14:30 0647. Age-Related Changes in Total Cerebral and Cardiac Blood Flow in Children and Adult Volunteers from 7 Months to 60 Years
Can Wu1,2, Samantha Schoeneman3, Amir Honarmand1, Susanne Schnell1, Michael Markl1,2, Ali Shaibani1,3
1Lawson Health Research Institute, London, Ontario, Canada; 2Medical Biophysics, Western University, London, Ontario, Canada; 3School of Kinesiology, Western University, London, Ontario, Canada; 4London Health Sciences Cardiology Rehabilitation Program, London, Ontario, Canada; 5University of California, Los Angeles, CA, United States

14:42 0648. Cell Volume Fraction (“cell Density”) Is Stable Despite Cerebral Volume Loss in Normal Human Ageing as Measured by Quantitative Sodium MR Imaging at 9.4Tesla
Elaine H. Lui1,2, Jonathan Guntin3, Saad Jamil2, Ziqi Sun1, Ian C. Atkinson1, Keith R. Thulborn3
1Radiology, Royal Melbourne Hospital, University of Melbourne, Parkville, Victoria, Australia; 2Centre of Magnetic Resonance Research, University of Illinois Chicago, Chicago, IL, United States; 3Centre of Magnetic Resonance Research, University of Illinois Chicago, IL, United States

14:45 0649. Densely Packed White Matter Regions Are Less Prone to Develop White Matter Hyperintensities
Robert S. Vorburger1, Atul Narkhede1, Yunglin Gazes1, Vanessa A. Gazman1, Yaakov Stern1,2, Adam M. Brickman1,2
1Taub Institute, Columbia University, New York, United States; 2Department of Neurology, Columbia University, New York, United States

15:06 0650. Correlation of Brain Atrophy to Decreased CBF and CVR in Coronary Artery Disease Patients.
Uduanu Anazodo1,2, Kevin Shoemaker2, Neville Susskin3, Danny J. Wang1, Keith S. St Lawrence1,2
1Lawson Health Research Institute, London, Ontario, Canada; 2Medical Biophysics, Western University, London, Ontario, Canada; 3School of Kinesiology, Western University, London, Ontario, Canada; 4London Health Sciences Cardiology Rehabilitation Program, London, Ontario, Canada; 5University of California, Los Angeles, CA, United States

15:18 0651. Longitudinal Relationship Between Amyloid Burden and Cerebrovascular Health in Healthy Individuals: a Combined MRI and PET Study
Peiying Liu1, Karen Rodriguez2, Kristen Kennedy2, Shin-Lei Peng1, Yang Li1, Michael Devous3, Denise Park2, Hanzhang Lu1
1Advanced Imaging Research Center, University of Texas Southwestern Medical Center, Dallas, TX, United States; 2Center for Vital Longevity, University of Texas at Dallas, TX, United States; 3Avid Radiopharmaceuticals Inc, TX, United States

Novel Pulse Sequences & Trajectories
John Bassett Theatre 102 13:30-15:30

Moderators: Fernando E. Boada, Ph.D. & Zhiqiang Li, Ph.D.
Wednesday

13:30  0652.  3D Cones Reordering Design Methods for Whole-Heart Coronary MR Angiography
        Mario O. Malave¹, Nii Okai Addy¹, R. Reeve Ingle¹, Joseph Y. Cheng¹, Dwight G. Nishimura¹
        ¹Electrical Engineering, Stanford University, Stanford, CA, United States

13:41  0653.  McMPRAGE (Multi-Contrast MPRAGE): A Novel Sequence for Generating Multiple Contrast Images in a
        Single Scan
        Manojkumar Saranathan¹, Brian K. Rutt¹
        ¹Dept. of Radiology, Stanford University, Stanford, CA, United States

13:52  0654.  Rapid Whole-Body Quantitative Fat Water Imaging with Golden Angle Continuously Moving Table MRI at 3
        Tesla
        Saikat Sengupta¹, ², David S. Smith¹, ³, E. Brian Welch¹, ²
        ¹Radiology and Radiological Sciences, Vanderbilt University, Nashville, TN, United States; ²Vanderbilt University Institute of
        Imaging Science, Nashville, TN, United States; ³Vanderbilt University Institute of Imaging Science, Nashville, TN, United States

14:03  0655.  Real-Time Speech MRI: A Comparison of Cartesian and Non-Cartesian Sequences
        Andreaia C. Freitas¹, ², Marzena Wylezinska, ¹², Malcolm J. Birch¹, Steffen E. Petersen¹, Marc E. Miguel, ¹²
        ¹William Harvey Research Institute, Queen Mary University of London, London, United Kingdom; ²Clinical Physics, Barts Health
        NHS Trust, London, United Kingdom

14:14  0656.  Improve O-Space Imaging Using High-Resolution Oversampled Data Acquisitions
        Haifeng Wang¹, Leo Tam¹, Emre Kopanoglu¹, Dana Peters¹, Gigi Galiana¹, R. Todd Constable¹
        ¹Department of Diagnostic Radiology, Yale University, New Haven, CT, United States

14:25  0657.  Off-Resonance Blurring Tolerant Image Reconstruction of 3D Radial MRI with Linogram Sampling
        Naoharu Kobayashi¹, Djaudat Idiyatullin¹, Curtis A. Corum¹, Michael Garwood¹
        ¹Center for Magnetic Resonance Research, Department of Radiology, University of Minnesota, Minneapolis, MN, United States

14:36  0658.  Artifact Free 3D Fast Spin Echo Imaging Using a Single Excitation
        Yuval Zur¹, Weitian Chen²
        ¹GE Healthcare, Tirat Carmel, Israel; ²Applied Science Lab, GE Healthcare, Menlo Park, CA, United States

14:47  0659.  ZTE Imaging with Enhanced Flip Angle Using Modulated Excitation
        Konrad Schieban¹, Markus Weiger¹, Franciskek Hennek¹, Andreas Boss¹, Klaas Paul Praessmann¹
        ¹Institute for Biomedical Engineering, ETH Zurich, Zurich, Switzerland; ²Bruker BioSpin MRI GmbH, Ettlingen, Germany; ³Institute
        for Diagnostic and Interventional Radiology, University Hospital Zurich, Zurich, Switzerland

14:58  0660.  Ramped Hybrid Encoding for Improved Ultrashort TE Imaging
        Hyungseok Jang¹, ², Curtis N. Wiens¹, Alan B. McMillan¹
        ¹Radiology, University of Wisconsin, Madison, WI, United States; ²Electrical and Computer Engineering, University of Wisconsin,
        Madison, WI, United States

Combined Educational & Scientific Session
Cardiovascular Tissue Characterization
Organizers: Daniel B. Ennis, Ph.D. & Martin J. Graves, Ph.D.
Room 718 A  13:30-15:30  Moderators: Neville D. Gai, Ph.D. & Richard B. Thompson, Ph.D.
13:30  What Is the Clinical Value of Quantitative Myocardial Tissue Characterization?
        Jeanette Schulz-Menger

14:00  0661.  Application of Native Myocardial T1 Mapping in Subjects with Coronary Microvascular Dysfunction and No
        Obstructive Coronary Artery Disease
14:12 0662. Black-Blood Contrast-Enhanced MRI: Validation of a Novel Technique for the Diagnosis of Myocardial Infarction
Han W. Kim1, Wolfgang G. Rehwald2, David C. Wendell1, Elizabeth R. Jenista1, Lowie Van Assche1, Christoph Jensen1, Peter Filev1, Enn-Ling Chen1, Michele A. Parker1, Raymond J. Kim1
1Biotechnology, University of California, Los Angeles, Los Angeles, CA, United States; 2Department of Biomedical Engineering, University of California, Los Angeles, Los Angeles, CA, United States; 3Cedars-Sinai Heart Institute, Los Angeles, CA, United States

14:24 0663. Cardiovascular Susceptibility Weighted Imaging Computed Using Water-Fat Separation Improves Intramyocardial Hemorrhage Detection Specificity
James Goldfarb1, 2
1Department of Research and Education, Saint Francis Hospital, Roslyn, NY, United States; 2Biomedical Engineering, Stony Brook University, Stony Brook, NY, United States

14:54 What Is the Clinical Value of Vessel Wall Characterization?
Tobias Saam

15:06 0664. Intracranial Vessel Wall MR Registry
Qi Yang1, 2, Haiping Song1, Hongqi Zhang1, Feng Ling2, Yu-Chao Chung3, Lei Zhang3, Zhaoyang Fan3, Xin Liu3, Kuncheng Li2, Debiao Li1
1Biomedical Imaging Research Institute, Cedars Sinai Medical Center, Los Angeles, CA, United States; 2Xuanwu Hospital, Beijing, China; 3Shenzhen Institutes of Advanced Technology, Chinese Academy of Sciences, Shenzhen, Guangdong, China

15:18 0665. Evaluation of Distribution of Femoral Artery Atherosclerotic Disease in Asymptomatic Old Adults Using 3D MR Vessel Wall Imaging
Maobin Guan1, Huijun Chen2, Zhu Zhu1, Le He2, Qiang Zhang2, Niranjan Bahu1, Chun Yuan2, 3, Xihai Zhao2
1Department of Radiology, Yangzhou First People's Hospital, Yangzhou, China; 2Center for Biomedical Imaging Research, Tsinghua University School of Medicine, Beijing, China; 3Department of Radiology, University of Washington, Seattle, WA, United States

15:30 Adjournment & Meet the Teachers

Educational Course
MR Economics
Organizers: Kevin M. Bennett, Ph.D. & Xiaohong Joe Zhou, Ph.D., D.A.B.R.
Room 718 B 13:30-15:30  Moderators: Kevin M. Bennett, Ph.D. & Xiaohong Joe Zhou, Ph.D., D.A.B.R.

13:30 MRI in Clinical Care & Research
Hedvig Hricak

14:00 MRI & Health in Developing Countries
Chun Yuan

14:30 Optimizing Clinical Protocols
Geoffrey S. Young

15:00 New Technology & Health Care Costs
James G. Pipe

15:30 Adjournment & Meet the Teachers
Wednesday

Educational Course
Spine
Organizers: Jonathan H. Gillard, M.D., FRCR, MBA & Howard A Rowley, M.D.
Room 801 A/B  13:30-15:30  Moderators: David B. Hackney, M.D. & Roland R. Lee, M.D.
13:30  MR in Low Back Pain: What the Neuroradiologist Can Contribute
      Michael T. Modic
14:00  MR in Low Back Pain: What Should We Do & Why?
      Johan W.M. Van Goethem
14:30  Spinal MR: What Multiparametric MR Can Add: A Physicist's Perspective
      Julien Cohen-Adad
15:00  Spinal MR: What Multiparametric MR Can Add: A Clinician's Perspective
      Lawrence N. Tanenbaum
15:30  Adjournment & Meet the Teachers

Hands-On Workshop 2 - Siemens
Room 711  13:30-15:30  (no CME credit)

Hands-On Workshop 2 - GE Healthcare
Room 703  13:30-15:30  (no CME credit)

Hands-On Workshop 2 - Philips Healthcare
Room 707  13:30-15:30  (no CME credit)

Traditional Poster Session: Pulse Sequences
Exhibition Hall  16:00-18:00  (no CME credit)

Electronic Poster Session: Neuro B
Exhibition Hall  16:00-18:00  (no CME credit)

Study Group Session
Interventional MR
Reception Hall 104 BCD 16:00-18:00  (no CME credit)

Study Group Session
Current Issues in Brain Function
Constitution Hall 105  16:00-18:00  (no CME credit)

Power Pitch Session: Cancer
Power Pitch Theatre, Exhibition Hall  16:00-17:00  (no CME credit)
Moderators: Bachir Taouli, M.D. & T.B.A.
Alina Tudorica¹, David C. Newitt², Karen Y. Oh³, Nicole Roy⁴, Stephen Y-C Chui³, Arpana Naik⁴, Megan L. Troxell¹, Yiyi Chen⁴, Aneela Afzal⁴, Megan L. Holtorf⁴, Nola M. Hylton², Wei Huang⁴
¹Oregon Health & Science University, Portland, OR, United States; ²University of California, San Francisco, CA, United States

114
0667. Can Model Weighting Improve the Accuracy of DCE-MRI Parameter Estimation?  
Xia Li1, Lori R. Arlinghaus1, Erin Rericha1, Thomas Yankeelov1  
1Vanderbilt University, Nashville, TN, United States

0668. Impact of Non-Rigid Motion Correction on Pharmaco-Kinetic Analysis for Breast Dynamic Contrast-Enhanced MRI  
Venkata Veerendra Naaj Chebrolu1, Dattesh Shanbhag1, Reem Bedair2, Sandeep Gupta1, Patrice Hervo3, Scott Reid3,  
Fiona Gilbert4, Andrew Patterson4, Martin Graves4, Rakesh Multick5  
1Medical Image Analysis Lab, GE Global Research, Bangalore, Karnataka, India; 2Radiology, University of Cambridge, Cambridge, United Kingdom; 3Biomedical Image Analysis Lab, GE Global Research, NY, United States; 4GE Healthcare, Buc, France; 5GE Healthcare, Amersham, United Kingdom; 6Cambridge University Hospitals Trust, Cambridge, United Kingdom; 7Radiology, Cambridge University Hospitals Trust, Cambridge, United Kingdom; 8Diagnostics & Biomedical Technologies, GE Global Research, Bangalore, Karnataka, India

0669. Dynamic Contrast Enhanced MRI Estimate of Tumor Interstitial Fluid Pressure in Solid Brain Tumors  
Madhava P. Arya1, Tavarekere N. Nagarajade, Rasha Elmghribi,1, Kelly A. Keenan2, Swayampravada Panda3, Glauber Cabral1, Stephen L. Brown1, James R. Ewing4,13  
1Dept. of Neurology, Henry Ford Hospital, Detroit, MI, United States; 2Dept. of Anesthesiology, Henry Ford Hospital, Detroit, MI, United States; 3Dept. of Physics, Oakland University, Rochester, MI, United States; 4Dept. of Radiation Oncology, Henry Ford Hospital, Detroit, MI, United States

0670. Quantitative Perfusion Measurements in Renal Masses with Arterial Spin Labeling and Dynamic Contrast Enhanced MRI at 3T Correlate with Microvessel Density at Histopathology  
Yue Zhang1, Payal Kapur1, Qi Qing Yuan1, Ananth Madhuranthakam1,1, Ingrid Carvo2, Sabina Signoretti2, Ivan Dimitrov1, Yin Xi3, Katherine Wicks1, Jeffrey Cadeddu1, Vitaly Margulis1, James Brugarolas4,8, Ivan Pedrosa1,4  
1Radiology, University of Texas Southwestern Medical Center, Dallas, TX, United States; 2Pathology, University of Texas Southwestern Medical Center, Dallas, TX, United States; 3Urology, University of Texas Southwestern Medical Center, Dallas, TX, United States; 4Advanced Imaging Research Center, University of Texas Southwestern Medical Center, Dallas, TX, United States; 5Pathology, Brigham and Women’s Hospital, Boston, MA, United States; 6Philips Medical Systems, Cleveland, OH, United States; 7Internal Medicine, University of Texas Southwestern Medical Center, Dallas, TX, United States; 8Developmental Biology, University of Texas Southwestern Medical Center, Dallas, TX, United States

0671. Classification of Tumor Sub-Volumes Based on Dynamic Contrast Enhanced MRI Model Hierarchy for Locally Advanced Cervical Cancer  
Jesper Følsted Kallehave1,2, Thomas Nielsen1, Markus Alber1, Søren Haack24, Erik Morre Pedersen5, Jacob Christian Lindegaard1, Anne Ramlov7, Kari Tandrup7,8  
1Dept. of Medical Physics, Aarhus University Hospital, Aarhus, Denmark; 2Dept. of Oncology, Aarhus University Hospital, Aarhus, Denmark; 3CFIN/Mindlab, Aarhus University Hospital, Aarhus, Denmark; 4Dept. of Clinical Engineering, Aarhus University Hospital, Aarhus, Denmark; 5Dept. of Radiology, Aarhus University Hospital, Aarhus, Denmark; 6Dept. of Clinical Oncology, Aarhus University Hospital, Aarhus, Denmark; 7Dept. of Clinical Medicine, Aarhus University, Aarhus, Denmark

0672. Evaluation of Stretched-Exponential Model for Diffusion-Weighted Imaging of Breast Lesions Using High B Values: Comparison with Monoexponential Diffusion Weighted Imaging  
Chunling Liu1, Changhong Liang1, Yingjie Mei2, Zaiyi Liu1, Jine Zhang1  
1Department of Radiology, Guangdong General Hospital/Guangdong Academy of Medical Sciences, Guangzhou, Guangdong, China; 2Philips Healthcare, Guangzhou, Guangdong, China

0673. SUV-ADC Mapping of Malignant and Benign Prostate Lesions with PET-MRI  
Yachao Liu1, Jiangping Gao1, Jiajin Liu1, Hui Liu1, Yong Xu1, Baixuan Xu1, Jiahe Tian1  
1Nuclear Medicine Department, PLA 301 General Hospital, Beijing, China; 2Urology Department, PLA 301 General Hospital, Beijing, China; 3NEA MR Collaboration, Siemens Ltd., China, Shanghai, China

0674. Simultaneous 18F-FACBC PET/MRI for Loco-Regional Staging of Prostate Cancer: Considerations on Imaging Protocol Design  
Mattijts Elschot1, Kirsten M. Selnes1,2, Brage Krüger-Stokke1, Øystein Størkersen2, Helena Bertilsson3,6, Siver A. Moestue1,2, Tone F. Bathen1,2  
1Department of Medical Physics, Aarhus University Hospital, Aarhus, Denmark; 2Department of Oncology, Aarhus University Hospital, Aarhus, Denmark; 3Pathology, Aarhus University Hospital, Aarhus, Denmark; 4Second Department of Radiology, Aarhus University Hospital, Aarhus, Denmark; 5Department of Radiology, Aarhus University Hospital, Aarhus, Denmark; 6Department of Clinical Medicine, Aarhus University, Aarhus, Denmark
0675. Multiparametric Hybrid 18FDG-PET/MRI in Patients with Multiple Myeloma: Initial Experience  
Jennifer Mossebach1, Christos Sachpekidis2, Martin Freitag1, Jens Hillengass1, Antonia Dimitrakopoulou-Strauss2, Uwe Haberkorn3, Heinz-Peter Schlemmer1, Stefan Delorme1  
1Department of Radiology, German Cancer Research Center, Heidelberg, Germany; 2Clinical Cooperation Unit Nuclear Medicine, German Cancer Research Center, Heidelberg, Germany; 3Department of Medicine V, Multiple Myeloma Section, University of Heidelberg, Heidelberg, Germany; 4Division of Nuclear Medicine, University of Heidelberg, Heidelberg, Germany

0676. 4D Echo Planar Correlated Spectroscopic Imaging and DWI of Breast Cancer  
Rajakumar Nagarajan1, Neil Wilson1, Nanette DeBruhl1, Brian Burns2, Melissa Joines1, Maithili Gopalakrishnan1, Fausto Rendon1, Lawrence W. Bassett1, M. Albert Thomas1  
1Radiological Sciences, UCLA School of Medicine, Los Angeles, CA, United States

0677. Relaxation-Weighted Sodium MRI of Breast Lesions at 7T  
Stefan Zbynit, Olgica Zoric, Vladimir Juras, Katja Pinker, Alex Farr, Nadia Benkhedhah, Pascal Balzer, Vladimir Mlynarik, Armin Nager, Christian Singer, Thomas Helbich, Wolfgang Bogner, Siegfried Tatroit  
1High Field MR Center, Department of Biomedical Imaging and Image-guided Therapy, Medical University of Vienna, Vienna, Austria; 2Division of Molecular and Gender Imaging, Department of Biomedical Imaging and Image-guided Therapy, Medical University of Vienna, Vienna, Austria; 3Department of Gynecology and Obstetrics, Medical University of Vienna, Vienna, Austria; 4Department of Medical Physics in Radiology, German Cancer Research Center (DKFZ), Heidelberg, Germany

0678. Noninvasive Assessment of Lympathic Impairment and Interstitial Protein Accumulation Using Chemical Exchange Saturation Transfer (CEST) MRI  
Manus Donahue1, 2, Paula CM Donahue1, 3, Swati Rane1, Megan K. Strother4, Allison O. Scott5, Seth A. Smith1  
1Radiology and Radiological Sciences, Vanderbilt University Medical Center, Nashville, TN, United States; 2Physics and Astronomy, Vanderbilt University, Nashville, TN, United States; 3Physical Medicine and Rehabilitation, Vanderbilt University Medical Center, Nashville, TN, United States; 4Dayani Center for Health and Wellness, Nashville, TN, United States

0679. Combining ‘omics’; Metabolic Breast Cancer Subclass Correlation with Protein and Gene Expression Subtypes  
Tonja H. Haukaas1, 2, Leslie R. Euceda1, 2, Guro F. Giskeødegård1, 3, Marit Krohn1, 2, Ellen Schlichting2, 3, Rolf Kåresen1, 2, Sandra Nyberg1, 2, 3, Kristine Kleivi Sahlberg1, 2, 3, Anne-Lise Borresen-Dale1, 3, Tone F. Bathen1  
1Department of Circulation and Medical Imaging, Faculty of Medicine, NTNU, Trondheim, Norway; 2St Olavs Hospital, Trondheim, Sør-Trøndelag, Norway; 3Department of Radiology, St Olavs Hospital, Trondheim, Sør-Trøndelag, Norway; 4Department of Urology, St Olavs Hospital, Trondheim, Sør-Trøndelag, Norway; 5Department of Cancer Research and Molecular Medicine, Norwegian University of Science and Technology, Trondheim, Sør-Trøndelag, Norway

0680. Using Radiogenomics to Characterize MRI-Guided Prostate Cancer Biopsy Heterogeneity  
Radka Stoyanova1, Alan Pollack2, Nicholas Erho3, Charles Lynne4, Lucia Lam5, Christine Buerki1, Sakhi Abraham1, Merce Jorda6, Olivier Girard6, Giselle Duhamel6, Arnaud Le Troter1, Olivier M. Girard3, 4, Guillaume Duhamel3, 4, Rolf Kåresen3, 5, Thorsten Feiwie1, Maxime Guye2, 4, Jean-Philippe Ranjeva1, 4, Virginie Callot3, 4  
1Radiation Oncology, University of Miami, Miami, FL, United States; 2Division of Urology, University of Miami, Miami, FL, United States; 3Urology, University of Miami, Miami, FL, United States; 4Department of Pathology, University of Miami, Miami, FL, United States; 5Department of Urology, University of Miami, Miami, FL, United States; 6Siemens AG, Healthcare, Erlangen, Germany

Spinal Cord & ENT Imaging  
Room 701 A 16:00-18:00  
16:00 0681. Regional and Age-Related Variations of the Healthy Spinal Cord Structure Assessed by Multimodal MRI (Diffusion, Inhomogeneous Magnetization Transfer, lHMT)  
Manuel Taso1, 2, Olivier Girard1, 2, Guillaume Duhamel1, 2, Arnaud Le Troter1, 2, Guillerme Ribeiro3, 4, Thorsten Feiwie1, Maxime Guye1, 4, Jean-Philippe Ranjeva1, 4, Virginie Callot3, 4  
1CRMBM-CEMEREM UMR 7339, Aix-Marseille Université, CNRS, Marseille, France; 2LBA UMR T 24, Aix-Marseille Université, IFSTTAR, Marseille, France; 3CRMBM UMR 7339, Aix-Marseille Université, CNRS, Marseille, France; 4CEMEREM, Pole d'imagerie médicale, Hôpital la Timone, AP-HM, Marseille, France; 5Siemens AG, Healthcare, Erlangen, Germany
**Real time MRI (RT-MRI) is a powerful tool to visualize the complex spatio-temporal coordination of upper airway structures during speech.**

Brain regions such as pons, cerebellum, spine etc are difficult to image using diffusion imaging due to the presence of high signal-to-noise ratio artifacts. We have developed parametric imaging methods that can recover diffusion orientation distribution functions at high resolution to enable the study of these regions.

1Dept of Psychiatry, University of Iowa, Iowa City, IA, United States; 2Dept of Electrical and Computer Engineering, University of Iowa, Iowa City, IA, United States; 3Center for Medical Image Computing, Department of Computer Science, University College London, London, United Kingdom; 4Brain Repair & Rehabilitation, UCL Institute of Neurology, London, United Kingdom; 5Spin Repair Unit, Brain Repair & Rehabilitation, UCL Institute of Neurology, London, United Kingdom; 6Leonard Wolfson Experimental Neurology Centre, UCL Institute of Neurology, London, United Kingdom

**Diffusion MRI Reveals Tissue Specific Changes in Early and Late Stages of Degeneration Within the Spinal Cord**

Torben Schneider, Gemma Nejati-Gilani, Mohamed Tachrouti, Ying Li, Amber Hill, Olga Ciccarelli, Ken Smith, David Thomas, Daniel C. Alexander, Claudia A M Wheeler-Kingshott

1NMR Research Unit, Department of Neuroinflammation, Queen Square MS Centre, UCL Institute of Neurology, London, United Kingdom; 2Department of Infectious Disease Epidemiology, Imperial College, London, United Kingdom; 3Centre for Medical Image Computing, Department of Computer Science, University College London, London, United Kingdom; 4Brain Repair & Rehabilitation, UCL Institute of Neurology, London, United Kingdom; 5Spin Repair Unit, Brain Repair & Rehabilitation, UCL Institute of Neurology, London, United Kingdom; 6Leonard Wolfson Experimental Neurology Centre, UCL Institute of Neurology, London, United Kingdom

**Longitudinal Characterization of the Wallerian Degeneration Process by a Multi-Compartment Diffusion Model: DIAMOND After a Rhizotomy in the Rat Spinal Cord and Comparison with the Histology**

Damien Jacobs, Benoit Scherrer, Aleksandar Jankowski, Anne des Rieux, Maxime Taquet, Bernard Gallez, Simon K. Warfield, Benoit Macq

1ICTEAM, Universite catholique de Louvain, Louvain-La-Neuve, Belgium; 2Computational Radiology Laboratory, Boston Childrens Hospital, MA, United States; 3Hôpital universitaire Mont-Godinne, Université catholique de Louvain, Godinne, Belgium; 4LDRI, Universite catholique de Louvain, Brussels, Belgium

**Diffusion Basis Spectrum Imaging Quantifies Pathologies in Cervical Spondylotic Myelopathy**

Peng Sun, Rory Murphy, Yong Wang, Joanna Wagner, Sammir Sullivan, Paul Gamble, Kim Griffin, Wilson Z. Ray, Sheng-Kwei Song

1Radiology, Washington University in St. Louis, St. Louis, MO, United States; 2Neurosurgery, Washington University in St. Louis, St. Louis, MO, United States; 3Physical Therapy and Athletic Training, Saint Louis University, St. Louis, MO, United States

**Evaluating the Feasibility of Monitoring In Vivo Spinal Cord Metabolism Using Hyperpolarized Carbon-13 MR Spectroscopic Imaging**

Ilwoo Park, Jason F. Talbott, Sarah J. Nelson

1Department of Radiology and Biomedical Imaging, University of California San Francisco, CA, United States; 2Brain and Spine Injury Center (BASIC), San Francisco General Hospital, San Francisco, CA, United States; 3Department of Bioengineering and Therapeutic Sciences, University of California San Francisco, CA, United States

**Computer-Aided Diagnosis of Head and Neck Lesions from Non-Gaussian Diffusion MRI Signal Patterns**

Mami Iima, Akira Yamamoto, Denis Le Bihan, Shigeru Hiranò, Ichiro Tateya, Morimasa Kitamura, Kaori Togashi

1Department of Diagnostic Imaging and Nuclear Medicine, Graduate School of Medicine, Kyoto University, Kyoto, Japan; 2Human Brain Research Center, Graduate School of Medicine, Kyoto University, Kyoto, Japan; 3Neurospin, CEA-Saclay Center, Gif-sur-Yvette Cedex, France; 4Department of Otolaryngology, Head and Neck Surgery, Graduate School of Medicine, Kyoto University, Kyoto, Japan

**Diffusion Imaging of Head and Neck at High Angular and Spatial Resolution Using Multi-Shot Spirals**

Merry Mani, Mathews Jacob, Vincent Magnotta

1Dept of Psychiatry, University of Iowa, Iowa City, IA, United States; 2Dept of Electrical and Computer Engineering, University of Iowa, Iowa City, IA, United States; 3Dept of Radiology, University of Iowa, Iowa City, IA, United States

**High Spatio-Temporal Resolution Multi-Slice Real Time MRI of Speech Using Golden Angle Spiral Imaging with Constrained Reconstruction, Parallel Imaging, and a Novel Upper Airway Coil**

Sajan Goud Lingala, Yinghua Zhu, Yoon-Chul Kim, Asterios Toutios, Shrikant Narayanan, Krishna S. Nayak

1Electrical Engineering, University of Southern California, Los Angeles, CA, United States; 2Samsung Medical Center, Seoul, Korea
17:48  0690. High Resolution Magnetic Resonance Elastography of the Human Eye In Vivo: A Feasibility Study
Jürgen Braun1, Sebastian Hirsch2, Jing Guo2, Katharina Erb-Eigner3, Ingolf Sack2
1Department of Medical Informatics, Charité - Universitätsmedizin Berlin, Berlin, Germany; 2Department of Radiology, Charité - Universitätsmedizin Berlin, Berlin, Germany

Cell Memories: Cell Tracking & MEMRI
Room 701 B  16:00-18:00  Moderators: Ichio Aoki, Ph.D. & Paula J. Foster, Ph.D.

16:00  0691. In Vivo Monitoring of Immune Cell Kinetics with Time-Lapse MRI in the Ischemic Lesion of Mouse Brain
Yuki Mori1,2, Ting Chen1,2, Yoshihika Yoshioka1,2
1Biofunctional Imaging, Immunology Frontier Research Center (IFReC), Osaka University, Suita, Osaka, Japan; 2Center for Information and Neural Networks, Suita, Osaka, Japan

16:12  0692. Dual Iron/Fluorine Cell Tracking: Monitoring the Fate of Human Stem Cells and the Ensuing Cellular Inflammatory Response
Jeff M. Gaudet1, 2, Matthew S. Fox1, Amanda M. Hamilton1, Paula J. Foster1, 2
1Imaging Research Laboratories, Robarts Research Institute, London, Ontario, Canada; 2Medical Biophysics, Western University, London, Ontario, Canada

16:24  0693. Comparison of Different Compressed Sensing Algorithms for Low SNR 19F Application --- Imaging of Transplanted Pancreatic Islets with PFCE Labeled
Sayuan Liang1, Yipeng Liu1, Tom Dresselaers2, Karim Louchami1, Sabine Van Huffel1, Uwe Himmelreich1
1Department of Imaging & Pathology, KU Leuven, Leuven, Flemish Brabant, Belgium; 2ESAT, KU Leuven, Leuven, Flemish Brabant, Belgium; 3Laboratory of Experimental Hormonology, Université Libre de Bruxelles, Brussels, Belgium

16:36  0694. Using SWIFT T1 Mapping to Quantify Iron Oxide Nanoparticles Uptake and Biodistribution in Organs In-Vivo
Jinjin Zhang1, Hattie L. Ring, 12, Katie Hurley1, Qi Shao1, Nathan D. Klein2, Christy Haynes1, John Bischof4, Michael Garwood1
1Center for Magnetic Resonance Research, Department of Radiology, University of Minnesota, Minneapolis, MN, United States; 2Department of Chemistry, University of Minnesota, MN, United States; 3Department of Biomedical Engineering, University of Minnesota, MN, United States; 4Department of Mechanical Engineering, University of Minnesota, MN, United States

16:48  0695. Sensing the High Magnetic Field: Fusion of Otoliths in Zebrafish Larvae Entails a Hint
Patricia Pais Roldán1, Ajey Singh1, Hellmut Merkle1, Hildegard Schulz1, Xin Yu1
1Max Planck Institute, Tuebingen, Baden-Wuerttemberg, Germany

17:00  0696. Genetically Functionalized Magnetosomes as MRI Contrast Agent Suitable for Molecular Imaging
Marianne Boucher1, Nicolas Ginet2, Françoise Geoffroy1, Sandra Préveral1, Géraldine Adryanczyk-Perrier1, Michel Peau1, Christopher T. Lefèvre2, Daniel Garcia2, David Pignol2, Sébastien Miriaux2
1UNIRS, CEA/DSV/I2BM/NeuroSpin, Saclay, France; 2LBC, CEA/DSV/IBEB/SBVME, Saint-Paul-lez-Durance, France

Leon C. Ho1, 2, Bo Wang3, 4, Ian P. Conner1, 4, Yolandi van der Merwe1, 4, Richard A. Bilonick1, Ed X. Wu1, Seong-Gi Kim1, 5, Gadi Wollstein2, Joel S. Schuman3, 4, Kevin C. Chan1, 3
1Neuroimaging Laboratory, University of Pittsburgh, Pittsburgh, PA, United States; 2Department of Electrical and Electronic Engineering, The University of Hong Kong, Pokfulam, Hong Kong, China; 3Department of Ophthalmology, School of Medicine, University of Pittsburgh, Pittsburgh, PA, United States; 4Department of Bioengineering, Swanson School of Engineering, University of Pittsburgh, Pittsburgh, PA, United States; 5Center for Neuroscience Imaging Research, Institute for Basic Science, Sungkyunkwan University, Suwon, Korea

17:24  0698. MEMRI Detects Neuronal Activity and Connectivity in Hypothalamic Neural Circuit.
Anna Ulyanova1, Jady Chua Ghee Sing2, Weiping Han1, Kai-Hsiang Chuang1
1Magnetic Resonance Imaging Group, Singapore Bioimaging Consortium, A*STAR, Singapore, Singapore; 2Department of Pharmacology, National University of Singapore, Singapore, Singapore; 3Lab of metabolic Medicine, Singapore Bioimaging Consortium, A*STAR, Singapore, Singapore
17:36 0699. Manganese PET Enables the Same Contrast as Manganese Enhanced MRI
Galit Saar1, Corina M. Millo2, Lawrence P. Szajek2, Jeff Bacon2, Peter Herscovitch2, Alan P. Koretsky1
1LFMI/NINDS, NIH, Bethesda, MD, United States; 2PET Department, Clinical Center, NIH, Bethesda, MD, United States

17:48 0700. Manganese-Enhanced MRI for Preclinical Evaluation of Therapeutic Efficacy of Retinal Degeneration Treatment
Rebecca M. Schur1, Li Sheng1, Bhubanananda Sahu2, Guanping Yu1, Song-Qi Gao1, Xin Yu1, Akiko Maeda2, Krzysztof Palczewski1, Zheng-Rong Lu1
1Biomedical Engineering, Case Western Reserve University, Cleveland, OH, United States; 2Ophthalmology and Visual Sciences, Case Western Reserve University, Cleveland, OH, United States; 3School of Optometry, Case Western Reserve University, Cleveland, OH, United States

Thinking Outside the Box - Novel Technical Development
Room 714 A/B 16:00-18:00 Moderators: David O. Brunner, Ph.D. & Steven M. Wright, Ph.D.

16:00 0701. Plasma Based MRI
Sebastian A. Aussenhofer1, Andrew G. Webb1
1C.J. Gorter Center for High Field MRI, Leiden University Medical Center, Leiden, South-Holland, Netherlands

16:12 0702. Low Cost High Performance MRI
Mathieu Sarracanie1, 2, Cristen LaPierre1, 2, Najat Salameh1, 2, David E J Waddington1, 3, Thomas Witzel1, Matthew S. Rosen1, 2
1MGH/A. A. Martinos Center for Biomedical Imaging, Charlestown, MA, United States; 2Department of Physics, Harvard University, Cambridge, MA, United States; 3ARC Centre of Excellence for Engineered Quantum Systems, School of Physics, University of Sydney, Sydney, NSW, Australia

16:24 0703. 3D Imaging in a Portable MRI Scanner Using Rotating Spatial Encoding Magnetic Fields and Transmit Array Spatial Encoding (TRASE)
Clarissa Zimmerman Cooley1, 2, Jason P. Stockmann3, 4, Mathieu Sarracanie1, 2, Matthew S. Rosen3, 4, Lawrence L. Wald3, 4
1A. A. Martinos Center for Biomedical Imaging, Dept. of Radiology, Massachusetts General Hospital, Charlestown, MA, United States; 2Harvard Medical School, Boston, MA, United States; 3A. A. Martinos Center for Biomedical Imaging, Dept. of Radiology, Massachusetts General Hospital, Charlestown, MA, United States; 4Dept. of Physics, Harvard University, Cambridge, MA, United States

16:36 0704. Custom MEMS Switch for MR Surface Coil Decoupling
Dan Spence1, Marco Aimi2
1GE Healthcare, Waukesha, WI, United States; 2GE Global Research, Niskayuna, NY, United States

16:48 0705. Utilization of the Receive Coil for Cardiovascular and Respiratory Motion Representation
Guido P. Kudielka1, 2, Christopher J. Hardy3, Pierre-André Vuissoz4, 5, Jacques Felblinger6, 6, Anja C.S. Brau7
1Imagerie Adaptative Diagnostique et Interventionnelle, Université de Lorraine, Nancy, Lorraine, France; 2GE Global Research, Munich, BY, Germany; 3GE Global Research, Niskayuna, NY, United States; 4U947, INSERM, Nancy, Lorraine, France; 5CIC-IT 1433, INSERM, Nancy, Lorraine, France; 6University Hospital Nancy, Nancy, Lorraine, France; 7GE Healthcare, Munich, BY, Germany

17:00 0706. An Integrated Mm-Wave Transceiver for Wireless MRI
Kamal Aggarwal1, Mazaheredin Taghivand1, Yashar Rajavi1, John Pauly1, Ada Poon1, Greig Scott1
1Electrical Engineering, Stanford University, Stanford, CA, United States

17:12 0707. RF Gated Wireless Power Transfer System
Kelly Byron1, Pascal Stang2, Shreyas Vasanawala1, John Pauly1, Greig Scott1
1Electrical Engineering, Stanford University, Stanford, CA, United States; 2Procyon Engineering, CA, United States; 3Radiology, Stanford University, Stanford, CA, United States
Wednesday

17:24  
**0708.** Development of a High Tc, Superconducting Bulk Magnet with a Homogeneous Magnetic Field Using a Finite Element Method and a Single-Layer Shim Coil  
*Daiuki Tamada*¹, ², *Yosuke Yanagi*¹, *Yoshitaka Itoh*¹, *Takashi Nakamura*¹, ², ³, *Katsumi Kose*¹  
¹Institute of Applied Physics, University of Tsukuba, Tsukuba, Ibaraki, Japan; ²RIKEN, Wako, Saitama, Japan; ³IMRA Material R&D, Ltd., Aichi, Japan

17:36  
**0709.** MARIÉ – a MATLAB-Based Open Source Software for the Fast Electromagnetic Analysis of MRI Systems  
*Jorge Fernandez Villena*¹, *Athanasios G. Polimeridis*¹, *Lawrence L. Wald*², ³, *Elfar Adalsteinsson*¹, ³, ⁴, *Jacob K. White*¹, *Luca Daniel*¹  
¹Research Laboratory of Electronics, EECS, Massachusetts Institute of Technology, Cambridge, MA, United States; ²A.A. Martinos Center for Biomedical Imaging, Dept. of Radiology, Massachusetts General Hospital, MA, United States; ³Harvard-MIT Division of Health Sciences Technology, Cambridge, MA, United States

17:48  
**0710.** MR Experiments Using a Commercially-Available Software-Defined Radio  
*Christopher J. Hasselwander*¹, ², *William A. Grissom*¹, ², *Zhipeng Cao*¹, ²  
¹Vanderbilt University Institute of Imaging Science, Nashville, TN, United States; ²Biomedical Engineering, Vanderbilt University, Nashville, TN, United States

---

**Myocardial Tissue Characterization - Relaxometry & Diffusion**

Room 716 A/B  
16:00-18:00  
**Moderators:** Martin J. Graves, Ph.D. & T.B.A.

16:00  
**0711.** In Vivo Diffusion-Weighted MRI: Contrast-Free Detection of Myocardial Fibrosis in Hypertrophic Cardiomyopathy Patients  
*Christopher Nguyen*¹, *Minjie Liu*², ³, *Zhaoyang Fan*¹, *Xiaoming Bi*¹, *Peter Kellman*⁴, *Debiao Li*¹, *Shihua Zhao*², ³  
¹Biomedical Imaging Research Institute, Cedars Sinai Medical Center, Los Angeles, CA, United States; ²State Key Laboratory of Cardiovascular Disease, Fuwai Hospital, Beijing, China; ³National Center for Cardiovascular Diseases, Chinese Academy of Medical Sciences and Peking Union Medical College, Beijing, China; ⁴Siemens Healthcare, Los Angeles, CA, United States; ³National Heart, Lung, and Blood Institute, National Institutes of Health, Bethesda, MD, United States

16:12  
**0712.** Second Order Motion Compensated Cardiac DTI: Direct Comparison In-Vivo and Post-Mortem  
*Christian Torben Stoeck*¹, ², *Constantin von Deuster*¹, ², *Thea Fleischmann*³, *Nikola Cesarevic*⁴, *Martin Genet*¹  
¹Institute for Biomedical Engineering, University and ETH Zurich, Zurich, Switzerland; ²Imaging Sciences and Biomedical Engineering, King's College London, London, United Kingdom; ³Department of Surgical Research, University Hospital Zurich, Zurich, Switzerland; ³Clinic for Cardiovascular Surgery, University Hospital Zurich, Zurich, Switzerland

16:24  
**0713.** Effect of the Number of Echoes and Reconstruction Model on the Precision and Reproducibility of T2 Measurments in Myocardial T2 Mapping  
*Tamer Basha*¹, *Mehmet Akçakaya*¹, *Sébastien Roujol*¹, *Reza Nezafat*¹  
¹Department of Medicine, Beth Israel Deaconess Medical Center & Harvard Medical School, Boston, MA, United States

16:36  
**0714.** Detection of Diffuse Myocardial Fibrosis In Vivo Using Diffusion Tensor Imaging with the Supertoroidal Model  
¹Department of Medicine, Beth Israel Deaconess Medical Center & Harvard Medical School, Boston, MA, United States; ²Harvard Medical School-Massachusetts General Hospital, Boston, MA, United States; ³Division of Cardiology and Cardiac MR Center, University Hospital of Lausanne (CHUV), Lausanne, Switzerland

16:48  
**0715.** An Iterative Approach to Respiratory Self-Navigation Enables 100% Scan Efficiency in 3D Free-Breathing Whole-Heart Phase Sensitive Inversion Recovery MRI  
*Giulia Ginami*¹, *Simone Coppo*², *Gabriele Bonanno*¹, *Tobias Ratz*², *Juerg Schwitter*², *Matthias Stuber*¹, *Davide Piccini*¹  
¹Center for Biomedical Imaging (CIBM), Department of Radiology, University Hospital (CHUV) and University of Lausanne (UNIL), Lausanne, Switzerland; ²Division of Cardiology and Cardiac MR Center, University Hospital of Lausanne (CHUV), Lausanne, Switzerland; ³Advanced Clinical Imaging Technology, Siemens Healthcare IM BM PI, Lausanne, Switzerland
Cerebellar involvement in cognition is becoming increasingly evident; this is thought to occur through the cerebello-cortical connections and provide a plausible pathway through which the cerebellum can influence cognition.

There is great interest in understanding population variability of brain connectivity patterns, and the genetic basis for this variability. Joint heritability analysis of structural and functional connectivity is an important approach towards understanding the genetic basis of brain architecture. In this study, we examined the heritability of structural connectivity between regions in the cerebral cortex using Diffusion MRI (dMRI) data from the Human Connectome Project (HCP) dataset. We also examined the heritability of structural connectivity patterns using multi-echo T2-mapping data from the same dataset.

Diffusion MRI - Novel Insights into the Brain

17:00 0716. Joint Myocardial T1 and T2 Mapping Using a Saturation-Recovery Sequence
Mehmet Akçakaya1, Sebastian Weingartner1,2, Tamer A. Bashf1, Sebastien Roujol1, Reza Nezafat1
1Beth Israel Deaconess Medical Center, Harvard Medical School, Boston, MA, United States; 2Heidelberg University, Mannheim, Germany

17:12 0717. Characterization of the Accuracy and Precision of Radial Cardiac T2 Mapping at 3T
Helene Feliciano1,2, Wajjha Bano1,2, Matthias Stuber1,2, Raud B. van Heeswijk1,2
1Department of Radiology, University Hospital (CHUV) and University of Lausanne (UNIL), Lausanne, Switzerland; 2Center for Biomedical Imaging (CIBM), Lausanne, Switzerland

17:24 0718. Whole-Heart T2-Mapping at 7T Quantifies Dystrophic Myocardial Pathology in Mdx/utrn+/- Mice
Ronald John Beyer1, Christopher Ballmann2, Joshua Selby3, Nouha Salibi4, John Quinney5, Thomas S. Denney5
1MRI Research Center, Auburn University, Auburn University, AL, United States; 2Kinesiology, Auburn University, Auburn University, AL, United States; 3Department of Animal Science, Iowa State University, Ames, IA, United States; 4Medical Imaging, University of Arizona, Tucson, AZ, United States; 5MR R&D, Siemens Healthcare, Malvern, PA, United States

17:36 0719. Endogenous Assessment of Chronic Myocardial Infarction with T1p-Mapping in Patients
Joep van Oorschot1, Hamza El Aidi2, Fredy Visser3, Pieter Doevendans4, Peter Luijten4, Tim Leiner5, Jaco Zwanenburg6
1University Medical Center Utrecht, Utrecht, Netherlands; 2Philips Healthcare, Best, Noord-Brabant, Netherlands

17:48 0720. Improved Slice Coverage in DBIR-FSE with Multi-Band Encoding
Sagar Mandava1, Mahesh Bharath Keerthivasan1, Diego R. Martin1,2, Ali Bilgin1,2, Maria I. Altbach2
1Electrical and Computer Engineering, University of Arizona, Tucson, AZ, United States; 2Medical Imaging, University of Arizona, Tucson, AZ, United States; 2Biomedical Engineering, University of Arizona, Tucson, AZ, United States

Diffusion MRI - Novel Insights into the Brain

Constitution Hall 105/106/107 16:00-18:00 Moderators: Susie Yi Huang, M.D., Ph.D. & Xiaohong Joe Zhou, Ph.D., D.A.B.R.

16:00 0721. Heritability of Structural Connections from HCP Diffusion MRI Data
Stamatios N. Sotiropoulos1, Xu Chen2, Stephen M. Smith3, David C. Van Essen4, Timothy E. Behrens5, Thomas E. Nichols2, Saad Ijabdi6
1FMRIB Centre, University of Oxford, Oxford, United Kingdom; 2Department of Statistics, University of Warwick, Coventry, United Kingdom; 3Department of Anatomy & Neurobiology, Washington University, St Louis, MO, United States

16:12 0722. Motor and Non-Motor Territories of the Human Dentate Nucleus: Mapping the Topographical Connectivity of the Cerebellar Cortex with In-Vivo Sub-Millimeter Diffusion Imaging
Christopher J. Steele1, Alfred Anwander2, Pierre-Louis Bazin1, Robert Trampel1, Andreas Schaefer1, Robert Turner1, Narender Rammani1, Arno Villringer3
1Max Planck Institute for Human Cognitive and Brain Sciences, Leipzig, Sachsen, Germany; 2Royal Holloway University of London, Egham, Surrey, United Kingdom

16:24 0723. Contralateral Cortico-Ponto-Cerebellar Pathways with Prominent Involvement of Associative Areas in Humans In Vivo
Andrea De Rinaldis1,2, Fulvia Palesi3, Gloria Castellazzi3,2, Fernando Calamante3,2, Nils Mahler6,7, J Donald Tournier3,2, Giovanni Magenes1, Egdio D'Angelo3, Claudia AM Wheeler-Kingshott6
1Department of Electrical, Computer and Biomedical Engineering, University of Pavia, Pavia, PV, Italy; 2Brain Connectivity Center, C. Mondino National Neurological Institute, Pavia, PV, Italy; 3Department of Physics, University of Pavia, Pavia, PV, Italy; 4The Florey Institute of Neuroscience and Mental Health, Melbourne Brain Centre, Heidelberg, Victoria, Australia; 5Department of Medicine, Austin Health and Northern Health, University of Melbourne, Heidelberg, Victoria, Australia; 6NMR Research Unit, Department of Neuroinflammation, Queen Square MS Centre, UCL Institute of Neurology, London, England, United Kingdom; 7Department of Psychology, Cardiff University, Cardiff, Wales, United Kingdom; 8Department of Brain and Behavioral Sciences, University of Pavia, Pavia, PV, Italy

16:36 0724. Age-Related Changes of the Human Brain: Insights from Double-Wave Vector Imaging
Marco Lawrenz1,2, Stefanie Brassen1,2, Jürgen Finsterbusch1,2
1Department of Neuroinflammation, Queen Square MS Centre, UCL Institute of Neurology, London, England, United Kingdom; 2Department of Brain and Behavioral Sciences, University of Pavia, Pavia, PV, Italy

Sakthivel Sekar1, Sankar Seramani1, Joanne Garnell1, Kishore Kumar Bhakoo1

1Department of Systems Neuroscience, University Medical Center Hamburg-Eppendorf, Hamburg, Germany; 2Neuroimage Nord, University Medical Centers Hamburg-Kiel-Lübeck, Hamburg-Kiel-Lübeck, Germany

Assessment of Proliferative Activity Changes Following Psychoactive Challenges in the Rodent Brain

Natalie M. Zahr, Ph.D.
Wednesday

Neuroimaging Schizophrenia Group, Centre for Addiction and Mental Health, Toronto, ON, Canada; Laboratory of Neuropsychology, INNN, Mexico City, Mexico

16:24 0733. MRI and MRS Characterization of Crtc1 Knock-Out Mice Limbic Structures: Investigating Neurobiology of Mood Disorders
Antoine Cherix1, Jean-René Cardinaux2, 3, Rolf Gruetter1, 4, Hongxia Lei5, 6
1Laboratory for functional and metabolic imaging (LIFMET), Ecole Polytechnique Fédérale de Lausanne, Lausanne, Vaud, Switzerland; 2Center for Psychiatric Neuroscience (CNP), Centre Hospitalier Universitaire Vaudois (CHUV), Lausanne, Vaud, Switzerland; 3Faculty of Medicine, University of Lausanne, Lausanne, Vaud, Switzerland; 4Department of Radiology, University of Lausanne, Lausanne, Vaud, Switzerland; 5Center for Biomedical Imaging (CIBM), Ecole Polytechnique Fédérale de Lausanne, Lausanne, Vaud, Switzerland; 6Department of Radiology, University of Geneva, Geneva, Switzerland

16:36 0734. Restoration of Abnormal Interconnectivity Between Memory and Emotional Processing Circuits in Remitted Late-Life Depression
Wenjun Li1, B. Douglas Ward2, Gang Chen2, Xiaolin Liu2, Jennifer Jones3, Piero Antuono3, Shi-Jiang Li, 12, Joseph Goveas1
1Psychiatry and Behavioral Medicine, Medical College of Wisconsin, Milwaukee, WI, United States; 2Biophysics, Medical College of Wisconsin, WI, United States; 3Neurology, Medical College of Wisconsin, WI, United States

16:48 0735. Lithium Brain Absorption in the Elderly Versus Younger Patients with Bipolar Disease.
Maria Otaduy1, Ivan Aprahami2, Rodolfo Ladeira2, Rodrigo Machado-Vieira2, 3, Claudia Leite4, Wagner Gattaz5, Orestes Forlenza2
1Laboratory of Magnetic Resonance in Neuroradiology, LIM 44, Institute and Department of Radiology, University of São Paulo, São Paulo, Brazil; 2Laboratory of Neuroscience, LIM 27, Institute and Department of Psychiatry, University of São Paulo, São Paulo, Brazil; 3Department of Health and Human Services, National Institute of Mental Health, National Institutes of Health, Bethesda, MD, United States; 4Laboratory of Magnetic Resonance in Neuroradiology, LIM 44, Institute and Department of Radiology, University of São Paulo, São Paulo, Brazil; 5Laboratory of Neurosciences, LIM 27, Institute and Department of Psychiatry, University of São Paulo, São Paulo, Brazil

17:00 0736. The Impact of Ebselen Administration on Brain Myo-Inositol Concentration
Uzay E. Emir1, Nisha Singh3, 4, Ann Sharpley1, Charles Masaki1, Sridhar Vasudevan2, Peter Jezzard1, Phil Cowen3, Grant Churchill2
1University of Oxford, FMRIB Centre, Oxford, Oxfordshire, United Kingdom; 2University of Oxford, Department of Pharmacology, Oxford, Oxfordshire, United Kingdom; 3University of Oxford, Department of Psychiatry, Oxford, Oxfordshire, United Kingdom

17:12 0737. Ketamine Improves Astroglial Metabolic Activity and Neurotransmission in Social Defeat Model of Depression: A 1H-[13C] NMR Study
Pravin Kumar Mishra1, Anant Bahadur Patel1
1Centre for Cellular and Molecular Biology, Hyderabad, India

17:24 0738. Electroconvulsive Therapy (ECT) Induced Neurochemical Modulation as Measured by 1H MRS in Major Depression
Shantanu H. Joshi1, Stephanie Njau1, Amber Leaver1, Antonio Marquina2, Roger P. Woods1, Randall Espinoza3, Katherine L. Narr1
1Neurology, UCLA, Los Angeles, CA, United States; 2Mathematics, University of Valencia, Valencia, Spain; 3Psychiatry and Behavioral Sciences, UCLA, Los Angeles, CA, United States

17:36 0739. 1H MRS Demonstrates Elevations of Prefrontal Cortex GABA in Major Depressive Disorder After Treatment with Repetitive Transcranial Magnetic Stimulation
Marc J. Dubin1, Xiangling Mao1, Samprit Banerjee1, Rebecca Gordon1, Zachary Goodman3, Kyle AB Lapidus4, Guoxin Kang1, Conor Liston1, Dikoma C. Shungu5
1Psychiatry & Brain and Mind Research Institute, Weill Cornell Medical College, New York, NY, United States; 2Radiology, Weill Cornell Medical College, New York, NY, United States; 3Healthcare Policy and Research, Weill Cornell Medical College, New York, NY, United States; 4Psychiatry, Weill Cornell Medical College, New York, NY, United States; 5Johns Hopkins University, Baltimore, MD, United States; 6Psychiatry, Icahn School of Medicine at Mount Sinai, New York, NY, United States
**Wednesday**

17:48  0740. Methylphenidate Modulates the Connectivity of Default Mode Network in ADHD: A Resting-State Dynamic Causal Model Analysis

*Hongjian He*, Fangfang Xu*, Jianhui Zhong*

1Center for Brain Imaging Science and Technology, Zhejiang University, Hangzhou, Zhejiang, China

---

**Functional Muscle MRI/MRS**

Room 718 A  16:00-18:00  Moderators: Michael D. Noseworthy, Ph.D. & Eric E. Sigmund, Ph.D.

16:00  0741. Co-Localized Post-Contractile BOLD and 31P-MRI in Muscles of the Lower Leg

*Prodromos Parasoglou*, *Ding Xia*, *Jill M. Slade*, *Ravinder R. Regatte*

1Bernard and Irene Schwartz Center for Biomedical Imaging, Department of Radiology, New York University School of Medicine, New York, NY, United States; 2Department of Radiology, New York University School of Medicine, New York, NY, United States; 3Department of Radiology, Michigan State University, East Lansing, MI, United States

16:12  0742. Simultaneous Muscle Water T2 and Fat Fraction Mapping Using Transverse Relaxometry with Stimulated Echo Compensation

*Benjamin Marty*, *Pierre-Yves Baudin*, *Noura Azzabou*, *Ericky C.A. Araujo*, *Pierre G. Carlier*, *Paulo Loureiro de Sousa*

1NMR laboratory, Institute of Myology, Paris, France; 2NMR laboratory, CEA/I2BM/MIRCen, Paris, France; 3Consultants for Research in Imaging and Spectroscopy, Tournai, Belgium; 4Université de Strasbourg, CNRS, ICube, FMTS, Strasbourg, France

16:24  0743. In Vivo OXPHOS Measurement by Magnetic Resonance Imaging in Metabolic Myopathy


1Center for Magnetic Resonance and Optical Imaging, Department of Radiology, University of Pennsylvania, Philadelphia, PA, United States; 2Center of Endocrinology and Diabetes, The Children's Hospital of Philadelphia, Philadelphia, PA, United States; 3Division of Human Genetics, The Children's Hospital of Philadelphia, Philadelphia, PA, United States; 4Perelman School of Medicine, University of Pennsylvania, Philadelphia, PA, United States

16:36  0744. Skeletal Muscle Tissue Characterization by 23Na NMRs Under Different Vascular Filling Conditions

*Benjamin Marty*, *Teresa Gerhalter*, *Ericky C.A. Araujo*, *Eric Giacomini*, *Pierre G. Carlier*

1NMR laboratory, Institute of Myology, Paris, France; 2NMR laboratory, CEA/I2BM/MIRCen, Paris, France; 3UNIRS, CEA/I2BM/NeuroSpin, Gif-Sur-Yvette, France

16:48  0745. Activation of Skeletal Muscle PDH with DCA Increases Steady State AGTP Below the Aerobic Threshold

*Jonathan David Kasper*, *Anne Tonson*, *Mike Klinger*, *Joshua Hubert*, *Ronald Meyer*, *Robert Wiseman*

1Physiology, Michigan State University, East Lansing, MI, United States; 2Physiology and Radiology, Michigan State University, East Lansing, MI, United States

17:00  0746. Assessment of Thigh Muscle in Healthy Controls and Dermatomyositis Patients with Diffusion Tensor Imaging, Intravoxel Incoherent Motion, and Dynamical DTI

*Eric Edward Sigmund*, *Steven H. Baete*, *Thomas Luo*, *Mary Bruno*, *David Mossa*, *David Stoffel*, *Alisa Femia*, *Sarika Ramachandran*, *Andrew Franks*, *Jenny Bencardino*

1Center for Advanced Imaging Innovation and Research (CAI2R), Department of Radiology, New York University School of Medicine, New York, NY, United States; 2Bernard and Irene Schwartz Center for Biomedical Imaging, Department of Radiology, New York University School of Medicine, New York, NY, United States; 3Department of Dermatology, New York University School of Medicine, New York, NY, United States

17:12  0747. T2 and T1ρ Detect Early Regenerative Changes in Ischemic Skeletal Muscle

*Hanne Hakkarainen*, *Galina Wirth*, *Petra Korpisalo-Pirinen*, *Seppo Ylä-Herttuala*, *Timo Liimatainen*

1University of Eastern Finland, A.I. Virtanen Institute for Molecular Sciences, Kuopio, Finland; 2Imaging Center, Kuopio University Hospital, Kuopio, Finland
Wednesday

17:24 0748. Reproducibility and Sensitivity of Muscle-Water T2 Determined Independently of Fat Fraction with IDEAL-CPMG
Christopher D J Sinclair1, Jasper M. Morrow1, Robert L. Janicke2, Matthew R M Evans1, Elham Rawah1, Sachit Shah1, Michael G. Hanna1, Mary M. Reilly1, Tarek A. Yousry1, John S. Thornton1
1Institute of Neurology, University College London, London, United Kingdom; 2Experimental Medicine Imaging, GlaxoSmithKline, Uxbridge, Middlesex, United Kingdom

17:36 0749. Skeletal Muscle Oxygen Extraction Fraction Measurement - At Rest and During Ischemia
Chengyan Wang1, Rui Zhang2, Xiaodong Zhang2, He Wang2, Kai Zhao1, Jue Zhang2, Xiaoying Wang1, Jing Fang1, 2
1Academy for Advanced Interdisciplinary Studies, Peking University, Beijing, China; 2Department of Radiology, Peking University First Hospital, Beijing, China; 3Philips Research China, Shanghai, China

17:48 0750. In Vivo Sodium T1 and T2 Measurements in Human Calf at 3T
Ping Wang1, Charles Nockowski2, John C. Gore1
1Vanderbilt University Institute of Imaging Science, Nashville, TN, United States; 2Philips Healthcare Technical Support at Vanderbilt, Nashville, TN, United States

Educational Course
Update on MRI Pulse Sequences for Body MRI
Organizers: Lorenzo Mannelli, M.D., Ph.D., Ivan Pedrosa, M.D., Scott B. Reeder, M.D., Ph.D. & Edwin J.R. van Beek, M.D., Ph.D., M.Ed., FRCR
Room 718 B 16:00-18:00  Moderators: Ananth J. Madhuranthakam, Ph.D. & Shreyas S. Vasanawala, M.D., Ph.D.
16:00 Ultrashort TE (Lung, Liver, Iron)
Scott K. Nagle

16:30 Dynamic Contrast Enhanced MRI/MRA
Vikas Gulani

17:00 New Developments & Applications for Body DWI
Andrew B. Rosenkrantz

17:30 Update on Parallel Imaging & Body MRI
Ananth J. Madhuranthakam

18:00 Adjournment & Meet the Teachers

Educational Course
MR Physics & Techniques for Clinicians
Organizers: Marcus T. Alley, Ph.D., Michael Markl, Ph.D., Brian Hargraves, Ph.D., & Nicole Seiberlich, Ph.D.
Room 801 A/B 16:00-18:00  Moderators: Marcus T. Alley, Ph.D. & Michael Markl, Ph.D.
16:00 Ultrafast Imaging
Mariya Doneva

16:30 Parallel Imaging
Katherine L. Wright

17:00 Diffusion & Perfusion Weighted Imaging
Maxime Descoteaux

17:30 Adjournment & Meet the Teachers

ISMRM Business Meeting
Room 701 A 18:15-19:15  (no CME credit)
Thursday

Sunrise Educational Course
Addressing Clinical Challenges in the Body with MRI
Organizers: Lorenzo Mannelli, M.D., Ph.D., Ivan Pedrosa, M.D., Scott B. Reeder, M.D., Ph.D. & Edwin J.R. van Beek, M.D., Ph.D., M.Ed., FRCR
Room 701 A 07:00-07:50  Moderators: Kathryn Fowler, M.D. & Gillian Macnaught, Ph.D.

Imaging in Pregnancy
07:00  MRI in Pregnancy: Practical Considerations & Indications
       Daniela Prayer, Peter C. Brugger, Gregor Kasprian

07:25  Fetal Anomalies in the Body
       Diane M. Twickler

07:50  Adjournment & Meet the Teachers

Sunrise Educational Course
How Can MRI of Mouse Models Provide Value for Cancer Studies?
Organizers: Chris A. Flask, Ph.D., Kristine Glunde, Ph.D. & Mark D. Pagel, Ph.D.
Constitution Hall 107 07:00-07:50  Moderators: Barjor S. Gimi, Ph.D. & Arvind P. Pathak, Ph.D.
07:25  How Can MRI of Mouse Models Provide Value for Studies of Neurological Conditions?
       Jeff F. Dunn

07:50  Adjournment & Meet the Teachers

Sunrise Educational Course
Clinical Challenges in Cardiovascular MRI
Organizers: Daniel B. Ennis, Ph.D. & Harald Kramer, M.D.
Room 714 A/B 07:00-07:50  Moderators: Thomas K. F. Foo, Ph.D. & Jeanette Schulz-Menger, M.D.
07:00  Pediatric Cardiovascular-MRI: Make It Fast, Safe & Accurate
       Taylor Chung

07:16  CMR in Very Sick Patients: Realtime, Fast Imaging, Tips, Tricks & Challenges
       Matthias G. Friedrich

07:32  Complex Flow in Complex Patients: Congenital Heart Disease
       Christopher J. P. François

07:50  Adjournment & Meet the Teachers

Sunrise Educational Course
UTE: Applications & Advances
Organizers: Neal K. Bangerter, Ph.D.
Room 716 A/B 07:00-07:50  Moderators: Neal K. Bangerter, Ph.D. & Matthew D. Robson, Ph.D.
07:00  Swift
       Djaoudat S. Idiyatullin

07:25  ZTE Imaging
       Markus Weiger

07:50  Adjournment & Meet the Teachers
### Sunrise Educational Course

**Contrast by Body Part: How & Why?**

*Organizers:* Brian A. Hargreaves, Ph.D. & Manojkumar Saranathan, Ph.D.  
*Room:* 718 A  
*Time:* 07:00-07:50  
*Moderators:* Brian A. Hargreaves, Ph.D. & Manojkumar Saranathan, Ph.D.

<table>
<thead>
<tr>
<th>Time</th>
<th>Session</th>
</tr>
</thead>
<tbody>
<tr>
<td>07:00</td>
<td>Neurologic Sequences: How &amp; Why?</td>
</tr>
<tr>
<td></td>
<td>Karl Egger</td>
</tr>
<tr>
<td>07:25</td>
<td>Angiography Sequences: How &amp; Why?</td>
</tr>
<tr>
<td></td>
<td>Kevin M. Johnson</td>
</tr>
<tr>
<td>07:50</td>
<td>Adjournment &amp; Meet the Teachers</td>
</tr>
</tbody>
</table>

### Sunrise Educational Course

**Brain Networks**

*Organizers:* James J. Pekar, Ph.D., & Jonathan R. Polimeni, Ph.D.  
*Room:* 718 B  
*Time:* 07:00-07:50  
*Moderators:* Catherine E. Chang, Ph.D. & James J. Pekar, Ph.D.

<table>
<thead>
<tr>
<th>Time</th>
<th>Session</th>
</tr>
</thead>
<tbody>
<tr>
<td>07:00</td>
<td>Brain Network Applications in Basic Neuroscience</td>
</tr>
<tr>
<td></td>
<td>Jean Daunizeau</td>
</tr>
<tr>
<td>07:25</td>
<td>Brain Network Applications in Clinical Neuroscience</td>
</tr>
<tr>
<td></td>
<td>Paul M. Matthews</td>
</tr>
<tr>
<td>07:50</td>
<td>Adjournment &amp; Meet the Teachers</td>
</tr>
</tbody>
</table>

### Sunrise Educational Course

**Bone Structure & Bone Interface**

*Organizers:* Eric Y. Chang, M.D., Garry E. Gold, M.D., Richard Kijowski, M.D., William B. Morrison, M.D., Ravinder R. Regatte, Ph.D. & Siegfried Trattnig, M.D.  
*Room:* 801 A/B  
*Time:* 07:00-07:50  
*Moderators:* Jenny T. Bencardino, M.D. & Avneesh Chhabra, M.D.

<table>
<thead>
<tr>
<th>Time</th>
<th>Session</th>
</tr>
</thead>
<tbody>
<tr>
<td>07:00</td>
<td>Cortical &amp; Trabecular Bone</td>
</tr>
<tr>
<td></td>
<td>Felix W. Wehrli</td>
</tr>
<tr>
<td>07:25</td>
<td>Bone-Tissue Interface</td>
</tr>
<tr>
<td></td>
<td>Jiang Du</td>
</tr>
<tr>
<td>07:50</td>
<td>Adjournment &amp; Meet the Teachers</td>
</tr>
</tbody>
</table>

### Sunrise Educational Course

**Neuroimaging: Vascular**

*Organizers:* Jonathan H. Gillard, M.D., FRCR, MBA & Howard A Rowley, M.D.  
*Room:* 701 B  
*Time:* 07:00-07:50  
*Moderators:* Dennis L. Parker, Ph.D. & David Saloner, Ph.D.

<table>
<thead>
<tr>
<th>Time</th>
<th>Session</th>
</tr>
</thead>
<tbody>
<tr>
<td>07:00</td>
<td>CNS Aneurysms &amp; Vascular Malformations: What the Neurosurgeon Needs to Know from Imaging.</td>
</tr>
<tr>
<td></td>
<td>Timothy J. Carroll</td>
</tr>
<tr>
<td>07:25</td>
<td>MR in the Evaluation of Aneurysms &amp; Vascular Malformations</td>
</tr>
<tr>
<td></td>
<td>Myriam Edjlali-Goujon</td>
</tr>
<tr>
<td>07:50</td>
<td>Adjournment &amp; Meet the Teachers</td>
</tr>
</tbody>
</table>
Thursday

Sunrise Educational Course
Nuts & Bolts of Advanced Imaging
Organizers: Alexey Samsonov, Ph.D., N. Jon Shah, Ph.D. & Jeffrey Tsao, Ph.D., M.B.A.
John Bassett Theatre 102 07:00-07:50
Moderators: Philip J. Beatty, Ph.D. & Christopher M. Collins, Ph.D.

Review/Demo of Available Excitation Software
07:00  The Image Reconstruction Pipeline
        Michael S. Hansen

07:25  Parallel Imaging & Beyond
        Philip J. Beatty

07:50  Adjournment & Meet the Teachers

Plenary Session
Mansfield Lecture
Plenary Hall FG 08:00-09:00

08:00  Young Investigator Awards Presentation
        James G. Pipe, 2015-16 ISMRM President

08:15  Mansfield Lecture: MRI in the Era of Personalized Medicine
        Elizabeth A. Morris, M.D., FACR

Plenary Session
Fetal & Placental Imaging: Technical & Clinical Aspects
Organizers: Patricia Ellen Grant, M.D. & Jeffrey J. Neil, M.D., Ph.D.
Plenary Hall FG 08:15-10:00
Moderators: Patricia Ellen Grant, M.D. & Jeffrey J. Neil, M.D., Ph.D.

09:00  0751. Technical Aspects/Challenges
        Joseph V. Hajnal

09:20  0752. Clinical Aspects of Fetal Brain Imaging
        Orit A. Glenn

09:40  0753. Clinical Aspects of Imaging the Placenta
        Daniela Prayer

10:00  Adjournment

Traditional Poster Session: Cardiovascular
Exhibition Hall 10:30-12:30 (no CME credit)

Electronic Poster Session: Cardiovascular
Exhibition Hall 10:30-12:30 (no CME credit)

Study Group Session
Molecular & Cellular Imaging
Reception Hall 104 BCD 10:30-12:30 (no CME credit)
In this work we present the first in vivo localized two dimension spectroscopy to unambiguously identify... by in vivo MRI. Our results show a clear correlation between plaque deposition and membrane breakdown in AD mouse brain.

Previous 1H MRS measurements in the brain have demonstrated advantages of ultra-short TE at ultra-high fields. Besides... lipid resonances highlights the potential of this sequence to be used in advanced studies of hepatic lipid profiles.

Twenty patients, seven without knee osteoarthritis and thirteen with osteoarthritis, were scanned at 3T and 7T with T1rho... values, suggesting the possibility of the use of smaller cohort sizes at 3T to detect changes in cartilage composition.

For comparison of relaxation times, 35Cl MRI was also performed. Chloride (Cl -) plays an important role in several physiological processes. However, due to the very short transverse... and used for in vivo and phantom measurements. This work shows the first 37Cl in vivo images of a human calf muscle.

MRI plays a vital role in the localization and characterization of epileptogenic abnormalities. High field MRI has been... and treatment course as well as findings that could assist with better understanding the etiology of the disease.

Pulsed Arterial Spin Labelling (ASL) techniques should benefit from the increased signal to noise ratio available at... reliable perfusion signal at 7T across the whole brain without the need for dielectric pads or dedicated labelling coils.
Grzegorz L. Chadzynski, Gisela Hagberg, Jonas Bause, Shajin, Sotiris Bisdas, Rolf Pohmann, Klaus Scheffler
1Dept. Biomedical Magnetic Resonance, University of Tuebingen, Tuebingen, Germany; 2Dept. High-field Magnetic Resonance, Max Planck Institute for Biological Cybernetics, Tuebingen, Germany; 3Dept. Diagnostic and Interventional Neuroradiology, University of Tuebingen, Tuebingen, Germany

0764. An Investigation of Lateral Geniculate Nucleus (LGN) Volume in Patients with Glaucoma Using 7T MRI.
Hye Jin Jeong, Jong Yeon Lee, Jong Hwan Lee, Yu Jeong Kim, Eun Young Kim, Yong Yeon Kim, Zang-Hee Cho, Young-Bo Kim
1Neuroscience Research Institute, Gachon University, Incheon, Korea; 2Department of Ophthalmology, Gachon University, Gil Hospital, Incheon, Korea; 3Department of Radiology, Gachon University, Incheon, Korea; 4Department of Ophthalmology, Korea University College of Medicine, Seoul, Korea

0765. Giant Intracranial Aneurysms at 7 Tesla MRI: A New Diagnostic Approach to Understand This Rare Intracranial Vascular Pathology
Bixia Chen, Toshihori Matsuhashi, Stefan Maderwald, Sören Johs, Harald H. Quick, Mark Edward Ladd, Ulrich Sure, Karsten Henning Wrede
1Erwin L. Hahn Institute for Magnetic Resonance Imaging, University Duisburg-Essen, Essen, NRW, Germany; 2Department of Neurosurgery, University Hospital Essen, University Duisburg-Essen, Essen, NRW, Germany; 3Department of Neurosurgery, Hiroshima University Hospital, Hiroshima University, Hiroshima, Hiroshima Prefecture, Japan; 4High Field and Hybrid MR Imaging, University Hospital Essen, University Duisburg-Essen, Essen, NRW, Germany; 5Medical Physics in Radiology, German Cancer Research Center (DKFZ), Heidelberg, BW, Germany

0766. High Resolution Spectroscopic Imaging with Ultra Short TE in Patients with Multiple Sclerosis and Brain Tumors at 7T
Gilbert Hangel, Bernhard Strasser, Michal Považan, Stephan Chmelik, Georg Widhalm, Engelbert Knosp, Assunta Dal-Bianco, Fritz Leutmezer, Siegfried Trautig, Wolfgang Bogner
1MCRE, Department of Biomedical Imaging and Image-guided Therapy, Medical University of Vienna, Wien, Vienna, Austria; 2MCRE, Department of Biomedical Imaging and Image-guided Therapy, Medical University of Vienna, Wien, Vienna, Austria; 3Department of Neurosurgery, Medical University of Vienna, Wien, Vienna, Austria; 4Department of Neurology, Medical University of Vienna, Wien, Vienna, Austria

0767. Examples of Clinical Imaging at 7T: Successes and Challenges
Stephen E. Jones, Se-Hong Oh, Erik Beall, Michael Phillips, Ken Sakaie, Irene Wang, Mark Love
1Imaging Institute, Cleveland Clinic, Cleveland, OH, United States; 2Neurologic Institute, Cleveland Clinic, Cleveland, OH, United States

0768. Towards Clinical Cardiac MR at 7.0 T: Early Experience with Black Blood RARE Imaging in Patients with Hypertrophic Cardiomyopathy
Till Huelnhagen, Katharina Paul, Andreas Pohmann, Andreas Graesel, Jan Rieger, Darius Lysiak, Christof Thalhammer, Marcel Prothmann, Jeanette Schulz-Menger, Thoralf Niendorf
1Berlin Ultrahigh Field Facility (B.U.F.F.), Max-Delbrueck Center for Molecular Medicine (MDC), Berlin, Germany; 2MRI.TOOLS GmbH, Berlin, Germany; 3Dept. of Cardiology and Nephrology, HELIOS Klinikum Berlin-Buch, Berlin, Germany; 4Experimental and Clinical Research Center, a joint cooperation between the Charite Medical Faculty and the Max-Delbrueck Center, Berlin, Germany

Fetal & Neonatal Imaging - Clinical
Room 701 A 10:30-12:30

10:30 0769. The Evaluation of the White Matter Development and Small-World Networks in the Fetal Brain MRI Using SBTFE Sequence
Bing Zhang, Chenchen Yan, Ming Li, Huiting Wang, Zuzana Nedelska, Tong Ru, Zhiqun Wang, Jie Li, Jian Yang, Yali Ha, Bin Zhu
1Experimental and Clinical Research Center, a joint cooperation between the Charite Medical Faculty and the Max-Delbrueck Center, Berlin, Germany

Moderators: Jessica Dubois, Ph.D. & T.B.A.
Disrupted Developmental Organization of Brain Connectivity in Fetuses with Corpus Callosum Agenesis: An in Utero Study

András Jakab¹, Gregor Kasprian, Ernst Schwartz, Veronika Schöpf², Daniela Prayer, Georg Langs¹, ³
¹CIR Lab, Department of Biomedical Imaging and Image-guided Therapy, Medical University of Vienna, Vienna, Austria; ²Institute for Psychology, University of Graz, Graz, Austria; ³Computer Science and Artificial Intelligence Lab, Massachusetts Institute of Technology, Cambridge, MA, United States

Analysis of In Vivo Microstructural Features During the First Weeks of Life Using Structural Brain Networks

Dafnis Batalle¹, Emer J. Hughes¹, Hui Zhang¹, Jaques-Donald Tournier¹, Nora Tusor², Paul Aljabar¹, Daniel C. Alexander², Joseph V. Hajnal¹, A David Edwards², Serena J. Counsell³
¹Centre for the Developing Brain, King's College London, London, United Kingdom; ²Computer Science & Centre for Medical Image Computing, University College London, London, United Kingdom

Assessing Brain Damage After Perinatal Hypoxic-Ischaemia Using an Automated Protocol for Combined Regional Analysis of the Cerebral Blood Flow and MR Spectroscopy

Magdalena Sokolska¹, Cristina Uria-Avellanal², M. Jorge Cardoso³, Máia Prisóy⁴, Alan Bainbridge⁵, Sebastien Ourselon⁴, David Thomas⁵, Nicola Robertson⁴, Xavier Goly¹
¹UCL Institute of Neurology, London, United Kingdom; ²UCL Institute for Women's Health, United Kingdom; ³Centre for Medical Image Computing, UCL, United Kingdom; ⁴UCL Medical Physics and Bioengineering, United Kingdom; ⁵Centre for Medical Physics and Bioengineering, United Kingdom

Basal Ganglia and Thalamic Volumes with Motor and Cognitive Outcomes in Very Preterm 7 Year Old Children.

Wai Yen Loh¹, ², Deanne K. Thompson¹, ², Jeanie LY Cheong¹, ³, Alicia J. Spittle¹, ³, Jian Chen¹, ⁴, Katherine J. Lee¹, ³, Terrie E. Inder¹, ², Alan Connelly¹, ², Lex W. Doyle¹, ³, Peter J. Anderson¹, ³
¹Murdoch Childrens Research Institute, Melbourne, Victoria, Australia; ²Florey Institute of Neuroscience and Mental Health, Melbourne, Victoria, Australia; ³University of Melbourne, Melbourne, Victoria, Australia; ⁴Monash University, Melbourne, Victoria, Australia; ⁵Brigham and Women's Hospital, Boston, MA, United States

MM-Suppressed GABA Concentration Correlates with Symptom Severity and Abnormal Tactile Processing in Children with ASD

Nicolai AJS Puts¹, ², Ashley D. Harris¹, ², Mark Twomberdahl¹, Peter B. Barker¹, ², Stewart H. Mostofsky¹, ², Richard A. Edden¹, ²
¹Russell H. Morgan Dept. of Radiology and Radiological Science, Johns Hopkins University, Baltimore, MD, United States; ²F.M. Kirby Center for Functional Brain Imaging, Kennedy Krieger Institute, Baltimore, MD, United States; ³Dept. of Biomedical Engineering, University of North Carolina at Chapel Hill, Chapel Hill, NC, United States; ⁴Dept. of Neurology, Johns Hopkins University, Baltimore, MD, United States; ⁵Center for Neurodevelopmental and Imaging Research, Kennedy Krieger Institute, Baltimore, MD, United States

Evidence for a Categorical-Dimensional Hybrid Model of Autism Spectrum Disorder Revealed in Functional Network Connectivity

Amanda Elton¹, Wei Gao¹, ²
¹Biomedical Research Imaging Center, UNC Chapel Hill, Chapel Hill, NC, United States; ²Radiology, UNC Chapel Hill, Chapel Hill, NC, United States

Psychostimulant Medication Duration Correlates with Increased Brain Iron Levels in Attention-Deficit/Hyperactivity Disorder

Vitria Adisetiyo¹, Jens H. Jensen¹, Ali Tabesh¹, Rachael L. Deardorf¹, Kevin M. Gray¹, Joseph A. Helpern², ³
¹Radiology and Radiological Science, Center for Biomedical Imaging, Medical University of South Carolina, Charleston, SC, United States; ²Psychiatry and Behavioral Sciences, Medical University of South Carolina, Charleston, SC, United States; ³Neuroscience, Medical University of South Carolina, Charleston, SC, United States
12:06 0777. Brain Connectomics and Social Cognition from Infancy to Early Adolescence: Effects of IUGR

Emma Muñoz-Moreno1, Elida Fischl-Gomez2, Dafnis Batalla3, Lana Vasung, Morgane Revelillon4, Cristina Borradori-Tolsa4, Elisenda Eixarch1, Jean-Philippe Gratacos2, B. Susan Hippel1

1Fetal and Perinatal Medicine Research Group, IDIBAPS, Barcelona, Spain; 2Ecole Polytechnique Fédérale de Lausanne, Signal Processing Laboratory 5 (LTS5), Lausanne, Switzerland; 3Division of Development and Growth, Department of Pediatrics, University of Geneva, Geneva, Switzerland; 4Maternal-Fetal Medicine Department, ICGON, Hospital Clinic, Universitat de Barcelona, Barcelona, Spain; 5Department of Radiology, University Hospital Center (CHUV) and University of Lausanne (UNIL), Lausanne, Switzerland

12:18 0778. Comparison of CBF Measured with Velocity Selective ASL and Pulsed ASL in Pediatric Patients with Prolonged Arterial Transit Times Due to Moyamoya Disease

Divya S. Bolhari1, Borjan Gagoski1, Richard L. Robertson2, Elfar Adalsteinsson2, Bruce R. Rosen1,2, P. Ellen Grant2

1Department of Radiology, Massachusetts General Hospital, Boston, MA, United States; 2MGH/HST Martinos Center for Biomedical Imaging, Charlestown, MA, United States; 3Fetal Neonatal Neuroimaging and Developmental Science Center, Boston Children’s Hospital, MA, United States; 4Department of Radiology, Boston Children’s Hospital, MA, United States; 5Department of Electrical Engineering & Computer Science, Massachusetts Institute of Technology, MA, United States

Thursday

10:30-12:30

CESToronto

Room 701 B

10:30 0779. Highly-Accelerated Chemical Exchange Saturation Transfer (CEST) Measurements with Linear Algebraic Modeling (SLAM)

Yi Zhang1, Hye-Young Heo1, Dong-Hoon Lee1, Shanshan Jiang1, Paul Bottomley1, Jinyuan Zhou1,2

1Division of MR Research, Department of Radiology, Johns Hopkins University, Baltimore, MD, United States; 2F. M. Kirby Research Center for Functional Brain Imaging, Kennedy Krieger Institute, Baltimore, MD, United States

10:42 0780. CEST Analysis Via MR Fingerprinting

Nicolas Geades1, Penny Gowland1, Olivier Mougin1

1Sir Peter Mansfield Imaging Centre, University of Nottingham, Nottingham, United Kingdom

10:54 0781. Monitoring Therapeutic Response on Non-Small Cell Lung Cancer in Chemotherapy by Amide Proton Transfer (APT) Imaging in Mice

Keisuke Ishimatsu1, Shanrong Zhang1, Koji Sagiyama1, Osamu Togao1, Brenda Timmons2, John Minna2, Masaya Takahashi1

1Advanced Imaging Research Center, University of Texas Southwestern Medical Center, Dallas, TX, United States; 2Hamon Center for Therapeutic Oncology, Internal Medicine, University of Texas Southwestern Medical Center, Dallas, TX, United States

11:06 0782. Dynamic Imaging of D-Glucose at 7T: First Experiments in Human Brain

Xiang Xu1,2, Craig K. Jones1,2, Nirbhay N. Yadav1,2, Linda Knutsson1, Jun Hua1,2, Rita Kalyani1, Erica Hall1, John Laterra1,2, Jashri Blakeley1, Roy Strovid1, Prakash Ambady1, Martin Pomper1, Peter Barker1,2, Guanshu Liu1,2, Kannie W.Y. Chan1,2, Michael T. McMahon1,2, Robert D. Stevens1,6, Peter van Zijl1,2

1Department of Radiology, Johns Hopkins University, Baltimore, MD, United States; 2F. M. Kirby Research Center, Kennedy Krieger Institute, Baltimore, MD, United States; 3Department of Medical Radiation Physics, Lund University, Lund, Sweden; 4Division of Endocrinology, Diabetes, & Metabolism, Johns Hopkins University, Baltimore, MD, United States; 5Department of Neurology, Johns Hopkins University, Baltimore, MD, United States; 6Department of Anesthesiology and Critical Care Medicine, Johns Hopkins University, Baltimore, MD, United States

11:18 0783. Chemical Exchange Sensitive Spin-Lock MRI of Deoxyglucose Transport and Metabolism in Brain

Tao Jin1, Hunter Mehrens4, Seong-Gi Kim1,2

1Department of Radiology, University of Pittsburgh, Pittsburgh, PA - Pennsylvania, United States; 2Center for Neuroscience Imaging Research, Institute for Basic Science, SKKU, Suwon, Korea

11:30 0784. Chemical Exchange Saturation Transfer (CEST) Imaging with Double Angles and Varying Duty Cycles

Ke Li1,2, Hua Li2, Zhongliang Zu1,2, Junzhong Xu1,2, Jingping Xie1,2, Bruce M. Damon1,2, Mark D. Does1,2, John C. Gore1,2, Daniel F. Gochberg1,2

1Institute of Imaging Sciences, Vanderbilt University, Nashville, TN, United States; 2Department of Radiology and Radiological Sciences, Vanderbilt University, Nashville, TN, United States; 3Department of Physics and Astronomy, Vanderbilt University, Nashville, TN, United States
Using an original DICOM file processing method, we studied the accuracy of software packages for measuring ... the software packages when processing clinical data consisting of dynamic contrast-enhanced MR images of rectal tumors.

Shu Zhang1, Zheng Liu2, Robert E. Lenkinski1, 3, Elena Vinogradov1, 3
1Radiology, UT Southwestern Medical Center, Dallas, TX, United States; 2Biomedical Engineering, UT, San Antonio, TX, United States; 3Department of Physiology, University of Kentucky, Lexington, KY, United States

Blood-brain-barrier (BBB) dysfunction has been implicated in a number of neurological disorders, such as multiple ... (Evan’s blue) in the same rats. Measurements were also made before and after mannitol administration to break the BBB.

Shu Zhang1, Zheng Liu2, Robert E. Lenkinski1, 3, Elena Vinogradov1, 3
1Radiology, UT Southwestern Medical Center, Dallas, TX, United States; 2Biomedical Engineering, UT, San Antonio, TX, United States; 3Department of Physiology, University of Kentucky, Lexington, KY, United States

In this work, we investigate the effects of temporal resolution on measured tumor perfusion parameters and also its ... In agreement with previous simulation studies, K trans is increasingly underestimated at reduced temporal resolutions.

1Laboratory for Structural NMR Imaging, University of Pennsylvania, Philadelphia, PA, United States; 2Department of Radiology, CHU Rennes, Rennes, France; 3Center for Nanomedicine, Johns Hopkins School of Medicine, Baltimore, MD, United States; 4MD Anderson Cancer Center, University of Texas, Houston, TX, United States; 5LTSI, UMR 1099, INSERM, University of Rennes I, Rennes, France

The conventional chemical exchange saturation transfer (CEST) imaging is always confounded by the MT asymmetry of the ... such effects. The equivalency of this approach to an ideal continuous-wave (CW) experiment is also demonstrated.

1Biological and Medical Imaging, University of Arizona, Tucson, AZ, United States; 2F.M. Kirby Research Center for Functional Brain Imaging, Kennedy Krieger Institute, Baltimore, MD, United States; 3Department of Radiology, Eugène Marquis Cancer Institute, Rennes, France; 4Department of Radiology, CHU Rennes, Rennes, France; 5LTSI, UMR 1099, INSERM, University of Rennes I, Rennes, France

The Poly(amido amine) (PAMAM) dendritics form a class of three dimensional, macromolecular hyperbranched globular ... conjugation of a salicylic acid (SA) analogue which displays specific high-frequency-offset CEST contrast4 to a 4th

1Saha Cardiovascular Research Center, University of Kentucky, Lexington, KY, United States; 2Department of Biomedical Engineering, University of Kentucky, Lexington, KY, United States; 3Department of Physiology, University of Kentucky, Lexington, KY, United States

We have incorporated the Phase-Offset MultiPlanar (POMP) Simultaneous MultiSlice (SMS) technique into CEST- FISP MRI to ... voxelwise pHe measurements have some variance, pHe analyses of tissue and sub-tissue regions have excellent precision.

1Biological and Medical Imaging, University of Arizona, Tucson, AZ, United States; 2Advanced Imaging Research Center, UT Southwestern Medical Center, Dallas, TX, United States; 3Research Imaging Institute, UT Health Science Center, San Antonio, TX, United States

In this work we demonstrate that pulses of bSSFP generate an effective RF field akin to the saturation/spin-lock RF ... agent acquired using this bSSFPX approach. This method may lead to fast acquisition and quantification approaches.

1Radiology, UT Southwestern Medical Center, Dallas, TX, United States; 2Advanced Imaging Research Center, Oregon Health & Science University, Portland, OR, United States; 3Research Imaging Institute, UT Health Science Center, Dallas, TX, United States

Room 714 A/B 10:30-12:30

Perfusion & Permeability: Validation Studies

Moderators: Weiying Dai, Ph.D. & Ronnie Wirestam, Ph.D.

10:30 0789. Dynamic Contrast-Enhanced MR Imaging in Rectal Cancer: Study of Inter-Software Accuracy and Reproducibility Using Simulated and Clinical Data
Luc Beuzit1, Pierre-Antoine Eliar2, Elise Bannier1, 3, Jean-Christophe Ferré1, 3, Yves Gandon1, Vanessa Brun1, Horvé Saint-Jalmes1, 5
1Radiology, CHU Rennes, Rennes, France; 2PRISM-Biosit CNRS UMS 3480, INSERM UMS 018, University of Rennes I, Rennes, France; 3Neurinfo MR imaging platform, University of Rennes I, Rennes, France; 4Radiology, Eugène Marquis Cancer Institute, Rennes, France; 5LTSI, UMR 1099, INSERM, University of Rennes I, Rennes, France

Stefan Hindel1, Anika Sauerbrey1, Marc Maasβ, Lutz Lüdemann1
1Strahlenklinik und Poliklinik, Universitätsklinikum Essen, Essen, North Rhine-Westphalia, Germany; 2Evangelisches Krankenhaus Wesel GmbH, North Rhine-Westphalia, Germany

10:54 0791. Effects of Temporal Resolution on DCE-MRI Parameter Estimation: In-Vivo Repeatability Analysis of Lung Tumors Using Retroactively Adjustable KWIC Reconstruction
Xia Zhao1, 2, Tiqun Xue1, 2, Mark Rosen1, Hyunseon Kang1, Ramesh Rengan1, Heekwon Song1, 2
1Laboratory for Structural NMR Imaging, University of Pennsylvania, Philadelphia, PA, United States; 2Department of Radiology, Hospital of University of Pennsylvania, Philadelphia, PA, United States; 3MD Anderson Cancer Center, University of Texas, Houston, TX, United States; 4Department of Radiation Oncology, University of Washington School of Medicine, Seattle, WA, United States

Yash Vardhan Tiwari1, 3, Qiun Chen1, 3, Zhao Jiang2, Wei Li2, Justin Long2, Chenling Fang2, Timothy Duong2
1Research Imaging Institute, UT Health Science Center, San Antonio, TX, United States; 2Biomedical Engineering, UT, San Antonio, TX, United States; 3Research Imaging Institute, UT Health Science Center, San Antonio, TX, United States
Thursday

11:18 0793. Intra and Inter-Subject Reproducibility of Arterial Transit Time
Tracy Ssali1, 2, Udunna C. Anazodo1, 2, Mahsa Shokouhi1, Bradley J. MacIntosh1, Keith St Lawrence1, 2
1Laswon Health Research Institute, London, Ontario, Canada; 2University of Western Ontario, London, Ontario, Canada

11:30 0794. Comparison of ASL Inversion Efficiency and CBF Quantification for 3 Perfusion Techniques at 3 Magnetic Fields
Clement Stephan Debacker1, 2, Jan M. Warnking1, 3, Sacha Koehler2, Jerome Voiron2, Emmanuel L. Barbier1, 3
1GIN, Univ. Grenoble Alpes, Grenoble, France; 2Bruker BioSpin MRI, Ettlingen, Germany; 3U836, INSERM, Grenoble, France

11:42 0795. Assessing Relationship Between Intracranial Vascular Compliance and Aortic Pulse Wave Velocity Using MRI
Lirong Yan1, Collin Liu2, Robert Smith1, Mayank Jag1, Kate Krasileva1, Cheng Li3, Michael Langham4, Danny JJ Wang5
1Neurology, University of California Los Angeles, Los Angeles, CA, United States; 2University of Southern California, CA, United States; 3University of Pennsylvania, Philadelphia, PA, United States

11:54 0796. Validation of Dual-Injection Dynamic Susceptibility Contrast Perfusion Weighted Imaging Against Pseudo-Continuous Arterial Spin Labeling: A Pilot Study
Natalie M. Wiseman1, Meng Li2, Mahmoud Zeydabadinezhad5, Jessy Mouannes-Srour1, Yongquan Ye2, E. Mark Haacke,2,3, Zhifeng Kou, 5,3
1Department of Psychiatry and Behavioral Neurosciences, Wayne State University School of Medicine, Detroit, MI, United States; 2Department of Radiology, Wayne State University School of Medicine, Detroit, MI, United States; 3Department of Biomedical Engineering, Wayne State University, Detroit, MI, United States

12:06 0797. An Extensible Methodology for Creating Realistic Anthropomorphic Digital Phantoms for Quantitative Imaging Algorithm Comparisons and Validation
Ryan J. Bosca1, Edward F. Jackson1
1Medical Physics, University of Wisconsin - Madison, Madison, WI, United States

12:18 0798. A Simple and Cheap Perfusion Phantom
Ina Nora Kompan1, 2, Klaus Eickel1, 2, Frederico von Samson-Himmelstjerna1, 4, Benjamin Richard Knowles1, Matthias Guenther1, 2
1Fraunhofer MEVIS, Bremen, Germany; 2mediri GmbH, Heidelberg, Baden-Württemberg, Germany; 3Universitätsklinikum Essen, Essen, Nordrhein-Westfalen, Germany; 4Charité, Berlin, Germany; 5Universitätsklinikum Freiburg, Freiburg, Baden-Württemberg, Germany

Diabetes, Metabolism & GI
Room 716 A/B 10:30-12:30 Moderators: Yulia Lakhman, M.D. & T.B.A.

10:30 0799. Localized Detection of Fasting-Induced Changes in Lactate Metabolism by Hyperpolarized 13C MRI
Cornelius von Morze1, Gene-Yuan Chang2, Peder E. Larson1, Hong Shang1, Robert A. Bak1, Jason C. Crane1, Marram P. Olson1, C. T. Tan1, Sarah J. Nelson1, John Kurhanewicz1, David Pearce2, Daniel B. Vigneron1
1Department of Radiology & Biomedical Imaging, UCSF, San Francisco, CA, United States; 2Department of Medicine, UCSF, San Francisco, CA, United States; 3ISOTEC, Sigma-Aldrich, Miamisburg, OH, United States

10:42 0800. Carbohydrate Requirements During Intermittent High Intensity Exercise Compared to Continuous Moderate Intensity Exercise in Individuals with Type 1 Diabetes
Tania Buehler1, Lia Bally2, Ayse Sila Dokumaci1, Christoph Stettler2, Chris Boesch1
1Depts. Radiology and Clinical Research, University Bern, Bern, Switzerland; 2Division of Endocrinology, Diabetes and Clinical Nutrition, Inselspital Bern, Bern, Switzerland

10:54 0801. The Acute Effects of Metformin on Cardiac and Hepatic Metabolism: A Hyperpolarized [1-13C]pyruvate Magnetic Resonance Spectroscopy Study
Andrew Lewis1, Chloe McCallum1, Jack Miller1, 2, Lisa Heather1, Damian J. Tyler1
1Department of Physiology, Anatomy and Genetics, University of Oxford, Oxford, United Kingdom; 2Department of Physics, University of Oxford, Oxford, United Kingdom
Thursday

11:06 0802. Fructose Increases de Novo Lipogenesis in the Liver of Rats: An In Vivo 1H-[13C] MRS Study

Sharon Janssens1, Klaas Nicolay1, Jeannine J. Prompers1
1Biomedical NMR, Eindhoven University of Technology, Eindhoven, Noord-Brabant, Netherlands

11:18 0803. Adipokine Secretions Correlate with MRI Measurements of Adiposity

Kathryn Murray1, Caroline Hoad1, Jill Garratt1, Carolyn Costigan1, Arvind Batra2, Britta Siegmund3, Yirga Falcone3, Jan Smith4, Eleanor Cox1, Jan Paul1, David Humes1, Susan Francis1, Luca Marciani1, Robin Spiller1, Penny Gowland1
1Sir Peter Mansfield Imaging Centre, Physics and Astronomy, University of Nottingham, Nottingham, United Kingdom; 2Sir Peter Mansfield Imaging Centre, Physics and Astronomy, University of Nottingham, Nottingham, United Kingdom; 3Nottingham Digestive Diseases Biomedical Research Centre, Nottingham University Hospitals, Nottingham, United Kingdom; 4Gastroenterology, Rheumatology, Infectious Diseases, Charité – Universitätsmedizin, Berlin, Germany

11:30 0804. Profiling Muscle Substrate Utilization in Insulin-Resistant Subjects Using 13C-MRS at 7 Tesla

Douglas E. Befroy1,2, Kitt Falk Petersen2, Douglas L. Rothman1,3, Gerald I. Shulman2,4
1Diagnostic Radiology, Yale University School of Medicine, New Haven, CT, United States; 2Internal Medicine, Yale University School of Medicine, New Haven, CT, United States; 3Biomedical Engineering, Yale University School of Medicine, New Haven, CT, United States; 4Howard Hughes Medical Institute, New Haven, CT, United States

11:42 0805. Contrast-Enhanced T1-Weighted MRI of the Small Bowel at 7 Tesla in Comparison to 1.5 Tesla

Maria Hahnenmann1,2, Oliver Kraff2, Stefan Maderwald2, Soeren Johst1, Mark E. Ladd2,3, Harald H. Quick2,4, Thomas Lauenstein1
1Department of Diagnostic and Interventional Radiology and Neuroradiology, University Hospital Essen, Essen, Germany; 2Erwin L. Hahn Institute for Magnetic Resonance Imaging, Essen, Germany; 3Medical Physics in Radiology, German Cancer Research Center (DKFZ), Heidelberg, Germany; 4High Field and Hybrid MR Imaging, University Hospital Essen, Essen, Germany

11:54 0806. Comparison of T2-Weighted MRI of the Small Bowel at 7 Tesla and 1.5 Tesla

Maria I. Hahnenmann1,2, Oliver Kraff2, Stefan Maderwald2, Soeren Johst1, Mark E. Ladd1,3, Harald H. Quick1,4, Thomas C. Lauenstein1
1Erwin L. Hahn Institute for Magnetic Resonance Imaging, Essen, Germany; 2Department of Diagnostic and Interventional Radiology and Neuroradiology, University Hospital Essen, Essen, Germany; 3Medical Physics in Radiology, German Cancer Research Center (DKFZ), Heidelberg, Germany; 4High Field and Hybrid MR Imaging, University Hospital Essen, Essen, Germany

12:06 0807. Prospective Comparison of a Contrast-Enhanced MRI Protocol with Contrast-Enhanced MDCT for the Primary Diagnosis of Acute Appendicitis in the General Population

Michael D. Repplinger1,2, Perry J. Pickhardt3, Douglas R. Kitchin2, Jessica B. Robbins2, Timothy J. Ziemlewicz2, Scott B. Reeder2,3
1Emergency Medicine, University of Wisconsin School of Medicine and Public Health, Madison, WI, United States; 2Radiology, University of Wisconsin School of Medicine and Public Health, Madison, WI, United States; 3Medical Physics, University of Wisconsin School of Medicine and Public Health, Madison, WI, United States


Alex Lewis1, Mathew Bernbeck1, Richard Barth1, Shreyas Vasanawala1
1Radiology, Stanford University, Stanford, CA, United States

Motion Correction
Constitution Hall 107 10:30-12:30 Moderators: Kevin M. Johnson, Ph.D. & Maxim Zaitsev, Ph.D.

10:30 0809. Combined Free Breathing, Whole Heart Self-Navigation and "pencil-Beam" 2D-T2-Prep for Coronary MRA

Andrew J. Coristine1,2, Jérôme Chaptinel3, Giulia Ginami4, Gabriele Bonanno5, Ruud B. van Heeswijk1, Davide Piccini1, Matthias Stuber6
1Department of Radiology, University Hospital (CHUV) and University of Lausanne (UNIL), Lausanne, VD, Switzerland; 2CardioVascular Magnetic Resonance (CVMR) research centre, Centre for Biomedical Imaging (CIBM), Lausanne, VD, Switzerland; 3Department of Radiology, University Hospital (CHUV) and University of Lausanne (UNIL), Lausanne, VD, Switzerland; 4Department of Radiology, University Hospital (CHUV) and Centre for Biomedical Imaging (CIBM), Lausanne, VD, Switzerland; 5Advanced Clinical Imaging Technology, Siemens Healthcare IM BM PI, Lausanne, VD, Switzerland
10:42  0810. **Motion Compensated Reconstruction in Accelerated Single-Shot Cardiac MRI**

Aurelien Bustin,1,2 Anne Menini1,2 Shufang Liu1,2 Teresa Rincón Domínguez1,2 Darius Burschka1, Martin A. Janich1, Steven Wolf3, Oleg Shubayev4, David W. Stanley1, Freddy Odille1,2 Anja C. Brau2

1 Computer Science, Technische Universität München, Munich, Germany; 2 GE Global Research, Garching, Germany; 3 Advanced Cardiovascular Imaging, New York City, NY, United States; 4 GE Healthcare, Rochester, MN, United States

**On the Resilience of GS-BSSFP to Motion and Other Noise-Like Artifacts**

Xinwei Shi1, Joseph Cheng2, Michael Lustig3, John Pauly1, Shreyas Vasanawala2

1 Electrical Engineering, Stanford University, Stanford, CA, United States; 2 Radiology, Stanford University, Stanford, CA, United States; 3 Electrical Engineering and Computer Science, UC Berkeley, Berkeley, CA, United States

10:54  0811. **Virtual Coil Navigator: A Robust Localized Motion Estimation Approach for Free-Breathing Cardiac MRI**

Xinwei Shi1, Joseph Cheng2, Michael Lustig3, John Pauly1, Shreyas Vasanawala2

1 Electrical Engineering, Stanford University, Stanford, CA, United States; 2 Radiology, Stanford University, Stanford, CA, United States

11:06  0812. **Imaging in the Presence of Motion with Sliding Slice Distortions**

Kevin Michael Johnson1, James H. Holmes1, Scott B. Reeder1,2

1 Medical Physics, University of Wisconsin-Madison, Madison, WI, United States; 2 Global MR Applications and Workflow, GE Healthcare, Madison, WI, United States

11:18  0813. **Improved Tracking of Object Motion During MRI Examinations Using Coil Fingerprint Enhanced Signal Navigators.**

Kaveh Vahedipour1,2, Thomas Köster2,3, Fernando Boada2,3

1 Center for Advanced Imaging Innovation and Research (CAI2R), NYU Langone Medical Center, New York, NY, United States; 2 Bernard and Irene Schwartz Center for Biomedical Imaging, Department of Radiology, New York School of Medicine, New York, NY, United States; 3 Center for Advanced Imaging Innovation and Research (CAI2R), NYU Langone Medical Center, New York, NY, United States

11:30  0814. **Predictive Sensor for Real-Time Respiratory Motion Monitoring**

Robin Navest1, Cornelis van den Berg2, Christian Lagendijk2, Anna Andreychenko1

1 Imaging Division, UMC Utrecht, Utrecht, Netherlands

11:42  0815. **Optical Prospective Motion Correction for High Resolution Quantitative MRI (QMRI) of the Brain**

Martina F. Callaghan,1 Oliver Josephs1, Michael Herbstr1, Maxim Zaitsev1, Nicholas Todd2, Nikolaus Weiskopf1

1 Wellcome Trust Centre for Neuroimaging, UCL Institute of Neurology, UCL, London, United Kingdom; 2 Department of Radiology, University Medical Centre Freiburg, Freiburg, Germany

11:54  0816. **3D FatNav: Prospective Motion Correction for Clinical Brain Imaging**

Magnus Mårtensson1,2, Mathias Engström2,3, Enrico Aventi2, Ola Norbeck2, Stefan Skare2,3

1 EMEA Research & Collaboration, GE Applied Science Laboratory, GE Healthcare, Stockholm, Sweden; 2 Dept. of Clinical Neuroscience, Karolinska Institutet, Stockholm, Sweden; 3 Dept. of Neuroradiology, Karolinska University Hospital, Stockholm, Sweden

12:06  0817. **Simultaneous Multi-Slice (SMS) Accelerated EPI Navigators for Prospective Motion Correction in the Brain**

Himanshu Bhat1, M. Dylan Tisdall2, Stephen F. Cauley2, Thomas Wizel3, Kavin Setsompop3, Andre J.W. van der Kouwe4, Keith Heberlein1

1 Siemens Healthcare, Charleston, MA, United States; 2 Athinoulia A. Martinos Center for Biomedical Imaging, Massachusetts General Hospital, Charlestown, MA, United States

12:18  0818. **On the Resilience of GS-BSSFP to Motion and Other Noise-Like Artifacts**

Michael N. Hoff1, Jalal B. Andre1, Qing-San Xiang2,3

1 Radiology, University of Washington, Seattle, WA, United States; 2 Physics, University of British Columbia, Vancouver, British Columbia, Canada; 3 Radiology, University of British Columbia, Vancouver, British Columbia, Canada
10:30 0819. Reduced Specific Absorption Rate (SAR) Magnetization Transfer Imaging with Low Density MT Pulse Technique for 7 Tesla
Se-Hong Oh¹, Wanyong Shin¹, Mark J Lowe¹
¹Imaging Institute, Cleveland Clinic Foundation, Cleveland, OH, United States

10:42 0820. High Resolution MR Elastography Reveals Disseminated White Matter Degradation of Brain Tissue Integrity in Clinically Isolated Syndrome
Andreas Fehlner¹, Kaspar-Josche Streitberger¹,², Friedemann Paul¹,³, Jens Würfel¹,³, Jürgen Braun², Ingolf Sack¹
¹Department of Radiology, Charité - Universitätsmedizin Berlin, Berlin, Germany; ²Department of Neurology with experimental Neurology, Charité - Universitätsmedizin Berlin, Berlin, Germany; ³NeuroCure Clinical Research Center, Charité - Universitätsmedizin Berlin, Berlin, Germany; ⁴Clinical and Experimental Multiple Sclerosis Research Center, Department of Neurology, Charité - Universitätsmedizin Berlin, Berlin, Germany; ⁵Institute of Neuroradiology, Universitätsmedizin Göttingen, Göttingen, Germany; ⁶Institute of Medical Informatics, Charité - Universitätsmedizin Berlin, Berlin, Germany

10:54 0821. Ultra-High Field MRI Longitudinal MS Lesion Study
Bryson Dietz¹, David A. Rudko², Marcelo Kremenchutzky¹, Ravi S. Menon¹, ⁴
¹Centre for Functional and Metabolic Mapping, Robarts Research Institute, Western University, London, ON, Canada; ²Montreal Neurological Institute, McGill University, Montreal, QC, Canada; ³London Health Sciences Centre, London, ON, Canada; ⁴Department of Medical Biophysics, Western University, London, ON, Canada

11:06 0822. Beyond Focal Cortical Lesions in Multiple Sclerosis: An In Vivo Quantitative and Spatial Imaging Study at 7 T
Céline Louapre¹,², Sindhuja T. Govindarajan¹, Costanza Giannì¹,², Jacob A. Sloane¹, RP Kinkel², Caterina Mainero¹,²
¹AA. Martinos Center for Biomedical Imaging, Charlestown, MA, United States; ²Harvard Medical School, Boston, MA, United States; ³Beth Israel Deaconess Medical Center, Boston, MA, United States; ⁴University of California San Diego, San Diego, CA, United States

11:18 0823. Multivariate Combination of Magnetization Transfer Ratio and Quantitative T₂* to Detect Subpial Demyelination in Multiple Sclerosis
Gabriel Mangeat¹,², Sindhuja Tirumalai Govindarajan², Revere Philip Kinkel¹, Caterina Mainero², ⁴, Julien Cohen-Adad²,³
¹Institute of Biomedical Engineering, Polytechnique Montreal, Montreal, QC, Canada; ²Martinos Center for Biomedical Imaging, MGH, Charlestown, MA, United States; ³Clinical Neurosciences, University of California San Diego, La Jolla, CA, United States; ⁴Harvard Medical School, Boston, MA, United States; ⁵Functional Neuroimaging Unit, CRU Urg, Université de Montréal, Montreal, QC, Canada

11:30 0824. Advanced Myelin Water Imaging Techniques for Rapid Data Acquisition and Long T₂ Component Measurements
Jing Zhang¹, Irene Vavassour¹, Shannon Kolind², Baumeister Baumeister³, Alexander Rauscher¹, Alex L. MacKay¹, ⁴
¹Department of Radiology, University of British Columbia, Vancouver, BC, Canada; ²Division of Neurology, Department of Medicine, University of British Columbia, Vancouver, BC, Canada; ³Department of Electrical and Computer Engineering, University of British Columbia, Vancouver, BC, Canada; ⁴Department of Physics and Astronomy, University of British Columbia, Vancouver, BC, Canada

11:42 0825. Voxel-Based Analysis of Subcortical Grey Matter Using Transverse Relaxation and Quantitative Susceptibility Mapping: Application to Multiple Sclerosis
Dana Cohan³, Hongta Sun¹, Andrew J. Walsh¹, R. Marc Lebel¹, Gregg Blevins², Alan H. W. Hillman¹
¹Biomedical Engineering, University of Alberta, Edmonton, Alberta, Canada; ²Neurology, University of Alberta, Edmonton, Alberta, Canada

11:54 0826. Regional White Matter Abnormalities and Cognitive Impairment in MS: A Multicenter TBSS Study
Elisabetta Pagani¹, Maria A. Rocca¹,², Alvino Bisecco¹, Olga Ciccarelli³, Christian Enzinger⁴, Antonio Gallo³, Hugo Vrenken³, Maria Laura Stromillo³, Tarek A. Yousry¹, Franz Fazekas², Gioacchino Tedeschi³, Frederik Barkhof², Nicola De Stefano¹, Massimo Filippi¹,², the MAGNIMS Network⁸
¹Neuroimaging Research Unit, Institute of Experimental Neurology, Division of Neuroscience, San Raffaele Scientific Institute, Vita-Salute San Raffaele University, Milan, MI, Italy; ²Department of Neurology, San Raffaele Scientific Institute, Vita-Salute San
Thursday

Raffaele University, Milan, MI, Italy; 1UCLH NHS Foundation Trust, National Hospital for Neurology and Neurosurgery, London, UK, United Kingdom; 2Department of Neurology, Medical University of Graz, Graz, A, Austria; 3MRI Center “SUN-FISM”, Second University of Naples, Naples, NA, Italy; 4Department of Radiology, VU University Medical Centre, Amsterdam, Netherlands, Netherlands; 5Department of Neurological and Behavioral Sciences, University of Siena, Siena, SI, Italy; 6EU, EU, Italy

12:06 0827. Cognitive Status of Multiple Sclerosis Patients Is Associated with Neocortical Neuronal Injury: A Voxel-Based Sodium MRI Study

Adil Maarouf1, 2, Bertrand Audoin1, Anthony Faivre1, Francoise Reuter1, Fanelly Parialioud1, Audrey Rico1, Elisabeth Soulier1, Sylviane Confort-Gouny1, Maxime Guye1, Lothar Schad3, Jean Pelletier1, Jean-Philippe Ranjeva1, Wafaa Zaaraoui1

1CRMBM UMR CNRS 7339 Aix-Marseille Université, Marseille, France; 2Faculté de Médecine, Université de Reims Champagne-Ardenne, Reims, France; 3Computer Assisted Clinical Medicine, Heidelberg University, Mannheim, Germany

12:18 0828. High Contrast Magnitude and Phase Imaging of the Short T2 Components in White Matter of the Brain

Qun He1, Lanqing Ma1, Wen Hong, 12, Vipul Sheth1, Graeme M. Bydder1, Jiang Du1

1Radiology, UC, San Diego, San Diego, CA, United States; 2Radiology, China-Japan friendship hospital, Beijing, China

Educational Course


Organizers: Eric Y. Chang, M.D., Garry E. Gold, M.D., Richard Kijowski, M.D., William B. Morrison, M.D., Ravinder R. Regatte, Ph.D. & Siegfried Trattnig, M.D.

Room 718 A 10:30-12:30  Moderators: Eric Y. Chang, M.D. & Emily McWalter, Ph.D.

10:30 Subchondroplasty

William B. Morrison

11:00 Cartilage Repair

Carl S. Winalski

11:30 Biomaterials

Jennifer H. Elisseff

12:00 Hip Metal-On-Metal Implants & Complications

Hollis G. Potter

12:30 Adjournment & Meet the Teachers

Combined Educational & Scientific Session

Pediatric Neuroimaging

Organizers: Jeffrey J. Neil, M.D., Ph.D.

Room 801 A/B 10:30-12:30  Moderators: Petra S. Hüppi, M.D. & Terrie E. Inder, M.B.Ch.B., M.D.

10:30 How to Scan an Infant or Child Without Using Sedation

Kelly N. Botteron

10:54 0832. Propeller Techniques for Pediatric Exams in the Presence of Large Motion

Stefan Skare1, Enrico Avventi1, Magnus Mårtensson2, Ola Norbeck2, Mathias Engström1, Maria Sandell1, Chen Wang1

1Neuroradiology, Karolinska University Hospital, Stockholm, Sweden; 2EMEA Research & Collaboration, GE, Stockholm, Sweden

11:06 0833. Retrospective Motion Correction of MPnRAGE Studies in Children

Andrew L. Alexander1, 2, Janet E. Lainhart1, Audra Sterling1, Brittany G. Travers1, Abigail Freeman1, Steven R. Keckemeti1

1Waisman Center, University of Wisconsin, Madison, WI, United States; 2Medical Physics and Psychiatry, University of Wisconsin, Madison, WI, United States

138
Stefan Blüml
Wei Li1, 2, Justin Long1, Lora Watts1, Qiang Shen1, Robert Boggs1, Zhao Jiang1, Yunxia Li1, Timothy Q. Duong1, 2
Prof. Peter Anderson
We previously reported CBF and vascular reactivity dysfunction, T2, ADC, and FA abnormality following mild TBI in a rat model. Magnetic resonance imaging (MRI) was used to measure these changes longitudinally from 1 hour and up to 7 days post TBI.

1Research Imaging Institute, University of Texas Health Science Center at San Antonio, San Antonio, TX, United States; 2Neurosurgery, University of Texas Health Science Center at San Antonio, San Antonio, TX, United States

Biomechanical head impact data shows that football players receive significantly more severe and more numerous subconcussive impacts than non-contact athletes. A careful analysis of these impacts is crucial for developing adequate methods of detecting and demonstrating physiologic changes in a single football season, likely caused by subconcussive impacts.

Bryson B. Reynolds1, Todd M. Chatlos1, Donna K. Broshek2, Max Wintermark3, Susan F. Saliba4, Howard P. Goodkin5, Peter J. Anderson1, 2

Mild traumatic brain injury (mTBI) is a prevalent injury for athletes in contact sports. In order to study changes in cognition and neurodevelopment following mTBI, radial kurtosis was measured using diffusion kurtosis imaging (DKI) and was found to be significantly reduced in athletes with concussions.

1Biophysics, Medical College of Wisconsin, Milwaukee, WI, United States; 2Neurosurgery, Medical College of Wisconsin, WI, United States

Sean Deoni1, Jonathan O’Muircheartaigh1, Holly Dirks2, Douglas C. Dean1

Children born very preterm (VPT; <32 weeks’ gestation) are at risk of neurodevelopmental delays. We aimed to determine the contributions of whole brain fractional anisotropy, axon density, and axon dispersion to neurodevelopmental outcomes in VPT children.

1Brown University, Providence, RI, United States; 2NeuroImaging, King’s College London, London, United Kingdom

What MR Scientists Should Know About Neurodevelopmental Testing

Prof. Peter Anderson

11:18

Multifunctional Liposome for Non-Small Cell Lung Cancer Targeting and Theranostic MRI

Ren Lili1, Shizhen Chen1, Haidong Li1, Zhiying Zhang1, Jianping Zhong1, Xin Zhou1

1National Center for Magnetic Resonance in Wuhan, Wuhan Institute of Physics and Mathematics, Wuhan, Hubei, China

Neural Correlates of Phonological Processing in 4-6 Year Olds

Andrea S. Miele1, Holly Dirks3, Dannielle John Whitey1, Terry Harrison-Goldman1, Viren D’Sa3, Sean Deoni2, 4

1Psychiatry and Human Behavior, Alpert Medical School of Brown University, Providence, RI, United States; 2University of Virginia School of Medicine, Charlottesville, VA, United States; 3Radiology, Stanford University Medical Center, Stanford, CA, United States; 4Kinesiology, University of Virginia Curry School, Charlottesville, VA, United States

Differing Contributions of Whole Brain Fractional Anisotropy, Axon Density and Axon Dispersion to Neurodevelopmental Outcomes of Children Born Very Preterm

Claire E. Kelly1, Deanne K. Thompson1, 2, Jian Chen1, 3, Alexander Leemans4, Christopher L. Adamson1, Terrie E. Ingersoll1, Jeanie LY Cheong1, 6, Lex W. Doyle1, 6, Peter J. Anderson1, 2

1Murdock Childrens Research Institute, Melbourne, VIC, Australia; 2Psychiatry, University of Melbourne, VIC, Australia; 3Florey Institute of Neuroscience and Mental Health, Melbourne, VIC, Australia; 4Monash University, Melbourne, VIC, Australia; 5Image Sciences Institute, University Medical Center Utrecht, Utrecht, Netherlands; 6 Brigham and Women’s Hospital, Boston, MA, United States; 7Royal Women’s Hospital, Melbourne, VIC, Australia

White Matter Maturation Profiles Through Early Childhood Predict General Cognitive Ability

Sean Deoni2, Jonathan O’Muircheartaigh1, Holly Dirks2, Douglas C. Dean1

1Brown University, Providence, RI, United States; 2NeuroImaging, King's College London, London, United Kingdom

12:18

Adjournment & Meet the Teachers

12:30

Combined Educational & Scientific Session

Traumatic Brain Injury

Organizers: Jonathan H. Gillard, M.D., FRCR, MBA & Howard A Rowley, M.D.

Room 718 B 10:30-12:30

Moderators: Roland R. Lee, M.D. & Joshua S. Shimony, M.D., Ph.D.

MR Spectroscopy in Acute Brain Injury - What We Can Offer the Clinician Now

Stefan Blüml

11:30

Diffusion Kurtosis Imaging Quantifies the Effects of Mild Traumatic Brain Injury in Football Players

Daniel Olson1, Melissa Lancaster2, Ashley LaRoche2, Volkan Arpinar3, Michael McCrea1, L Tugan Muftuler2

1Biophysics, Medical College of Wisconsin, Milwaukee, WI, United States; 2Neurosurgery, Medical College of Wisconsin, WI, United States; 3Neurosurgery, University of Miami, Miami, FL, United States

Altered Cortical and Subcortical Functional Connectivity in a Single Football Season

Bryson B. Reynolds1, Todd M. Chatlos1, Donna K. Broshek2, Max Wintermark3, Susan F. Saliba4, Howard P. Goodkin5, T. Jason Druzgal6

1Radiology and Medical Imaging, University of Virginia School of Medicine, Charlottesville, VA, United States; 2Psychiatry and Neurobehavioral Sciences, University of Virginia School of Medicine, Charlottesville, VA, United States; 3Radiology, Stanford School of Medicine, San Francisco, CA, United States; 4Kinesiology, University of Virginia Curry School, Charlottesville, VA, United States; 5Neurology, University of Virginia Health System, Charlottesville, VA, United States

Longitudinal Blood-Brain Barrier Permeability, Cerebral Flood Flow, T2 and Diffusion Changes Following Mild Traumatic Brain Injury

Wei Li1, 2, Justin Long1, Lora Watts1, Qiang Shen1, Robert Boggs1, Zhao Jiang1, Yunxia Li1, Timothy Q. Duong1, 2

1Research Imaging Institute, University of Texas Health Science Center at San Antonio, San Antonio, TX, United States; 2Ophthalmology, University of Texas Health Science Center at San Antonio, San Antonio, TX, United States

14:40

14:00

14:20

14:40
Thursday

15:00  
MR in Acute Brain Injury - What's on the Horizon  
Karen A. Tong

15:30  
Adjournment & Meet the Teachers

**Hands-On Workshop 3 – Siemens Healthcare GmbH**
Room 711  10:30-12:30  
(no CME credit)

**Hands-On Workshop 3 - GE Healthcare**
Room 703  10:30-12:30  
(no CME credit)

**Hands-On Workshop 3 - Philips Healthcare**
Room 707  10:30-12:30  
(no CME credit)

**Traditional Poster Session: Diffusion**
Exhibition Hall  13:30-15:30  
(no CME credit)

**Electronic Poster Session: Molecular Imaging**
Exhibition Hall  13:30-15:30  
(no CME credit)

**Electronic Poster Session: Spectroscopy**
Exhibition Hall  13:30-15:30  
(no CME credit)

**Study Group Session**
Detection & Correction of Motion in MRI & MRS
Reception Hall 104 BCD  13:30-15:30  
(no CME credit)

**Study Group Session**
MR of Cancer
Room 801 A/B  13:30-15:30  
(no CME credit)

**Power Pitch Session: Body**
Power Pitch Theatre, Exhibition Hall  13:30-14:30  
(no CME credit)

*0838. Does Using a 16-Element Receive-Array Improve Whole-Liver $^{31}$P Metabolite Ratio Quantification at 7T?*
Lucian A. B. Purvis\(^{1,}\), William T. Clarke\(^{1,}\), Michael Pavlides\(^{1,}\), Stefan Neubauer\(^{1,}\), Matthew D. Robson\(^{1,}\), Christopher T. Rodgers\(^{1,}\)

\(^{1,}\)Department of Cardiovascular Medicine, University of Oxford, Oxford, Oxfordshire, United Kingdom

*0839. Combined Gadoxetic Acid and Gadofosveset Enhanced Liver MRI: Detection and Characterization of Focal Liver Lesions*
Peter Bannas\(^{1,}\), Candice A. Bookwalter\(^{1,}\), Tim Ziemlewicz\(^{2,}\), Utaroh Motosugi\(^{1,}\), Richard Bruce\(^{1,}\), Theodora A. Potretzke\(^{1,}\), Scott B. Reeder\(^{1,}\)

\(^{1}\)Radiology, University of Wisconsin-Madison, Madison, WI, United States; \(^{2}\)Radiology, University Medical Center Hamburg-Eppendorf, Hamburg, Germany; \(^{3}\)Medical Physics, University of Wisconsin-Madison, WI, United States
0840. Adipose Tissue Hydration as a Potential Non-Invasive Marker for Adipose Tissue Hypertrophy
Navin Michael1, Suresh Anand Sadanandhan1, Jadegoud Malliga2, Swee Shean Lee3, Melvin Khee-Shing Leow4,5,6, Chin Meng Kho1, Eric Tin Hao Ko2, Kavita Venkataraman2, Yung Seng Lee4,6, Yap Seng Chong1,7, Peter D. Gluckman1, E. Shyong Tai2, S. Sendhil Velan3
1Singapore Institute for Clinical Sciences, A*STAR, Singapore; 2Singapore BioImaging Consortium, A*STAR, Singapore; 3Department of Paediatrics, Yong Loo Lin School of Medicine, Singapore; 4National University of Singapore, Singapore; 5Saw Swee Hock School of Public Health, National University of Singapore, Singapore; 6Department of Radiology, Yong Loo Lin School of Medicine, Singapore; 7Department of Obstetrics & Gynaecology, Yong Loo Lin School of Medicine, Singapore; 8Clinical Imaging Research Centre, A*STAR, Singapore

0841. Modelling Skull Dynamics During Brain Magnetic Resonance Elastography to Evaluate Wave Delivery Strategies
Deirdre M. McGrath1,2, Alejandro F. Frangi1, Iain D. Wilkinson2, Zeike A. Taylor3
1CISTIB, Center for Computational Imaging & Simulation Technologies in Biomedicine, University of Sheffield, Sheffield, South Yorkshire, United Kingdom; 2Academic Radiology, University of Sheffield, Sheffield, South Yorkshire, United Kingdom

0842. Isocaloric Fructose Restriction for 10 Days Reduces MR-Measured Liver, Pancreatic and Visceral Fat in High Sugar-Consuming, Obese Children
Susan M. Novorolski1, Kathleen Pulligan2, Natalie Kohn1, Molly Gibson1, Viva W. Tai1,2, Michael Wen1, Ayca Erkin-Cakmak1, Alejandro Gugliucci1, Robert H. Lustig3, Jean-Marc Schwartz4
1Radiology & Biomedical Imaging, University of California, San Francisco, CA, United States; 2Medicine, University of California, San Francisco, CA, United States; 3Pediatrics, University of California, San Francisco, CA, United States; 4Basic Science, Touro University College of Osteopathic Medicine, Vallejo, CA, United States

0843. The Effect of Parallel Radiofrequency Transmission on Arterial Input Function Selection in 3T DCE-MRI of Prostate Cancer
Hatim Chafi1, Saba N. Elias2, Huyen T. Nguyen2, Harry T. Friel3, Michael V. Knopp2, BeiBei Guo1, Steven B. Heymsfield4, Guang Jia4
1Department of Physics and Astronomy, Louisiana State University, Baton Rouge, LA, United States; 2Department of Radiology, The Ohio State University, Columbus, OH, United States; 3Clinical Science Operations, Philips Healthcare, Highland Heights, OH, United States; 4Department of Experimental Statistics, Louisiana State University, Baton Rouge, LA, United States; 5Metabolism - Body Composition, Pennington Biomedical Research Center, Baton Rouge, LA, United States

0844. Automatic Combined Whole-Body Muscle and Fat Volume Quantification Using Water-Fat Separated MRI in Postmenopausal Women
Janne West1, Thais Romu2, Anna-Clara Spetz Holm3, Hanna Lindblom4, Lotta Lindh-Åstrand4, Magnus Borga5, Mats Hammar6, Olof Dahlqvist Leinhard6
1Department of Medical and Health Sciences, Linköping University, Linköping, Sweden; 2Center for Medical Imaging Science and Visualization, Linköping, Sweden; 3Department of Biomedical Engineering, Linköping University, Linköping, Sweden; 4Department of Clinical and Experimental Medicine, Linköping University, Linköping, Sweden

0845. Stimulated Echo Diffusion Weighted Imaging of the Liver at 3T
Hui Zhang1, Aiqi Sun2, Xiaodong Ma3, Zhe Zhang2, Ed X. Wu1, Hua Guo2
1Center for Biomedical Imaging Research, Department of Biomedical Engineering, School of Medicine, Tsinghua University, Beijing, China; 2Laboratory of Biomedical Imaging and Signal Processing, The University of Hong Kong, Hong Kong SAR, China; 3Department of Electrical and Electronic Engineering, The University of Hong Kong, Hong Kong SAR, China

0846. Characterizing Water Diffusion and Perfusion Features of the Healthy and Malignant Pancreas Using Diffusion-Tensor and Diffusion Weighted MRI
Noam Nissan1, Talia Golani2, Edna Furman-Haran1, Sara Aptar2, Yael Inbar2, Arie Ariche2, Barak Bar Zakay2, Yuri Goldes3, Michael Schvimer2, Dov Grobgeld3, Hadassa Degani1
1Weizmann Institute of Science, Rehovot, Israel; 2Sheba Medical Center, Israel

0847. Utility of Combined Ga-68 DOTA-TOC PET and Eovist MRI Utilizing PET/MRI
Thomas A. Hope1, Carina Mari Aparici2, Eric Nakakura2, Henry VanBrocklin1, Miguel Hernandez Pampaloni1, James Slater1, Salma Jivan1, Judy Yee1, Emily Bergsland4

Thursday
Thursday

0848. Imaging of Dissolved-Phase Hyperpolarized Xenon-129 in Human Kidneys
John P. Magier, III1, G. Wilson Miller2, Craig H. Meyer2, Kun Qiong1, Jaime F. Mata1, Steven Guan1, Kai Ruppert1, 3, Julian C. Ruster1, 2, F. William Hersman1, 5, Talissa A. Altes1
1Radiology & Medical Imaging, University of Virginia, Charlottesville, VA, United States; 2Biomedical Engineering, University of Virginia, Charlottesville, VA, United States; 3Cincinnati Children's Hospital, Cincinnati, OH, United States; 4Xemed, LLC, Durham, NH, United States; 5Physics, University of New Hampshire, Durham, NH, United States

0849. Renal Blood Oxygenation Level-Dependent Imaging in Longitudinal Follow-Up of the Donated and the Remaining Kidney in Renal Transplantation
Maryam Seif1, Ute Eisenberger1, Tobias Binser1, Harriet C. Thoeny3, Chris Boesch1, Bruno Vogt4, Peter Vermathen1
1Depts. Radiology and Clinical Research, University Bern, Bern, Switzerland; 2Dept. Nephrology, University Hospital Essen-Duisburg, Essen, Germany; 3Dept. Radiology, Neuroradiology and Nuclear Medicine, University Hospital of Bern, Bern, Switzerland; 4Dept. Nephrology, Hypertension and Clinical Pharmacology, University Hospital of Bern, Bern, Switzerland

0850. Redistribution of Fractional Ventilation After Circumscribed Primary Lung Injury and Atelectasis
Yi Xin1, Maurizio Cereda1, Hooman Hamedani1, Harrilla Profka1, Justin Clapp1, Stephen Kadlecok1, Brian P. Kavanagh1, Rahim R. Rizvi1
1Radiology, University of Pennsylvania, Philadelphia, PA, United States; 2Anesthesiology and Critical Care, University of Pennsylvania, Philadelphia, PA, United States; 3Hospital for Sick Children, Toronto, Ontario, Canada

0851. Three-Dimensional Pulmonary 1H MRI Multi-Region Segmentation Using Convex Optimization
Fumin Guo1, 2, Sarah Svenningsen3, 4, Aaron Fenster2, 5, Grace Parraga1, 2
1Imaging Research Laboratories, Robarts Research Institute, London, Ontario, Canada; 2Graduate Program in Biomedical Engineering, The University of Western Ontario, London, Ontario, Canada; 3Department of Medical Biophysics, The University of Western Ontario, London, Ontario, Canada

0852. Ventilation Heterogeneity in Obstructive Airways Disease – Comparing Multi-Breath Washout-Imaging with Global Lung Measurements
Felix C. Horn1, Helen Marshall1, Salman Siddiqui1, Alexander Horsley1, Laurie Smith1, Ina Aldag1, Richard Kay1, Christopher J. Taylor4, Juan Parra-Robles1, Jim M. Wild1
1Sheffield University, Sheffield, United Kingdom; 2University of Leicester, United Kingdom; 3University of Manchester, United Kingdom; 4Sheffield Children’s NHS Foundation Trust, NHS, United Kingdom; 5Novartis, Switzerland

Novel RF Coil Concepts
Room 701 A 13:30-15:30 Moderators: Gregor Adriany, Ph.D. & George R. Duensing, Ph.D.

13:30 0853. 3D-Printed RF Coils for Solution-State NMR: Towards Low-Cost, High-Throughput Arrays
R. Adam Horch1, 2, John C. Gore1, 2
1Department of Radiology & Biomedical Sciences, Vanderbilt University, Nashville, TN, United States; 2Vanderbilt University Institute of Imaging Science, Nashville, TN, United States

13:42 0854. Multi-Turn Multi-Gap Transmission Line Resonators - First Tests at 7 T
Robert Kriegl1, 2, Jean-Christophe Gineste1, Marie Poirier-Quinot1, Zhoujian Li2, Luc Darrasse2, Ewald Moser1, 3, Elmar Laistler1, 3
1Center for Medical Physics and Biomedical Engineering, Medical University, Vienna, Austria; 2IR4M (Imagerie par Résonance Magnétique Médicale et Multi-Modalités), UMR8081 CNRS, Université Paris Sud, Orsay, Essonne, France; 3MR Centre of Excellence, Medical University, Vienna, Austria

13:54 0855. Q-Spoiling Method Using Depletion Mode Gallium Nitride (GaN) HEMT Devices at 1.5T
Jonathan Y. Lu1, Kamal Aggarwal1, Thomas Grafendorfer2, Fraser Robb3, John M. Pauly1, Greig C. Scott1
1Electrical Engineering, Stanford University, Stanford, CA, United States; 2Advanced Coils, GEHC Coils, Stanford, CA, United States; 3GE Healthcare, Aurora, OH, United States
Thursday

14:06 0856. On the Contribution of Electric-Type Current Patterns to UISNR for a Spherical Geometry at 9.4 T
Andreas Pfrommer1, Anke Henning2,3
1Max Planck Institute for Biological Cybernetics, Tuebingen, Germany; 2Institute for Biomedical Engineering, UZH and ETH Zurich, Zurich, Switzerland

14:18 0857. 3D Curved Electric Dipole Antenna for Propagation Delay Compensation
Gang Chen1,2, Daniel Sodickson1, Graham Wiggins3
1Center for Advanced Imaging Innovation and Research (CAI2R) and Center for Biomedical Imaging, Department of Radiology, New York University School of Medicine, New York, NY, United States; 2The Sackler Institute of Graduate Biomedical Science, New York University School of Medicine, New York, NY, United States

14:30 0858. New Low-Order Pre-Fractal Geometries of High Permittivity Pads Further Increase Sensitivity at High Magnetic Fields
Rita Schmidt1, Andrew Webb1
1Radiology, Leiden University Medical Center, Leiden, Netherlands

14:42 0859. Discovering and Working Around Effects of Unwanted Resonant Modes in High Permittivity Materials Placed Near RF Coils
Gillian G. Haemer1, 2, Christopher M. Collins1, 2, Daniel K. Sodickson1, 2, Graham C. Wiggins1
1The Center for Advanced Imaging Innovation and Research, and the Center for Biomedical Imaging, Department of Radiology, New York University School of Medicine, New York, NY, United States; 2The Sackler Institute of Graduate Biomedical Sciences, Department of Radiology, New York University School of Medicine, New York, NY, United States

14:54 0860. Comparison of New Element Designs for Combined RF-Shim Arrays at 7T
Simone Angela Winkler1, Jason P. Stockmann1, Paul A. Warr1, Boris Keil2, Lawrence L. Wald3, 4, Brian K. Rutt1
1Dept. of Radiology, Stanford University, Stanford, CA, United States; 2A. A. Martinos Center for Biomedical Imaging, Massachusetts General Hospital, Harvard Medical School, Charlestown, MA, United States; 3Department of Electrical & Electronic Engineering, University of Bristol, Clifton, United Kingdom; 4Harvard-MIT Health Sciences and Technology, Massachusetts Institute of Technology, Cambridge, MA, United States

15:06 0861. Integrated Parallel Reception, Excitation, and Shimming (IPRES) with Split DC Loops for Improved B0 Shimming
Dean Darnell1, Trong-Kha Truong1, Allen Song1
1Brain Imaging and Analysis Center, Duke University, Durham, NC, United States

15:18 0862. Endoluminal MR Receiver Coil Based on Electro-Optical Conversion and Active Optical Decoupling
Isabelle Sanion1, Anne-Laure Perrier2, Reina Ayd1, Gwenaëel Gaborit3, 4, Lionel Davillaret5, Olivier Beuf3
1Université de Lyon, CREATIS, CNRS UMR 5220, Inserm U1044, INSA-Lyon, Université Lyon 1, Villeurbanne, France; 2Université de Savoie, IMEP-LAHC, UMR 5130, Le Bourget-du-Lac, France; 3KAPTEOS, Sainte-Hélène-du-Lac, France; 4KAPTEOS, Sainte-Hélène-du-Lac, France

MR-Guided Interventions
Room 701 B 13:30-15:30  Moderators: Charles L. Dumoulin, Ph.D. & Bruno Quesson, Ph.D.

Frank Preiswerk1, W. Scott Hoge2, Matthew Toews3, Jr-yuan George Chiou4, Laurent Chauvin5, Lawrence P. Panych1, Bruno Madore1
1Department of Radiology, Harvard Medical School, Brigham and Women's Hospital, Boston, MA, United States

13:42 0864. Pushing X-Ray CT Out of the Equation: In Vivo RASOR MRI-Based Seed Detection for Post-Implant Dosimetry in LDR Prostate
Peter Roland Seevinck1, Cornelis A. van den Berg2, Frank Zijlstra2, Marielle E. Philippens2, Stijn Jelle Hoogcaspers2, Jan J. Lagendijk2, Maximus A. Viergever3, Marinus Adriana Moerland2
1Image Sciences Institute, University Medical Center Utrecht, Utrecht, Netherlands; 2Department of Radiotherapy, University Medical Center Utrecht, Utrecht, Netherlands
Thursday

13:54 0865. Improved Cortical Bone Segmentation Using a Spectral-Spatial Selective Pulse to Reduce Water/fat In-Phase Echo Time
Matteo Maspero1, Peter R. Seevinck2, Anna Andreychenko1, Sjoerd Crijns1, Alessandro Sbrizzi3, Max Viergever2, Jan J. W. Lagendijk1, Cornelia A. T. van Den Berg1
1Radiotherapy, UMC Utrecht, Utrecht, Netherlands; 2Image Sciences Institute, UMC Utrecht, Utrecht, Netherlands; 3Radiology, UMC Utrecht, Utrecht, Netherlands

14:06 0866. Synthetic CT Generation from T2 Weighted MRI Using a Hybrid Regression and Multi-Atlas Approach
S. Ghose1, D. Rives Henault1, J. Mitra1, J. Sun2, P. Pichler3, P. Greer4, J. Dowling5
1Australian e-Health Research Centre, CSIRO Digital Productivity Flagship, Herston, QLD, Australia; 2University of Newcastle, NSW, Australia; 3Department of Radiation Oncology, University of Newcastle, NSW, Australia; 4Australian e-Health Research Centre, CSIRO Digital Productivity Flagship, QLD, Australia

14:18 0867. Integration of Active MR Tracking Into Adaptive Radiation Therapy Treatment Planning
Wei Wang1, 2, Akila N. Viswanathan3, Antonio L. Damato1, Zion T. Tse1, Yue Chen1, Ravi T. Seethamraju4, Clare M. Temppany1, Robert A. Cormack2, Ehud J. Schmidt3
1Radiology, Brigham and Women’s Hospital, Harvard Medical School, Boston, MA, United States; 2Radiation Oncology, Brigham and Women’s Hospital, Harvard Medical School, Boston, MA, United States; 3The University of Georgia, GA, United States; 4MR R&D, Siemens Healthcare, MA, United States

14:30 0868. Two-Channel Visualization of a Passive Nitinol Guidewire with Iron Oxide Maker Created from a Single Image Acquisition
Adrienne E. Campbell-Washburn1, Burcu Basar1, 2, Toby Rogers1, Merdim Sonmez1, Ozgur Kocaturk1, 2, Robert J. Lederman1, Michael S. Hansen2, Anthony Z. Faranesh1
1Cardiovascular and Pulmonary Branch, Division of Intramural Research, National Heart Lung and Blood Institute, National Institutes of Health, Bethesda, MD, United States; 2Institute of Biomedical Engineering, Bogazici University, Istanbul, Turkey

14:42 0869. Real-Time MRI Guided Cardiac Cryo-Ablation
Eugene G. Kholmovski1, 2, Ravi Ranjan2, Nicolas Coulombe3, Joshua Silvernagel2, Nassir F. Marrouche2
1UCAIR, Department of Radiology, University of Utah, Salt Lake City, UT, United States; 2CARMA Center, University of Utah, Salt Lake City, UT, United States; 3Medtronic CryoCath, Montreal, Quebec, Canada

14:54 0870. Visualization of Porcine Gastric Ulcer In Vivo Using Intracavitary RF Probe and Its Navigation System
Yuichiro Matsuoka1, 2, Yoshinori Morita1, Yoshiki Hashioka4, Etsuko Kumamoto5, Hiromu Kutsumi2, Takeshi Azuma2, Kagayuki Kuroda6
1Center for Information and Neural Networks, National Institute of Information and Communications Technology, Suita, Japan; 2Department of Internal Medicine, Kobe University Graduate School of Medicine, Kobe, Japan; 3Department of Gastroenterology, Kobe University School of Medicine, Kobe, Japan; 4Faculty of Engineering, Kobe University, Kobe, Japan; 5Information Science and Technology Center, Kobe University, Kobe, Japan; 6School of Information Science and Technology, Tokai University, Hiratsuka, Japan

15:06 0871. Minimally Invasive Magnetic Resonance Imaging-Guided Delivery of Neural Stem Cells Into the Porcine Spinal Cord
Jason J. Lamanna1, 2, Lindsey N. Urquia1, Carl V. Hurtig1, Juanmarco Gutierrez2, Cody Anderson1, Pete Pfertl2, Thais Federici1, Nicholas M. Boulis3, 4, John N. Oshinski, 25
1Neurosurgery, Emory University, Atlanta, GA, United States; 2Biomedical Engineering, Emory University & Georgia Institute of Technology, Atlanta, GA, United States; 3Physics, Emory University, Atlanta, GA, United States; 4MRI Interventions, Inc., Memphis, TN, United States; 5Radiology, Emory University, Atlanta, GA, United States

15:18 0872. Wide-Bore MRI Guided DBS Surgery: Initial Experience
Karl K. Vigen1, Deborah Rusty2, Laura Buyan-Dent2, Nancy L. Ninman2, Karl A. Sillay2, 5
1Radiology, University of Wisconsin-Madison, Madison, WI, United States; 2Anesthesiology, University of Wisconsin-Madison, Madison, WI, United States; 3Neurology, University of Wisconsin-Madison, Madison, WI, United States; 4Semmes-Murphy Neurologic and Spine Institute, Memphis, TN, United States; 5Neurosurgery and Electrical Engineering & Computer Science, University of Tennessee, Memphis, TN, United States
CE & Non CE - Innovations Around the Body
Room 714 A/B  13:30-15:30  Moderators: T.B.A. & T.B.A.

13:30  0873. Evaluation of Perfusion in Rheumatoid Arthritis Patients with Highly Accelerated Dynamic Contrast Enhanced Wrist MRI
Jing Liu¹, Valentina Pedeo¹, Ursula Heilmeier¹, Favian Sa¹, Sameer Khanna², John Imboden¹, Jonathan Graf¹, David Saloner¹, Xiaojuan Li¹
¹Radiology and Biomedical Imaging, University of California San Francisco, San Francisco, CA, United States; ²University of California Berkeley, Berkeley, CA, United States; ¹Medicine, University of California San Francisco, San Francisco, CA, United States

13:42  0874. 3D Radial UTE MRI for Comprehensive Imaging of Pulmonary Embolism in Canines
Peter Bannas¹, ², Laura C. Bell¹, Kevin M. Johnson¹, Mark L. Schiebler¹, Christopher J. François¹, Utaroh Motosugi¹, Dan Consigny¹, Scott B. Reeder², ³, Scott K. Nagle², ³
¹Radiology, University of Wisconsin-Madison, Madison, WI, United States; ²Radiology, University Medical Center Hamburg-Eppendorf, Hamburg, Germany; ³Medical Physics, University of Wisconsin-Madison, WI, United States

13:54  0875. Image-Based Respiratory Motion Compensation for CMRA in Patients with Coronary Artery Disease
Markus Henningsson¹, Kostas Bratis¹, Eike Nagel¹, Rene Botnar¹
¹Division of Imaging Sciences and Biomedical Engineering, King's College London, London, United Kingdom

14:06  0876. PETRA QMRA: Towards Zero-Flow Dephasing Intracranial Non-Contrast MR Angiography
Yutaka Natsuaki¹, Xiaoming Bi¹, David M. Grodzki², Aurelien F. Stalder², Gerhard Laub²
¹Siemens Healthcare, Los Angeles, CA, United States; ²Siemens Healthcare, Erlangen, Germany

14:18  0877. Quiet, Dual-Contrast Ultra-Short Echo Time MRA of the Extracranial Carotid Arteries
Ioannis Koktzoglou¹, ², Ian G. Murphy¹, ³, David Grodzki², Shivrnan Girl², Robert R. Edelman¹, ³
¹Radiology, NorthShore University HealthSystem, Evanston, IL, United States; ²Radiology, The University of Chicago Pritzker School of Medicine, Chicago, IL, United States; ³Radiology, Northwestern University Feinberg School of Medicine, Chicago, IL, United States; ²Healthcare Sector, Siemens AG, Erlangen, Germany; ³Siemens Healthcare, Chicago, IL, United States

14:30  0878. Carotid Atherosclerotic Plaque Surface Condition Evaluation Utilizing Simultaneous Non-Contrast Angiography and IntraPlaque Hemorrhage (SNAP) Sequence
Shuo Chen¹, Xihai Zhao¹, Niranjan Balu², Haining Liu², Zechen Zhou¹, Jianan Wang², ³, Rui Li¹, Chun Yuan¹, ², Haitun Chen¹
¹Center for Biomedical Imaging Research, Department of Biomedical Engineering, School of Medicine, Tsinghua University, Beijing, China; ²Department of radiology, University of Washington, Seattle, United States; ³Philips Research North America, Briarcliff Manor, NY, United States

14:42  0879. Improved Visualization of the Accelerated ASL-Based Time-Resolved MRA with Single Acquisition of Labeled and Control Images
Yuriko Suzuki¹, Tetsuo Ogino¹, James Alastair Meakin¹, Akira Suwa¹, Daigo Ushijima¹, Marc Van Cauteren³
¹Healthcare, Philips Electronics Japan, Minato-ku, Tokyo, Japan; ²Philips Healthcare Netherlands, Best, Netherlands; ³Philips Healthcare Asia Pasific, Tokyo, Japan

14:54  0880. Depiction of Transplant Renal Vascular Anatomy and Complications: Unenhanced MR Angiography by Using Spatial Labeling with Multiple Inversion Pulses
Hao Tang¹, Daoyu Hu¹, Zi Wang¹, Xiaoyan Meng¹, Yanchu Wang¹
¹Radiology, Tongji Hospital, Tongji Medical College, Huazhong University of Science and Technology, Wuhan, Hubei, China

15:06  0881. Age-Related Changes of Aortic Hemodynamics Derived from 4D Flow MRI in 60 Healthy Volunteers
Pim van Ooij¹, ², Julio Garcia³, Susanne Schnell³, Jeremy D. Collins³, James C. Carr³, Michael Markl³, ⁴, Alex J. Barker³
¹Radiology, Academic Medical Center, Amsterdam, Netherlands; ²Radiology, Northwestern University, Chicago, IL, United States; ³Biomedical Engineering, Northwestern University, Chicago, IL, United States
The aims of this study were to determine if any associations exist between MR parameters and survival intervals; and to validate these findings in a longitudinal cohort of breast cancer patients since these survival associations are evident prior to the initiation of neoadjuvant chemotherapy treatment.

**Background Parenchymal Enhancement (BPE) following contrast agent (CA) administration in DCE-MRI breast examinations may not be a reliable robust quantification of Background Parenchymal Enhancement (BPE) in Dynamic Contrast-Enhanced (DCE) MRI Breast Examinations.**

Stimulated Echo Diffusion Tensor Imaging with Varying Diffusion Times as a Probe of Breast Tissue

José R. Teruel1, 2, Gene Y. Cho3, 4, Jason Ostenson5, Melanie Moccaldi1, Joon Lee6, Pål E. Goa6, Tone F. Bathen7, Sungheon G. Kim8, 9, Linda Moy9, 10, Eric E. Sigmund11, 12

1Circulation and Medical Imaging, Norwegian University of Science and Technology, Trondheim, Norway; 2St.Olavs Hospital, Trondheim, Norway; 3Center for Advanced Imaging Innovation and Research (CAI2R), New York University School of Medicine, New York, NY, United States; 4Department of Physics, Norwegian University of Science and Technology, Trondheim, Norway; 5Radiology, St.Olavs Hospital, Trondheim, Norway; 6Radiology, St.Olavs Hospital, Trondheim, Norway; 7Radiology, St.Olavs Hospital, Trondheim, Norway; 8Radiology, St.Olavs Hospital, Trondheim, Norway; 9Radiology, St.Olavs Hospital, Trondheim, Norway; 10Department of Physics, Norwegian University of Science and Technology, Trondheim, Norway; 11Department of Physics, Norwegian University of Science and Technology, Trondheim, Norway; 12Department of Physics, Norwegian University of Science and Technology, Trondheim, Norway

**High-Resolution Diffusion-Weighted Imaging of the Breast with Multiband 2D RF Pulses and a Generalized Parallel Imaging Reconstruction**

Valentina Taviani1, Marcus T. Alley1, Suchandrima Banerjee1, Bruce L. Daniel1, Brian A. Hargreaves1

1Radiology, Stanford University, Stanford, CA, United States; 2Global Applied Science Laboratory, GE Healthcare, Menlo Park, CA, United States

**Relative Enhanced Diffusivity (RED) as a Marker of Breast Tumor Microvasculature**

José R. Teruel1, 2, Pål E. Goa2, 3, Torill E. Sjøbakk1, Agnes Østlie1, Hans E. Fjøsne5, Tone F. Bathen7

1Circulation and Medical Imaging, Norwegian University of Science and Technology, Trondheim, Norway; 2St.Olavs Hospital, Trondheim, Norway; 3Physics, Norwegian University of Science and Technology, Trondheim, Norway; 4Radiology, St.Olavs Hospital, Trondheim, Norway; 5Cancer Research and Molecular Medicine, Norwegian University of Science and Technology, Trondheim, Norway; 6Surgery, St.Olavs Hospital, Trondheim, Norway

**Texture Analysis of Parameter Maps in Breast MRI**

Peter Gibbs1, Martin Pickles1, Lindsay Turnbull1

1Centre for MR Investigations, University of Hull, Hull, East Yorkshire, United Kingdom

**Robust Quantification of Background Parenchymal Enhancement (BPE) in Dynamic Contrast-Enhanced (DCE) MRI Breast Examinations**

Araminta EW Ledger1, Maria A. Schmidt1, Marco Borri1, Steven Allen2, Elizabeth AM O’Flynn2, Romney J. Pope2, Erica D. Scurr2, Nandita deSouza1, Robin Wilson2, Martin O. Leach1

1CR-UK Cancer Imaging Centre, The Institute of Cancer Research and Royal Marsden NHS Foundation Trust, Sutton, Surrey, United Kingdom; 2Radiology, The Royal Marsden NHS Foundation Trust, Sutton, Surrey, United Kingdom

**Prognostic Value of MR Parameters Obtained Prior to the Initiation of Neoadjuvant Chemotherapy: A Comparison with Traditional Prognostic Indicators**

Martin D. Pickles1, Peter Gibbs1, Martin Lowry1, Lindsay W. Turnbull1

1Centre for Magnetic Resonance Investigations, Hull York Medical School at University of Hull, Hull, East Yorkshire, United Kingdom
We found that subjects with slower resting-state BOLD oscillation frequency in DMN reacted faster in psychomotor tasks and showed higher condition-related BOLD responses in the visual cortex in response to hyperthermia, which may shed light on the physiological basis of resting-state BOLD activities.

Different functional metabolisms might be expected in selectively activated blob and interblob neuronal populations due to their differential vascularization. Using 13C NMR spectra, we measured the rate of energy production in vivo for human brains, but required prolonged 90–120 min for adequate signal-to-noise ratio. Consistent with this, we found similar aerobic responses in blob and interblob neuronal populations to achromatic stimuli, which suggests equal aerobic responses in both populations.

The ability to noninvasively image the cerebral metabolic rate of oxygen (CMRO2) is essential for studying oxygen metabolism and its roles in human brain function and dysfunction. We have recently established an optimized oxygen extraction fraction (OEF) mapping using joint parametric estimation. Using a turbo spin echo version of QUIXOTIC, we measure changes in OEF in the visual cortex during functional activation, which suggests that with further validation, tQUIXOTIC MRI may be useful to monitor regional OEF in the clinic.

Brain Oxygenation, Perfusion & Metabolic Rate
Constitution Hall 107 13:30-15:30

15:06 0890. 7T Breast MRI to Visualize Proliferative Characteristics of Breast Cancer Using DCE, DWI, and 31P-MRS
Alexander M. Th. Schnitzl, Wouter B. Veldhuis1, Marian B.E. Menke-Pluijmers2, Wybe J.M. van der Kemp1, Tijl A. van der Velden1, Marc C.J.M. Kock1, Pieter J. Westenenda1, Dennis W.J. Klomp1, Kenneth G.A. Gilhuijs1
1Department of Radiology/Image Sciences Institute, University Medical Center Utrecht, Utrecht, Netherlands; 2Department of Surgery, Albert Schweitzer Hospital, Dordrecht, Netherlands; 3Department of Radiology, Albert Schweitzer Hospital, Dordrecht, Netherlands; 4Department of Pathology, Albert Schweitzer Hospital, Dordrecht, Netherlands

15:18 0891. Quantitative Sodium Imaging of Breast Tumors at 7 Tesla: Preliminary Results
Olgica Zaric, Katja Pinker-Domenig, Stefan Zbyni, Thomas Helbich1, Alex Farr2, Christian Singer1, Siegfried Trattinig1, Wolfgang Bogner1
1High Field MR Center, Department of Biomedical Imaging and Image-guided Therapy, Medical University of Vienna, Vienna, Austria; 2Gynecology Department, Medical University of Vienna, Vienna, Austria

Brain Oxygenation, Perfusion & Metabolic Rate
Constitution Hall 107 13:30-15:30

Jeffrey N. Stout1, Elfar Adalsteinsson1, 2, Bruce R. Rosen3, Divya S. Bolar4
1Harvard-MIT Health Sciences and Technology, Institute of Medical Engineering and Science, Cambridge, MA, United States; 2Department of Electrical Engineering and Computer Science, MIT, MA, United States; 3Martinos Center for Biomedical Imaging, MGH/Harvard Medical School, MA, United States; 4Department of Radiology, Massachusetts General Hospital, Boston, MA, United States

13:42 0893. Exploring Human Brain Oxidative Metabolism and Neurotransmitter Cycling Via Coupled 13C MRS at 7T
Vikram Jakkamsetti, Levi Good, Dorothy Kelly, Sergey Cheshkov, Karthik Rajasekaran, Dean Sherry, Juan Pascual, Craig Malloy, Ivan Dimitrov
1Neurology and Neurotherapeutics, UT Southwestern Medical Center, Dallas, TX, United States; 2Advanced Imaging Research Center, UT Southwestern Medical Center, Dallas, TX, United States; 3Philips Medical Systems, Cleveland, OH, United States

Youngkyoo Jung, Naeim Bahrami, Megan E. Johnston
1Radiology, Wake Forest School of Medicine, Winston-Salem, NC, United States; 2Biomedical Engineering, Wake Forest School of Medicine, Winston-Salem, NC, United States

14:06 0895. Quantitative and Simultaneous Imaging of CMRO2, CBF and OEF in Resting Human Brain
Xiao-Hong Zhu1, Hannes M. Wiesner1, Byeong-Yeul Lee1, Ming Lu1, Kamil Ugurbil1, Wei Chen1
1CMRR, Department of Radiology, University of Minnesota Medical School, Minneapolis, MN, United States

14:18 0896. Neurochemical and BOLD Responses in Activated Blob and Interblob Neuronal Populations Measured in the Human Visual Cortex at 7T
Petra Bednarik1, Ivan Tkac1, Federico Giove1, Dinesh Deelchand1, Lynn Eberly1, Felipe Barreto1, Silvia Mangia1
1University of Minnesota, Minneapolis, MN, United States; 2Central European Institute of Technology, Masaryk University, Brno, Czech Republic; 3MARBI Lab c/o Fondazione Santa Lucia, "Enrico Fermi" Centre, Rome, Italy; 4Physics Department - G1 Group, University of Rome "La Sapienza", Rome, Italy; 5Physics Department, University of Sao Paulo, Sao Paulo, Brazil

14:30 0897. Slower DMN, Faster Reaction: Coupling of Resting-State CBF and BOLD Oscillations in Specific Frequency Bands Predicts Vigilance Task Performance
Xiaopeng Song1, Shaowen Qian2, Kai Liu2, Zhenyu Zhou2, Gang Sun2, Yijun Liu2
1Department of Biomedical Engineering, Peking University, Beijing, China; 2Department of Medical Imaging, Jinan Military General Hospital, Shandong, China; 3GE Health Care, Beijing, China

14:42 0898. Three-Dimensional Acquisition of Cerebral Blood Volume, Blood Flow and Blood Oxygenation-Weighted Responses During Functional Stimulation in a Single Scan
Ying Cheng1, Qin Qiu1, Peter C. M. van Zijl2, James J. Pekar1, Jun Hua1
1Department of Radiology, Wake Forest School of Medicine, Winston-Salem, NC, United States; 2Department of Radiology, University of Minnesota Medical School, Minneapolis, MN, United States
**Thursday**

14:54  **0899. Blood Oxygenation, CBF, OEF, and CMRO2 Changes During Hypercapnia and Hyperoxia Using PCASL and TRUST MRI**  
Jeroen C.W. Sier1, Carlos C. Faraco1, Alex Bhogal1, Megan K. Strorher2, Peiying Liu3, Hanzhang Lu3, Jeroen Hendriks1, Manus J. Donahue1  
1Radiology, University Medical Center Utrecht, Utrecht, Netherlands; 2Radiology and Radiological Sciences, Nashville, Vanderbilt University School of Medicine, TN, United States; 3Radiology Advanced Imaging Research Center, UTSouthwestern Medical Center, TX, United States

15:06  **0900. Temporal and Spatial Changes of BOLD Signal, CBF and CBV in the Activated Human Visual Cortex During Mild Hypoxia**  
Felipe Rodrigues Barreto1, Silvia Mangia2, Carlos Ernesto Garrido Salmon3  
1Department of Physics, University of Sao Paulo, Ribeirao Preto, SP, Brazil; 2Department of Radiology, CMRR, University of Minnesota, MN, United States; 3Department of Physics, University of Sao Paulo, Ribeirao Preto, SP, Brazil

15:18  **0901. Cerebral Blood Flow Is Mediated by Brain Cells Expressing Glucose Transporter 2**  
Hongxia Lei1,2, Frederic Preitner1, Bernard Thorens3, Rolf Gruetter4,5  
1AIT, Center for Biomedical Imaging (CIBM), Ecole Polytechnique Fédérale de Lausanne, Lausanne, Vaud, Switzerland; 2University of Geneva, Geneva, Switzerland; 3Center for Integrative Genomics (CIG), University of Lausanne, Lausanne, Vaud, Switzerland; 4Laboratory for Functional and Metabolic Imaging, Ecole Polytechnique Fédérale de Lausanne, Lausanne, Vaud, Switzerland; 5Department of Radiology, University of Lausanne, Lausanne, Vaud, Switzerland

**Multiple Sclerosis 2**

John Bassett Theatre 102 13:30-15:30  
Moderators: T.B.A. & T.B.A.

13:30  **0902. Prediction of Disease Course in Multiple Sclerosis Using Cortical Thinning Measurements at Baseline**  
Sushmita Datta1, Koushik A. Govindarajan1, Stacey S. Cofield2, Gary R. Cutter2, Fred D. Lublin3, Jerry S. Wolinsky4, Céline Louapre1, Sindhuja T. Govindarajan1, Costanza Giannì1, Nancy Madigan2, AS Nielsen3, RP Kinkel4, Caterina Jeroen C.W. Siero1, Carlos C. Faraco2, Alex Bhogal1, Megan K. Strorher2, Peiying Liu3, Hanzhang Lu3, Jeroen Hendriks1, Manus J. Donahue1  
1F.M. Kirby Research Center for Functional Brain Imaging, Kennedy Krieger Institute, Baltimore, MD, United States; 2Dept. of Biomedical Engineering, Johns Hopkins University, Baltimore, MD, United States; 3Neurosection, Div. of MRI Research, Dept. of Radiology and Radiological Science, Johns Hopkins University, Baltimore, MD, United States

13:42  **0903. Iron and Non-Iron Related Pathological Features of Multiple Sclerosis Lesions Using Multiparametric 7T MRI**  
Sanjeev Chawla1, Ilya Kister1, Jens Wuerfel1, E Mark Haacke1, Tim Sinnecker3, Jean Christophe Brisset1, Friedemann Paul4, Yulin Ge1  
1Radiology, New York University Langone Medical Center, New York, NY, United States; 2Neurology, New York University Langone Medical Center, New York, NY, United States; 3Radiology, Universitätsmedizin Göttingen, Berlin, Germany; 4Radiology, Wayne State University, Detroit, MI, United States

13:54  **0904. Impact of Intra- And Juxta-Cortical Pathology on Cognitive Impairment in Multiple Sclerosis by Quantitative T2* Mapping at 7 T MRI**  
Céline Lounpre1, Sindhuja T. Govindarajan1, Costanza Giannì1, Nancy Madigan2, AS Nielsen1, RP Kinkel1, Caterina Mainero1  
1AA. Martinos Center for Biomedical Imaging, Charlestown, MA, United States; 2Beth Israel Deaconess Medical Center, Boston, MA, United States; 3Virginia Mason Medical Center, Seattle, WA, United States; 4University of California San Diego, San Diego, CA, United States

14:06  **0905. Can Myelin Water Imaging Differentiate Vasogenic Edema and Demyelinating Lesions in the Human Brain?**  
Eung Yeop Kim1, Joon Yul Choi2, Yoonho Nam2, Se-Hong Oh1, Jongho Lee1  
1Department of Radiology, Gachon University Gil Medical Center, Incheon, Korea; 2Department of Electrical and Computer Engineering, Seoul National University, Seoul, Korea; 3Imaging Institute, Cleveland Clinic Foundation, Cleveland, OH, United States

14:18  **0906. USPIO Contrast Enhanced MRI Study Monitoring Inflammatory Lesions in Brain of the Relapsing-Remitting Model of EAE in SJL/J Mice**
14:30 0907. Connectivity-Based Parcellation of the Thalamus in Multiple Sclerosis and Its Implications for Cognitive Impairment: A Multicenter Study
Elisabetta Paganì, Maria A. Rocca, Alvin Bisecco, Laura Mancini, Christian Enzinger, Antonio Gallo, Hugo Vrenken, Maria Laura Stromillo, Massimiliano Copetti, David Thomas, Franz Fazekas, Gioacchino Tedeschi, Frederik Barkhof, Nicola De Stefano, Massimo Filippi, for the MAGNIMS Network
1Neuroimaging Research Unit, Institute of Experimental Neurology, Division of Neuroscience, San Raffaele Scientific Institute, Vita-Salute San Raffaele University, Milan, MI, Italy; 2Department of Neurology, San Raffaele Scientific Institute, Vita-Salute San Raffaele University, Milan, MI, Italy; 3UCLH NHS Foundation Trust, National Hospital for Neurology and Neurosurgery, London, UK, United Kingdom; 4Department of Neurology, Medical University of Graz, Graz, A, Austria; 5MRI Center “SUN-FISM”, Second University of Naples, Naples, NA, Italy; 6Department of Radiology, VU University Medical Centre, Amsterdam, Netherlands, Netherlands; 7Department of Neurological and Behavioral Sciences, University of Siena, Siena, SI, Italy; 8EU, EU, Italy

14:42 0908. Hippocampal-Related Memory Network in Multiple Sclerosis: A Structural Connectivity Analysis
Elisabetta Paganì, Maria A. Rocca, Sara Liafru, Gianna Carla Riccitelli, Bruno Colombo, Mariamma Rodegher, Andrea Falini, Giancarlo Comi, Massimo Filippi
1Neuroimaging Research Unit, Institute of Experimental Neurology, Division of Neuroscience, San Raffaele Scientific Institute, Vita-Salute San Raffaele University, Milan, MI, Italy; 2Hospital Clinic Barcelona, Barcelona, E, Spain; 3Department of Neuroradiology, San Raffaele Scientific Institute, Vita-Salute San Raffaele University, Milan, MI, Italy; 4Department of Radiology, VU University Medical Centre, Amsterdam, Netherlands, Netherlands; 5Department of Neurological and Behavioral Sciences, University of Siena, Siena, SI, Italy; 6EU, EU, Italy

14:54 0909. Histological Metrics Confirm Microstructural Characteristics of NODDI Indices in Multiple Sclerosis Spinal Cord
1NMR Research Unit, Department of Neuroinflammation, Queen Square MS Centre, UCL Institute of Neurology, London, England, United Kingdom; 2Department of Clinical Neurosciences, University of Oxford, Oxford, England, United Kingdom; 3Department of Brain Repair and Rehabilitation, UCL Institute of Neurology, London, England, United Kingdom; 4NeuroResource, UCL Institute of Neurology, London, England, United Kingdom; 5Department of Computer Science and Centre for Medical Image Computing, University College London, London, England, United Kingdom

15:06 0910. Quantitatively Characterize Pathological Compositions for Different Types of Multiple Sclerosis Lesion
Yong Wang, Peng Sun, Qing Wang, Kathryn Trinkaus, Robert T. Naismith, Robert E. Schmidt, Anne H. Cross
1Radiology, Washington University in St. Louis, Saint Louis, MO, United States; 2Hope Center for neurological Disorders, Washington University in St. Louis, Saint Louis, MO, United States; 3Biostatistics, Washington University in St. Louis, Saint Louis, MO, United States; 4Neurology, Washington University in St. Louis, Saint Louis, MO, United States

15:18 0911. BOLD, Blood Flow and Hypercapnic Challenge Reveals Cerebrovascular Decoupling in Multiple Sclerosis
Mark J. Lowe, Wanyong Shin, Lael Stone, Robert Bermele, Micheal D. Phillips
1Imaging Institute, Cleveland Clinic, Cleveland, OH, United States; 2Neurologic Institute, Cleveland Clinic, Cleveland, OH, United States

Educational Course
Organizers: Garry E. Gold, M.D., Richard Kijowski, M.D., William B. Morrison, M.D., & Ravinder R. Regatte, Ph.D.
Room 718 A 13:30-15:30 Moderators: Eric Y. Chang, M.D. & Lynne S. Steinbach, M.D.

13:30 ACL Reconstruction: Techniques & Failure
Lynne S. Steinbach

14:00 Meniscal Repair & Replacement
Holli G. Potter
Thursday

14:30  Rotator Cuff Repair: Old & New Techniques  
Miriama A. Bredella

15:00  Labral Repair of the Shoulder: Anatomic & Non-Anatomic  
Luis S. Beltran

15:30  Adjournment & Meet the Teachers

Educational Course

Game Show: Artifacts, Eh?
Organizers: Christopher M. Collins, Ph.D. & Alexey Samsonov, Ph.D.
Room 718 B  13:30-15:30  Moderators: Walter F. Block, Ph.D. & Nicole E. Seiberlich, Ph.D.

13:30  Artifact Identification & Elimination Game Show  
Thoralf Niendorf
Nicole Seiberlich
Walter F. Block

15:30  Adjournment & Meet the Teachers

Hands-On Workshop 4 – Siemens Healthcare GmbH
Room 711  13:30-15:30  (no CME credit)

Hands-On Workshop 4 - GE Healthcare
Room 703  13:30-15:30  (no CME credit)

Hands-On Workshop 4 - Philips Healthcare
Room 707  13:30-15:30  (no CME credit)

Study Group Session

X-Nuclei Imaging
Reception Hall 104 BCD 16:00-18:00  (no CME credit)

RF Pulse Design
Room 701 A  16:00-18:00
Moderators: Charles H. Cunningham, Ph.D. & T.B.A.

16:00  0912. Hyperbolic Secant RF Pulses for Simultaneous Multi-Slice Excitation with Reduced Susceptibility Artifacts  
Mehran Baboli1, Bastien Guerin2, Lawrence Wald2, V. Andrew Stenger1
1Medicine, University of Hawaii, Honolulu, HI, United States; 2Radiology, Massachusetts General Hospital, MA, United States

16:12  0913. Root-Flipped Multiband Radiofrequency Pulses  
Anuj Sharma1, Michael Lustig2, William A. Grissom1
1Biomedical Engineering, Vanderbilt University, Nashville, TN, United States; 2EECS, University of California, Berkeley, CA, United States

16:24  0914. A Wavelet-Based Optimization for RF Pulse Design Applied to Multiband Imaging at 7T  
Andrew M. Huettnert1, Nikolai J. Mickevicius1, Ali Ersoz1, Kevin M. Koch1, L. Tugan Mufules2, Andrew S. Nemka1
1Biophysics, The Medical College of Wisconsin, Milwaukee, WI, United States; 2Biophysics and Radiology, The Medical College of Wisconsin, Milwaukee, WI, United States; 3Neurosurgery, The Medical College of Wisconsin, Milwaukee, WI, United States
16:36  0915. RF Pulse Design for Simultaneous Multislice Excitation with Highly Reduced B1 Peak Amplitude
Christoph Stefan Aigner1, Christian Clason1, Armin Rund1, Rudolf Stollberger1
1Institute of Medical Engineering, Graz University of Technology, Graz, Austria; 2Faculty of Mathematics, University of Duisburg-Essen, Essen, Germany; 3Institute for Mathematics and Scientific Computing, University of Graz, Graz, Austria

16:48  0916. HENSIR: Hadamard Encoded Simultaneous Image Refocusing
Nikolai J. Mickevicius1, Eric S. Paulson2, Tingting Shao1, Yun Zhang2, Nikolai Avdievich1, Steffen Glaser2, Anke Henning1, 3, Kyle S. Decker1, 2, Chunlei Liu3, 4
1Department of Radiology, University Hospital Zürich, Zürich, Switzerland; 2Institute of Biomedical Engineering, ETH Zürich, Zürich, Switzerland

17:00  0917. Transmit Array Spatial Encoding (TRASE) with Broadband WURST Pulses for Robust Spatial Encoding in Inhomogeneous B0 Fields
Jason P. Stockmann1, 2, Clarissa Cooley, 3, Mathieu Sarracanie1, 2, Matthew S. Rosen1, 2, Lawrence L. Wald1, 3
1A. A. Martinos Center for Biomedical Imaging, Charlestown, MA, United States; 2Radiology, Duke University Medical Center, Durham, NC, United States; 3Department of Physics, Harvard University, Cambridge, MA, United States

17:12  0918. A Parallel Transmit Spectral-Spatial Pulse Design Method for Ultra-High Field MRS Combining LSQR and Optimal Control Based Optimization
Tingting Shao1, Yun Zhang2, Nikolai Avdievich1, Steffen Glaser2, Anke Henning1, 3
1Max Planck Institute for Biological Cybernetics, Tübingen, Baden-Württemberg, Germany; 2Department of Chemistry, Technical University of Munich, Garching, Germany; 3Institute for Biomedical Engineering, UZH and ETH Zurich, Zurich, Switzerland

17:24  0919. A Spectral-Spatial Pulse for Improved Signal Recovery in the Small-Tip Fast Recovery (STFR) Sequence
Sydney N. Williams1, Hao Sun2, Jon-Fredrik Nielsen1, Jeffrey A. Fessler2, Douglas C. Noll1
1Biomedical Engineering, University of Michigan, Ann Arbor, MI, United States; 2Electrical Engineering, University of Michigan, Ann Arbor, MI, United States

17:36  0920. Impact of RF-Shimming on the Uniformity and Specific Absorption Rate of Spin-Echo Imaging at 7 Tesla
Filiz Yetisir1, Bastien Guerin2, Benedikt A. Poser3, Lawrence L. Wald4, Elfar Adalsteinsson5
1Electrical Engineering and Computer Science, Massachusetts Institute of Technology, Cambridge, MA, United States; 2Dept. of Radiology, Martinos Center for Biomedical Imaging, Charlestown, MA, United States; 3Faculty of Psychology and Neuroscience, Maastricht University, Maastricht, Netherlands; 4Harvard-MIT Division of Health Sciences Technology, Institute of Medical Engineering and Science, Cambridge, MA, United States

17:48  0921. Delay-Insensitive Variable-Rate Selective Excitation (DIVERSE)
Adam B. Kerr1, Kangrong Zhu1, Matthew J. Middione1, Hua Wu1, Robert F. Dougherty1, John M. Pauly1
1Electrical Engineering, Stanford University, Stanford, CA, United States; 2Applied Sciences Laboratory West, GE Healthcare, Menlo Park, CA, United States; 3Center for Cognitive and Neurobiological Imaging, Stanford University, Stanford, CA, United States

Methods of Magnetic Susceptibility & Electromagnetic Tissue Property Mapping

Room 701 B  16:00-18:00  Moderators: Dong-Hyun Kim, Ph.D. & Ferdinand Schweser, Ph.D.

16:00  0922. Rapid Multi-Orientation Susceptibility Mapping with Wave-CAIPI
Berkin Bilgic1, Luke Xie2, Russell Dibb3, Christian Langkammer4, Aysegul Mutluay1, Huihui Ye1, Jonathan R. Polimeni1, Chunlei Liu2, Lawrence L. Wald3, Kawin Setsompop2
1Martinos Center for Biomedical Imaging, Charlestown, MA, United States; 2Radiology, Duke University Medical Center, Durham, NC, United States

16:12  0923. Quantitative Susceptibility Mapping (QSM) at 7 Tesla: Correction of Induced Field Fluctuations with Real-Time Feedback Field Control
PINAR SENAY ÖZBAY1, 2, Yolanda Dürst1, Klaas Paul Prüssmann2, Daniel Nanz2
1Department of Radiology, University Hospital Zürich, Zürich, Switzerland; 2Institute of Biomedical Engineering, ETH Zürich, Zürich, Switzerland

16:24  0924. Temporal-Variance Weighted P-Space Multipole Frequency Mapping
Kyle S. Decker1, 2, Chunlei Liu3, 4
1Biophysics, Medical College of Wisconsin, Milwaukee, WI, United States; 2Radiation Oncology, Medical College of Wisconsin, Milwaukee, WI, United States

151
**Thursday**

16:36 **0925.** B₀-Orientation Dependent Susceptibility-Induced White Matter Contrast in the Human Brainstem  
Manisha Aggarwal¹, Xu Li², Susumu Mori³, Peter C. M. van Zijl¹, ²  
¹Department of Radiology, Johns Hopkins University School of Medicine, Baltimore, MD, United States; ²F.M. Kirby Research Center, Kennedy Krieger Institute, Baltimore, MD, United States

16:48 **0926.** iLSQR: A Quantitative Susceptibility Mapping Method Provided by STI Suite V2.12  
Wei Li¹, Nian Wang², Bing Wu², Timothy Q. Duong¹, Chunlei Liu⁵  
¹Research Imaging Institute, University of Texas Health Science Center at San Antonio, San Antonio, TX, United States; ²Ophthalmology, University of Texas Health Science Center at San Antonio, San Antonio, TX, United States; ³Brain Imaging and Analysis Center, Duke University, Durham, NC, United States; ⁴GE Healthcare, Beijing, China; ⁵Radiology, Duke University, Durham, NC, United States

17:00 **0927.** Improving Estimation of Small-Vein Susceptibility by Using a Pre-Estimated Susceptibility Map  
Ryota Sató¹, Tora Shirai¹, Yo Tamiguchi¹, Takenori Murase², Yoshihiko Bito², Hisashi Ochi¹  
¹Central Research Laboratory, Hitachi, Ltd., Kokubunji, Tokyo, Japan; ²Hitachi Medical Corporation, Chiba, Japan

17:12 **0928.** Vector Model for Quantitative Susceptibility Mapping (Vector QSM)  
Tian Liu¹, ², Cynthia Wisniew³, Dong Zhou³, Pascal Spincemaille³, Yi Wang³  
¹MedImageMetric LLC, New York, NY, United States; ²Radiology, Weill Cornell Medical College, New York, NY, United States; ³FMRIB Imaging Analysis Center, University of Oxford, Oxford, United Kingdom

17:24 **0929.** Human Cortical Surface Maps of Three Quantitative Imaging Parameters: R₁, R₂* and Magnetic Susceptibility  
Diana Khabipova¹, Rolf Gruetter¹, José P. Marques¹  
¹CIBM, Lausanne, Vaud, Switzerland; ²Radiology, University of Lausanne and Geneva, Vaud, Switzerland

17:36 **0930.** Feasibility of Conductivity Imaging Based on Slice Selection and Readout Gradient Induced Eddy-Currents  
Omer Faruk Oran¹, Necip Gurler¹, Yusuf Ziya Ider¹  
¹Electrical and Electronics Engineering, Bilkent University, Ankara, Turkey

17:48 **0931.** MR Guidance of TMS for a Patient Specific Treatment Plan: MR Based TMS Field Measurements and Electromagnetic Simulations  
S. Mandija¹, P. Petrov³, S.W.F. Neggers², A.D. de Weijer³, P.R. Luijten¹, C.A.T. van den Berg¹  
¹Imaging Division, UMC Utrecht, Utrecht, Netherlands; ²Brain Center Rudolf Magnus, UMC Utrecht, Utrecht, Netherlands; ³FMRIB Analysis Center, University of Oxford, Oxford, United Kingdom

**Bone & UTE**

Room 714 A/B  
16:00-18:00  
**Moderators:** Jiang Du, Ph.D. & T.B.A.

16:00 **0932.** Bound Bone Water Density Is a Surrogate Measurement of Organic Matrix Density  
Alan C. Seifert¹, Cheng Li¹, Suzanne L. Wehrli¹, Felix W. Wehrli¹  
¹University of Pennsylvania, Philadelphia, PA, United States; ²Children's Hospital of Philadelphia, Philadelphia, PA, United States

16:12 **0933.** In Vivo Imaging of Bound and Pore Water in Tibia and Femur Using 3D Cones Sequences  
Jun Chen¹, Michael Carl², Hongda Shao¹, Soorena Azam Zanganeh¹, Eric Chang¹, ³, Christine B. Chung¹, ³, Graeme M. Bydder¹, Jiang Du¹  
¹Radiology, University of California, San Diego, CA, United States; ²GE Healthcare, San Diego, CA, United States; ³Department of Radiology, VA San Diego Healthcare System, San Diego, CA, United States

16:24 **0934.** Bone Marrow Fat Quantification in Calcaneus. Why Not?  
Silvia Capuani¹, ², Giulia Di Pietro¹, ², Guglielmo Manenti², Vincenzo Vinicola², Marco Bozzali², Umberto Tarantino²  
¹MedImageMetric LLC, New York, NY, United States; ²MedImageMetric LLC, New York, NY, United States
16:36 0935. UTE Imaging with Simultaneous Water and Fat Signal Suppression Using an Efficient Multi-Shot Inversion Recovery Preparation

Michael Carl¹, Jiang Du², Graeme M. Bydder³
¹GE Healthcare, San Diego, CA, United States; ²UCSD, CA, United States

16:48 0936. Dental MRI Can Detect Micro-Cracks

Djaudat Idiyatullin¹, Michael Garwood¹, Donald Nixdorf³
¹CMRR, Radiology Department, University of Minnesota, Minneapolis, Minneaoa, United States; ³Division of TMD & Orofacial Pain and Department of Neurology, University of Minnesota, Minneapolis, Minneaoa, United States

17:00 0937. Feasibility of Ultrashort Echo Time (UTE) MR Imaging at 1.5 T in the Diagnosis of Skull Fractures

Hao Wu¹, Shuangguang Chù¹, Huaping Sun¹, Yumin Zhong¹, Quannin Nie¹, Liemei Gao¹, Xi Yang¹, Hong Zhang¹, Yi Lin², Weibo Chen³, He Wang³, Ming Zhu²
¹Department of Radiology, HuShan Hospital North, Fudan University, Baoshan District, Shanghai, China; ²Department of Radiology, Shanghai Children’s Medical Center, Shanghai Jiao Tong University School of Medicine, Pudong New District, Shanghai, China; ³Department of Neurosurgery, Ren Ji Hospital, Shanghai Jiao Tong University School of Medicine, Pudong New District, Shanghai, China

17:12 0938. Quantitative Susceptibility Mapping of Bone Using Ultra-Short TE Sequence

Alexey V. Dimov¹, Zhe Liu¹, Pascal Spincemaille², Jiang Du³, Yi Wang³
¹Department of Biomedical Engineering, Cornell University, Ithaca, NY, United States; ²Radiology Department, Weill Cornell Medical College, New York, United States; ³University of California (San Diego), CA, United States

17:24 0939. MRS-Based Vertebral Bone Marrow Fat Quantification Using Prior Fat Spectrum Characterization and T2 Correction

Michael Dieckmeyer¹, Stefan Ruschke¹, Christian Cordes¹, Samuel Paran Yap¹, Hendrik Kooijman², Hans Hauner³, Ernst J. Rummeny³, Jan S. Bauer³, Thomas Baum³, Dimitrios C. Karapinos³
¹Technische Universität München, Munich, Germany; ²Philips Healthcare, Shanghai, China

17:36 0940. Dual Echo UTE Imaging with Rescaled Subtraction (DUTE-RS): Scaling Factor Optimization Study

Yanchun Zhu¹, Jiang Du², Qun He², Shanglian Bao³, Song Gao³, Guoru Zhao³, Yaqin Xie³
¹Institute of Biomedical and Health Engineering, Shenzhen Institutes of Advanced Technology, Chinese Academy of Sciences, Shenzhen, Guangdong, China; ²Department of Radiology, University of California, CA, United States; ³Beijing City Key Lab of Medical Physics and Engineering, Peking University, Beijing, China

17:48 0941. Selective Musculoskeletal MRI Using ZTE Imaging with Long-T2 Suppression

Markus Weiger¹, Mingming Wu¹,²; Moritz Christoph Wurzig¹, David Kenkel¹, Andreas Boss³, Gustav Andreisek¹, Klaas Paul Praessmann¹
¹Institute for Biomedical Engineering, University and ETH Zurich, Zurich, Switzerland; ²Institute of Biomedical Engineering, Karlsruhe Institute of Technology, Karlsruhe, Germany; ³Institute for Diagnostic and Interventional Radiology, University Hospital Zurich, Zurich, Switzerland

Abdomen & Pelvis
Room 716 A/B 16:00-18:00  Moderators: Alessandro Furlan, M.D. & Ferdia A. Gallagher, Ph.D., MRCP, FRCR

16:00 0942. Prostate MRI Predicts Treatment Failure After Radical Prostatectomy

Kristen Zakian¹, William Hafiefield¹, Omer Aras², Kun Cao², Derya Yakar², Debra Goldman², Chaya Moskowitz², Amita Shukla-Dave³, Yousuf Mazaheri Tehrani³, Samson Fine³, James Eastham³, Hedvig Hricak³
¹Memorial Sloan-Kettering Cancer Center, New York, NY, United States; ²MSKCC, NY, United States; ³Peking University Cancer Hospital, Beijing, China; ³Radboud University of Nijmegen Medical Centre, Nijmegen, Netherlands
16:12 0943. X-Ray Fluorescence Microscopy Imaging of the Normal Mouse Prostate Reveals That Intravenously Administered Gadolinium Enters the Lumen of the Prostatic Glands

Devkumar Mustafi1, Sophie-Charlotte Gleber2, Urszula Dougherty1, Marta Zamora1, Tatjana Antic3, Stefan Vogt2, Gregory S. Karczmarz1, Aytakin Oto1

1Radiology, The University of Chicago, Chicago, IL, United States; 2Advanced Proton Source, Argonne National Laboratory, Lemont, IL, United States; 3Medicine, The University of Chicago, Chicago, IL, United States; 4Pathology, The University of Chicago, Chicago, IL, United States

16:24 0944. Two-Compartment T2 Decay for Prostate Cancer Diagnosis

Shiyang Wang1, Harsh Agarwal2, Gregory S. Karczmarz1, Aytakin Oto1

1Radiology, University of Chicago, Chicago, IL, United States; 2Clinical Research Development, Philips Research North America, Briarcliff, Manor, NY, United States

16:36 0945. Gestational Age Dependent Increase in Placental Perfusion Quantified Using MRI

Brijesh Kumar Yadav1,2, Jaladhar Neelavalli1,2, Uday Krishnamurthy1,2, Yimin Shen1, Gabor Szalai1, Bing Wang1, Tinnakorn Chaisorapongsa1,4, Edgar Hernandez Andrade4, Nandor Gabor Than1,4, Ewart Mark Haacke1,2, Roberto Romero4

1Department of Biomedical Engineering, Wayne State University, Detroit, MI, United States; 2Department of Radiology, Wayne State University, Detroit, MI, United States; 3Perinatology Research Branch, NICHD, NIH, DHHS, Wayne State University, Detroit, MI, United States; 4Department of Obstetrics and Gynecology, Wayne State University, Detroit, MI, United States

16:48 0946. Free Breathing 3D Abdominal T1 Mapping with 3D Golden Angle Through-Time Spiral GRAPPA

Wei-Ching Lo1, Yong Chen2, Jesse I. Hamilton1, Dan Ma1, Yun Jiang1, Katherine L. Wright1, Mark A. Griswold1,4, Vikas Gulani1,4, Nicole Seiberlich4

1Dept. of Biomedical Engineering, Case Western Reserve University, Cleveland, OH, United States; 2Dept. of Radiology, University Hospitals of Cleveland and Case Western Reserve University, Cleveland, OH, United States

17:00 0947. Free-Breathing Artifact-Free Liver Imaging at 3T Incorporating Phase-Cycled TrueFISP and Motion Correction

Xiaoming Bi1, Yutaka Natsuaki1, Kevin Johnson2, Gerhard Laub3

1Siemens Healthcare, Los Angeles, CA, United States; 2Siemens Healthcare, Tucson, AZ, United States; 3Siemens Healthcare, San Francisco, CA, United States

17:12 0948. Single-Shot Fast Spin Echo of Targeted Regions with Variable Refocusing Flip Angles and Quadratic Phase Pulses for Outer Volume Suppression

Valentina Taviani1, Daniel Litwiller2, Andreas M. Loening1, Manojkumar Saranathan1, Brian A. Hargreaves1, Shreyas S. Vasanavala1

1Radiology, Stanford University, Stanford, CA, United States; 2GE Healthcare, Rochester, MN, United States

17:24 0949. Large FOV ZTE Imaging in Abdomen on a Standard Clinical Scanner

Jouke Smink1, Marco Nijenhuis1, Jan P. Groen4

1Philips Healthcare, Best, Netherlands

17:36 0950. MRI Fat-Water Separation Models: Correlation with CT Hounsfield Units in Human Subcutaneous White Adipose Tissue

Aliya Gifford1,2, Theodore F. Towse1,3, Brian Welch1,4

1Institute of Imaging Science, Vanderbilt University, Nashville, TN, United States; 2Chemical and Physical Biology Program, Vanderbilt University, Nashville, TN, United States; 3Department of Physical Medicine and Rehabilitation, Vanderbilt University School of Medicine, Nashville, TN, United States; 4Radiology and Radiological Sciences, Vanderbilt University, Nashville, TN, United States

17:48 0951. In Vivo MRI Assessment of Hepato-Splenic Disease in a Murine Model of Schistosomiasis

Brice Massi1,2, Teodora-Adriana Perles-Barbacaru1, Caroline Laprie4, Helia Dessein1,2, Monique Bernard1, Alain Dessein1,2, Angele Viola1
A new POCSMUSE method is developed to produce high-quality and artifact-free multi-shot DTI data in the presence of through-plane motion in multi-shot DTI data, and is generally compatible with different types of sampling trajectories.

Diffusion Acquisition
Constitution Hall 107 16:00-18:00  Moderators: Rita G. Nunes, D. Phil. & David A. Porter, Ph.D.

16:00 0952. Framework for Comparing Relative SNR and SNR Efficiency of Diffusion Weighted Sequences in Neuro-Imaging
Benjamin Fürsich, Tim Sprenger, Axel Haase, Marion I. Menzel
1IMETUM, Technical University, Munich, Bavaria, Germany; 2GE Global Research, Munich, Germany

16:12 0953. B1 Insensitive Zoomed FOV Imaging
Zhigang Wu, Jing Zhang, Wenzin Fang, Feng Huang
1Philips Healthcare (Suzhou), Suzhou, China

16:24 0954. High Resolution DTI Using Dual-Density Spiral for Efficient Sampling and Reduced Off-Resonance Artifacts
Xiaodong Ma, Zhe Zhang, Hui Zhang, Bida Zhang, Sheng Fang, Hua Guo
1Center for Biomedical Imaging Research, Department of Biomedical Engineering, School of Medicine, Tsinghua University, Beijing, China; 2Healthcare Department, Philips Research China, Shanghai, China; 3Institute of nuclear and new energy technology, Tsinghua University, Beijing, China

16:36 0955. High-Resolution Single-Shot Spiral Imaging Using Magnetic Field Monitoring and Its Application to Diffusion Weighted MRI
Bertram J. Wilm, Christoph Barmel, Simon Gross, Lars Kasper, Johanna Vannesse, Maximilian Haebelrin, Benjamin Dietrich, David Brunner, Thomas Schmid, Klaas P. Pruessmann
1Institute for Biomedical Engineering, University & ETH, Zurich, Switzerland; 2Skope Magnetic Resonance Technologies, Zurich, Switzerland

16:48 0956. How to Suppress the Contribution from Pseudo-Diffusion in Oscillating Gradient Diffusion MRI
Dan Wu, Jiangyang Zhang
1Biomedical Engineering, Johns Hopkins University School of Medicine, BALTIMORE, MD, United States; 2Radiology, Johns Hopkins University School of Medicine, MD, United States

17:00 0957. Double Oscillating Diffusion Encoding (DODE) Augments Microscopic Anisotropy Contrast
Noam Shemes, Andradu Ianu, Daniel C. Alexander, Ivana Drobniak
1Champalimaud Neuroscience Programme, Champalimaud Center for the Unknown, Lisbon, Portugal; 2Center for Medical Image Computing, Department of Computer Science, University College London, London, United Kingdom

17:12 0958. Single-Spin Echo Multiband Diffusion Imaging with Slice Select Gradient Reversal
Matthew J. Middione, Hua Wu, Robert F. Dougherty, Kangrong Zhu, Adam B. Kerr, John M. Pauly
1Applied Sciences Laboratory West, GE Healthcare, Meno Park, CA, United States; 2CNI, Stanford University, Stanford, CA, United States; 3Electrical Engineering, Stanford University, Stanford, CA, United States

17:24 0959. Diffusion-Weighted Readout-Segmented EPI Using PINS Simultaneous Multislice Imaging
Peter J. Koopmans, Robert Frost, David A. Porter, Wenchuan Wu, Peter Jezzard, Karla L. Miller, Markus Barth
1FMRIB Centre, Nuffield Department of Clinical Neurosciences, University of Oxford, Oxford, United Kingdom; 2Institute for Medical Image Computing, Fraunhofer MEVIS, Bremen, Germany; 3Centre for Advanced Imaging, The University of Queensland, Brisbane, Australia

17:36 0960. Correction of 3D Motion Induced Artifacts in Multi-Shot Diffusion Imaging Using Projection Onto Convex Sets Based Multiplexed Sensitivity-Encoding MRI (POCSMUSE)
Mei-Lan Chi, Shayan Guhaniyogi, Hing-Chiu Chang, Nan-kuei Chen
1Brain Imaging and Analysis Center, Duke University Medical Center, Durham, NC, United States; 2Graduate Institute of Biomedical Electronics and Bioinformatics, National Taiwan University, Taipei, Taiwan
17:48  0961. Efficient Large Scale Motion Compensation for Multi-Shot Diffusion-Weighted Imaging  
Zhonghao Xu, Zhigang Wu, Wufan Chen, Yanqiue Peng, Feng Huang, Wening Fang, Jing Zhang  
1Guangdong Provincial Key Laboratory of Medical Image Processing, School of Biomedical Engineering, Southern Medical University, Guangzhou, Guangdong, China; 2Philips Healthcare (Suzhou) CO.LTD, Suzhou, Jiangsu, China

Normal Brain Anatomy & Morphometry  
John Bassett Theatre 102 16:00-18:00  
Moderators: Andrew L. Alexander, Ph.D. & David J. Mikulis, M.D.

16:00  0962. Influence of T1 Contrast and Resolution on Myelinated Cortical Thickness at 7 Tesla  
Pierre-Louis Bazin, Christine Lucas Tardif, Arno Villringer, Nicholas Bock  
1Max Planck Institute for Human Cognitive and Brain Sciences, Leipzig, Germany; 2McMaster University, Ontario, Canada

16:12  0963. Enhanced T1-Weighted Myelin Contrast Across Lamina at 7T; In-Vivo, Ex-Vivo, and Histology  
Alessio Fracasso, Susanne J. van Veluw, Fredy Visser, Jaco JM Zwanenburg, Serge O. Dumoulin, Natalia Petridou  
1Experimental Psychology, Helmholtz Institute, Utrecht University, Utrecht, Netherlands; 2Neurology, Brain Center Rudolf Magnus, University Medical Center, Utrecht, Netherlands; 3Philips Medical Systems, Best, Netherlands; 4Radiology, Imaging Division, University Medical Center, Utrecht, Netherlands

16:24  0964. MR Morphometry of Myeloarchitecture for In-Vivo Cortical Mapping  
Christine Lucas Tardif, Nicholas A. Bock, Arno Villringer, Pierre-Louis Bazin  
1Max Planck Institute for Human Cognitive and Brain Sciences, Leipzig, Saxony, Germany; 2McMaster University, Hamilton, Ontario, Canada

16:36  0965. Effect of Hypobaric Pressure on MRI Parameters, Including B0, T2, T2*, and T1  
Eric R. Muir, Damon P. Cardenas, Timothy Q. Duong  
1Research Imaging Institute, University of Texas Health Science Center, San Antonio, TX, United States

16:48  0966. Connectivity-Based Atlas of Human Brain White Matter in ICBM-152 Space  
Anna Varentsova, Shengwei Zhang, Ekaterina Shanina, Konstantinos Arfanakis  
1Physics Department, Illinois Institute of Technology, Chicago, IL, United States; 2Department of Biomedical Engineering, Illinois Institute of Technology, Chicago, IL, United States; 3Rush Alzheimer's Disease Center, Rush University, Chicago, IL, United States

17:00  0967. Arcuate Fasciculus Delineation by Means of Diffusion Compartment Imaging Based Tractography  
Xavier Tomas-Fernandez, Benoit Scherrer, Catherine Wan, Simon K. Warfield  
1Boston Children's Hospital, Boston, MA, United States

17:12  0968. The Number of Subjects Needed to Detect a Change in White Matter Microstructure Depends on the Pathway in Question  
Sonya Bells, C.John Evans, Derek K. Jones  
1School of Psychology, CUBRIC, Cardiff, Wales, United Kingdom

17:24  0969. Investigating Variability of Brain Anatomy Using Three Common Mouse Strains  
Jan Scholz, Matthijs van Eede, Jason P. Lerch, Mark Henkelman  
1Mouse Imaging Centre, Hospital for Sick Children, Toronto, ON, Canada; 2Medical Biophysics, University of Toronto, Toronto, ON, Canada; 3Medical Biophysics, University of Toronto, ON, Canada

17:36  0970. In Vivo High Resolution Imaging of the Mouse Neurovasculature  
Jérémie Pierre Fouquet, Réjean Lebel, Luc Tremblay, Martin Lepage  
1CIMS, Université de Sherbrooke, Sherbrooke, QC, Canada

17:48  0971. Initial Human Imaging Experience with a Head-Only Gradient System Utilizing 80 MT/m and 500 T/m/s  
John Huston III, Shengheng Tao, Joshua D. Trzasko, Paul T. Weavers, Yunhong Shu, Erin Gray, Seung-Kyun Lee, Jean-Baptiste Mathieu, Christopher J. Hardy, John Schenck, Ek Tsoon Tan, Thomas K.F. Foo, Matt A. Bernstein  
156
Combined Educational & Scientific Session
Cardiovascular MRA With & Without Contrast
Organizers: Daniel B. Ennis, Ph.D. & Harald Kramer, M.D.
Room 718 A 16:00-18:00  Moderators: Vincent B. Ho, M.D., M.B.A. & Harald Kramer, M.D.

16:00  0972. Contrast Enhanced MRA: Why, Where & How?
J. Paul Finn

16:30  0973. Three-Station Fluoroscopic Tracking 3D Bolus Chase MRA with Optimized Accelerations
Paul T. Weavers1, Eric A. Borisch1, Phillip M. Young1, Phillip J. Rossman1, Thomas C. Hulshizer1, Stephen J. Riederer1
1Radiology, Mayo Clinic, Rochester, MN, United States

16:42  0974. Ferumoxytol in Pediatric Congenital Heart Disease: Initial Results with 4D Multiphase Steady State Imaging of Contrast (MUSIC) Enhancement
Kim-Lien Nguyen1, 2, Fei Han1, Daniel Z. Brunengraber2, Stanislas Rapacchi2, Ihab Ayad2, Gary Satou2, Peng Hu2, J. Paul Finn1
1Division of Cardiology, Greater Los Angeles VA Healthcare System and David Geffen School of Medicine at UCLA, Los Angeles, CA, United States; 2Diagnostic Cardiovascular Imaging Laboratory, Department of Radiology, David Geffen School of Medicine at UCLA, Los Angeles, CA, United States

Ruth P. Lim

Jeremy Douglas Collins1, Edouard Semaan1, Zoran Stankovic2, Riad Salem1, Maria Carr1, Michael Markl1, 3, James Christian Carr1
1Radiology, Northwestern University, Chicago, IL, United States; 2Radiology, University Hospital, Freiberg, Germany; 3Biomedical Engineering, Northwestern University, Evanston, IL, United States

Hanwei Chen1, Na Zhang2, 3, Xin Liu1, 3
1Department of Radiology, Guangzhou Panyu Central Hospital, Guangzhou, Guangdong, China; 2Lauterbur Research Center for Biomedical Imaging, Shenzhen Institutes of Advanced Technology of Chinese Academy of Sciences, Shenzhen, Guangdong, China; 3Shenzhen Key Laboratory for MRI, Shenzhen, Guangdong, China

17:48  0978. Bicuspid Valve Morphology Determines the Position of Elevated Velocity and WSS: 4D Flow MRI in 202 Subjects
Pim van Ooij1, 2, Ian G. Murphy3, Alexander L. Powell1, Maria Carr2, Wouter V. Potters3, Colleen Crennan1, Jeremy D. Collins1, James C. Carr2, S Chris Malaisrie1, Patrick M. McCarthy3, Michael Markl2, 3, Alex J. Barker2
1Radiology, Academic Medical Center, Amsterdam, Netherlands; 2Radiology, Northwestern University, Chicago, IL, United States; 3Division of Cardiac Surgery, Northwestern University, Chicago, IL, United States; 4Medicine-Cardiology, Northwestern University, Chicago, IL, United States; 5Northwestern University, Biomedical Engineering, Chicago, IL, United States

18:00  Adjournment & Meet the Teachers

Quantitative Biomarkers of Chest Disease: the Role of MRI in a Multimodality Practice
Organizers: Mitchell S. Albert, Ph.D. & Jim M. Wild, Ph.D.
Room 718 B 16:00-18:00  Moderators: Mitchell S. Albert, Ph.D. & Jim M. Wild, Ph.D.

16:00  Introduction
**Thursday**

16:03  **Imaging of Chronic Obstructive Pulmonary Disease (COPD): MRI Vs. CT**  
Grace Parraga

16:18  **0977. Tobacco Smoke Exposure Reduces Lung T1 in COPD Patients**  
Daniel F. Alamidi¹, Alexandra R. Morgan¹, Penny L. Hubbard Cristinacce⁰, Lars H. Nordenmark², Paul D. Hockings¹, Kerstin M. Lagerstrand², Simon S. Young¹, Josephine H. Naish⁰, John C. Waterton⁰, Lars E. Olsson⁴, Geoff J.M Parker³,⁵  
¹Department of Radiation Physics, Institute of Clinical Sciences, Sahlgrenska Academy, University of Gothenburg, Sweden; ²Bioxydyn Ltd, Manchester, United Kingdom; ³Centre for Imaging Sciences and Biomedical Imaging Institute, Manchester Academic Health Sciences Centre, University of Manchester, Manchester, United Kingdom; ⁴Centre for Imaging Sciences and Biomedical Imaging Institute, Manchester Academic Health Sciences Centre, University of Manchester, Manchester, United Kingdom; ⁵AstraZeneca R&D, Mölndal, Sweden; ⁶Chalmers University of Technology, MedTech West, Gothenburg, Sweden; ⁷AstraZeneca R&D, Alderley Park, United Kingdom; ⁸Department of Medical Physics, Lund University, Lund, Sweden

16:30  **0978. Quantitative Evaluation of Emphysema in COPD Patients Via CT and UTE MR Image Analysis**  
David J. Roach¹, Yannick Crémillieux, Suraj Seraf², Robert Thomen³, Sadia Benzaquen⁴, Jason C. Woods⁴, ¹Center for Pulmonary Imaging Research, Cincinnati Children’s Hospital Medical Center, Cincinnati, OH, United States; ²Pulmonary Medicine, Cincinnati Children’s Hospital Medical Center, Cincinnati, OH, United States; ³Centre de Résonance Magnétique des Systèmes Biologiques, Université de Bordeaux, Bordeaux, France; ⁴Radiology, Cincinnati Children’s Hospital Medical Center, Cincinnati, OH, United States; ⁵Physics, Washington University in St. Louis, St. Louis, MO, United States; ⁶University of Cincinnati College of Medicine, Cincinnati, OH, United States

16:42  **Imaging of Lung Cancer: MRI vs. PET-CT**  
Edwin J. van Beek

16:57  **0979. Diffusion-Weighted MRI (DWI) with Fast Advanced Spin-Echo Sequence: Comparison of N-Stage Assessment with DWI with Echo-Planar Imaging and FDG-PET/CT in Non-Small Cell Lung Cancer Patients**  
Yoshikazu Ohno¹, Shinichiro Seki², Hisanobu Koyama³, Takeshi Yoshikawa³, Sumiaki Matsumoto³, Yoshikazu Ueno³, Katsusuke Kyotani³, Yoshinori Kassai³, Masao Uy³, Hitoshi Yamagata³, Kazuhiro Sugimura³  
¹Advanced Biomedical Imaging Research, Kobe University Graduate School of Medicine, Kobe, Hyogo, Japan; ²Division of Functional and Diagnostic Imaging Research, Department of Radiology, Kobe University Graduate School of Medicine, Kobe, Hyogo, Japan; ³Division of Radiology, Department of Radiology, Kobe University Graduate School of Medicine, Kobe, Hyogo, Japan; ⁴Center for Radiology and Radiation Oncology, Kobe University Hospital, KObe, Hyogo, Japan; ⁵Toshiba Medical Systems Corporation, Tochigi, Japan

17:09  **0980. Detection of Pulmonary Nodules by Ultra-Short TE Sequences in Oncology Patients Using a PET/MR System**  
Nicholas Scott Burris¹, Peder Larson¹, Kevin M. Johnson², Michael D. Hope³, Spencer Behr³, Thomas A. Hope³  
¹Radiology, University of California San Francisco, San Francisco, CA, United States; ²University of Wisconsin–Madison, WI, United States; ³University of California San Francisco, CA, United States

17:21  **Imaging of Pulmonary Vascular Disease: MRI Vs. CT**  
Jim M. Wild

17:36  **0981. Pulmonary Perfusion Phase Imaging Using Self-Gated Fourier Decomposition MRI**  
Daniel Stäb¹, Simon Veldhoen³, Andre Fischer², Stefan Weick², Andreas Max Weng², Clemens Wirth², Thorsten A. Bley², Herbert Köstler²  
¹The Centre for Advanced Imaging, Lumière Matière, CNRS UMR 5306, Universite Claude Bernard, Domaine Scientifique de la Doua, Villeurbanne, France; ²Institut Lumière Matière, CNRS UMR 5306, Universite Claude Bernard, Domaine Scientifique de la Doua, Villeurbanne, France

17:48  **0982. MR Imaging, Targeting and Characterization of Pulmonary Fibrosis Using Intra-Tracheal Administration of Gadolinium Based Nanoparticles**  
Naval Tassali¹, Andrea Bianchi¹, François Luc², Gerard Raffard³, Stephane Sanchez¹, Olivier Tillement², Yannick Cremillieux¹  
¹Centre de Resonance Magnetique des Systemes Biologiques, CNRS UMR 5536, Universite de Bordeaux, Bordeaux, France; ²Institut Lumière Matière, CNRS UMR 5306, Universite Claude Bernard, Domaine Scientifique de la Doua, Villeurbanne, France

18:00  **Adjournment & Meet the Teachers**
Educational Course
MR Physics & Techniques for Clinicians
Organizers: Marcus T. Alley, Ph.D., Michael Markl, Ph.D., Brian Hargraves, Ph.D., & Nicole Seiberlich, Ph.D.
Room 801 A/B 16:00-18:00
Moderators: Brian A. Hargreaves, Ph.D. & Michael Markl, Ph.D.

16:00 Artifacts to Artefacts: Causes & Cures from Clinical Perspective
Vikas Gulani

16:40 Contrast Agents
Bernd Jung

17:20 High Field Imaging
Priti Balchandani

17:50 Adjournment & Meet the Teachers

Closing Party
North Building Exhibition Hall 18:15 – 22:00 (no CME credit)
**Proton MRSI Methods**

**Room 701 A 08:00-10:00**  
**Moderators:** Vincent O. Boer, Ph.D. & Sarah J. Nelson, Ph.D.

<table>
<thead>
<tr>
<th>Time</th>
<th>Presentation</th>
<th>Authors</th>
</tr>
</thead>
</table>
| 08:00  | **Mechanisms of SNR Enhancement and Line Shape Improvement in B₀ Correction for Overdiscrete MRSI** | Thomas Kirchner¹, Ariane Fillmer¹, Klaas Paul Pruessmann¹, Anke Henning,¹²  
¹Institute for Biomedical Engineering, UZH and ETH Zurich, Zurich, Switzerland; ¹²Max Planck Institute for Biological Cybernetics,Tuebingen, Germany |
| 08:12  | **Removal of Nuisance Signals from Limited and Sparse 3D ¹H-MRSI Data of the Brain** | Bryan Clifford¹, Chao Ma¹, Fan Lam¹, Zhi-Pei Liang¹  
¹Electrical and Computer Engineering, University of Illinois at Urbana-Champaign, Urbana, IL, United States; ²Beckman Institute,University of Illinois at Urbana-Champaign, Urbana, IL, United States |
| 08:24  | **Towards Robust Reproducibility Study for MRSI Via Fully Automated Reproducible Imaging Positioning** | Wei Bian¹, Yan Li¹, Jason C. Crane¹, Sarah J. Nelson¹  
¹Department of Radiology and Biomedical Imaging, University of California San Francisco, San Francisco, CA, United States |
| 08:36  | **Comparison of Several Coil Combination Techniques in Multi-Channel 3D MRSI for Brain Tumor Patients** | Maryam Vareth¹, Li Yan¹, Janine Lupo¹, Sarah Nelson¹,²  
¹UCSF/UCBerkeley Joint Graduate Group in Bioengineering, University of California Berkeley, Berkeley, CA, United States; ²Surbeck Laboratory of Advanced Imaging, Department of Radiology and Biomedical Imaging, CA, United States; ³Radiology and Biomedical Imaging, University of California San Francisco, CA, United States |
| 08:48  | **Rosette Spectroscopic Imaging with Hadamard Encoding** | Claudia Schirda¹, Tiejun Zhao¹, Julie Pan¹, Hoby Hetherington¹  
¹Radiology, University of Pittsburgh School of Medicine, Pittsburgh, PA, United States; ²Siemens Medical Solutions, Pittsburgh, PA, United States |
| 09:00  | **3D Mapping of Glutathione in the Human Brain Via Real-Time Motion Corrected MEGA-LASER MRSI** | Wolfgang Bogner², Bernhard Strasser², Michal Povazan¹, Gilbert Hangel¹, Borjan Gagoski², Stephan Gruber¹, Bruce Rosen¹, Siegfried Trattnig¹, Ovidiu C. Andronesi³  
²Surbeck Laboratory of Advanced Imaging, Department of Radiology and Biomedical Imaging, CA, United States; ³Radiology and Biomedical Imaging, Massachusetts General Hospital, Harvard Medical School, Charlestown, MA, United States |
| 09:12  | **Image-Guided Spatial Localization of Heterogeneous Compartments by Compressed Sensing** | Li An¹, Jun Shen¹  
¹National Institute of Mental Health, National Institutes of Health, Bethesda, MD, United States |
| 09:24  | **3D MR Spectroscopic Imaging Using Adiabatic Spin Echo and Hypergeometric Dual Band Pulses for Metabolic Mapping Over the Entire Brain** | Morteza Esmaeili¹,², Tone Frost Bøhren¹, Bruce R. Rosen¹, Ovidiu Cristian Andronesi¹  
²Athinoula A. Martinos Center for Biomedical Imaging, Department of Radiology, Massachusetts General Hospital, Harvard Medical School, Boston, MA, United States; ³Department of Circulation and Medical Imaging, Norwegian University of Science and Technology (NTNU), Trondheim, Norway |
| 09:36  | **Detection of Brain Macromolecules Using Double Inversion Recovery Ultra-Short Acquisition Delay ¹H MRSI at 7 Tesla** | Michal Povazan¹, Gilbert Hangel¹, Bernhard Strasser¹, Marek Chmelik¹, Stephan Gruber¹, Siegfried Trattnig¹, Wolfgang Bogner²  
¹MRCE, Department of Biomedical Imaging and Image-guided therapy, Medical University Vienna, Vienna, Austria |
| 09:48  | **High-Resolution ¹H-MRSI of the Brain Using Short-TE SPICE** | Chao Ma¹, Fan Lam¹,², Quang Ding,², Curtis L. Johnson¹, Zhi-Pei Liang,¹²  
¹²Max Planck Institute for Biological Cybernetics, Tuebingen, Germany |
Magnetization Transfer

Room 701 B 08:00-10:00  

**Moderators:** David C. Alsop, Ph.D. & T.B.A.

**08:00** 0993. Application of a Dipolar Model to Inhomogeneous Magnetization Transfer (IhMT)

Gopal Varma¹, Olivier M. Girard², Valentin Prévost¹, Aaron K. Grant¹, Guillaume Duhamel², David C. Alsop¹

¹Radiology, Division of MR Research, Beth Israel Deaconess Medical Center, Harvard Medical School, Boston, MA, United States; ²CRMBM UMR 7339, CNRS and Aix-Marseille Université, Marseille, France

**08:12** 0994. Towards a Quantitative Theory for Inhomogeneous Magnetization Transfer

Scott D. Swanson¹, Dariya I. Malyarenko², Mario L. Fabilli²

¹Department of Radiology, University of Michigan, Ann Arbor, MI, United States; ²Department of Radiology, University of Michigan, MI, United States

**08:24** 0995. Further Evidence of an Orientation Dependence of Magnetization Transfer Parameters from Investigations in Post-Mortem Marmoset Brain

Henrik Marschner¹, Riccardo Metere¹, Stefan Geyer¹, André E. Möller¹

¹Nuclear Magnetic Resonance, Max Planck Institute for Human Cognitive and Brain Sciences, Leipzig, Sachsen, Germany

**08:36** 0996. Exploring a Flexible Pulse Design for Studying Magnetization Transfer

Peter van Gelderen¹, Xu Jiang¹, Jeff H. Duyn¹

¹AMRI, LFMI, NINDS, National Institutes of Health, Bethesda, MD, United States

**08:48** 0997. Contrast Generation with a Novel Adiabatic On-Resonance Magnetization Transfer Preparation (MT-Prep)

Wolfgang G. Rehwald¹, David C. Wendell¹, Elizabeth R. Jenista¹, Han W. Kim¹, Enn-Ling Chen¹, Igor Klem¹, Raymond J. Kim¹

¹Siemens Healthcare, Durham, NC, United States; ²Cardiology, Duke University Medical School, Durham, NC, United States

**09:00** 0998. Study of Bound Proton T2 and Magnetization Transfer Using Pulsed MT

Xu Jiang¹,², Peter van Gelderen¹, Xiaozen Li¹, Emily Leibovitch³, Pascal Sati¹, Afonso C. Silva³, Jeff H. Duyn¹

¹AMRI, LFMI, NINDS, NIH, Bethesda, MD, United States; ²Viral Immunology Section, Neuroimmunology Branch, NINDS, NIH, Bethesda, MD, United States; ³Translational Neuroradiology Unit, NINDS, NIH, Bethesda, MD, United States

**09:12** 0999. A New MT Signal at -1.6 Ppm Via NOE-Mediated Saturation Transfer

Xiao-Yong Zhang¹, Hua Li¹, Junzhong Xu¹, Jingping Xie¹, John C. Gore¹, Zhongliang Zu¹

¹Institute of Imaging Science, Vanderbilt University, Nashville, TN, United States

**09:24** 1000. Oxidative Stress Sensitive Magnetization Transfer MRI of Prostate Cancer

Rongwen Tain¹,², Michael Abern³, Karen Xie¹, X. Joe Zhou¹,², Kejia Cai¹,²

¹Radiology, College of Medicine, University of Illinois at Chicago, Chicago, IL, United States; ²Center for MR Research, College of Medicine, University of Illinois at Chicago, Chicago, IL, United States; ³Urology, College of Medicine, University of Illinois at Chicago, Chicago, IL, United States

**09:36** 1001. Assessment of Amide Proton Transfer and Nuclear Overhauser Effects Using Long RF Saturation at 3T in Clinical Brain Tumor Applications

Jochen Keupp¹, Osamu Togao²

¹Philips Research, Hamburg, Germany; ²Clinical Radiology, Graduate School of Medical Science, Kyushu University, Fukuoka, Japan

**09:48** 1002. Amplifying ATP Magnetization Exchange Effects by Band Inversion Transfer: A 31P NMR Study in Human Skeletal Muscle at 7T

Jimin Ren¹,², Baolian Yang¹, A. Dean Sherry¹,³, Craig R. Malloy¹,⁵

¹Biological Sciences, University of Illinois at Urbana-Champaign, Champaign, IL, United States; ²Department of Radiology and Biomedical Imaging, Yale University, New Haven, CT, United States; ³Department of Radiology, University of California, Los Angeles, CA, United States; ⁴Department of Radiology, University of California, San Francisco, CA, United States; ⁵Department of Radiology, University of Illinois at Urbana-Champaign, Champaign, IL, United States
Novel Techniques for Cardiac Perfusion & Function

Room 714 A/B 08:00-10:00  Moderators: Vincent B. Ho, M.D., M.B.A. & T.B.A.

08:00  1003. Multi-Center Evaluation of Accelerated 3D Magnetic Resonance Perfusion Imaging for Assessing Myocardial Ischemic Burden to Detect Coronary Heart Disease
Robert Manka1, Lukas Wissmann2, Rolf Geberl3, Roy Jogiya4, Manish Motwani5, Michael Frick6, Sebastian Reinartz2, Bernhard Schnackenburg2, Markus Niemann7, Alexander Gotschy8, Christiane Kuhl9, Eike Nagel4, Eckart Fleck1, Thomas F. Luescher1, Sven Plein4, Sebastian Kozerke3,4
1University Hospital Zurich, Zurich, Switzerland; 2University and ETH Zurich, Zurich, Switzerland; 3University and ETH Zurich, Zurich, Switzerland; 4German Heart Institute, Berlin, Germany; 5King's College London, United Kingdom; 6University of Leeds, United Kingdom; 7University Hospital Aachen, Germany

08:12  1004. Quantification of Myocardial Blood Flow Using Non-ECG-Triggered MR Imaging with 3 Slice Coverage
David Chen1,2, Behzad Sharij3, Xiaoming Bi3, Janet Wei3, Louise E.L. Thomson3,5, C. Noel Bairey Merz2, Daniel S. Manka1,2, Rolf Gebler3
1Advanced Imaging Research Center, University of Texas Southwestern Medical Center, Dallas, TX, United States; 2Department of Radiology, University of Texas Southwestern Medical Center, Dallas, TX, United States; 3Philips Healthcare, Cleveland, OH, United States; 4Department of Chemistry, University of Texas at Dallas, Richardson, TX, United States; 5VA North Texas Health Care System, Dallas, TX, United States

08:24  1005. Reduced Field-Of-View Single-Shot Spiral Perfusion Imaging
Yang Yang1, Li Zhao2, Xiao Chen1, Peter Shaw1, Jorge Gonzalez2, Frederick Epstein3, Craig Meyer4, Christopher Kramer1,4, Michael Salerno1,4
1Biomedical Engineering, University of Virginia, Charlottesville, VA, United States; 2Radiology, Harvard University, Boston, MA, United States; 3Medicine, University of Virginia, Charlottesville, VA, United States; 4Radiology, University of Virginia, Charlottesville, VA, United States

08:36  1006. Towards a Synergistic Application of Multimodal MR/PET Myocardial Perfusion Imaging: Measuring Capillary Transit Time Heterogeneity with MRI and Blood Flow with Simultaneous N-13 Ammonia PET
Karl Philipp Kunze1, Christoph Rischpler1, Shelley Zhang2, Carmel Hayes1, Markus Schweiger1, Stephan Sekulla1
1Klinikum rechts der Isar der Technischen Universität München, München, Bayern, Germany; 2Brigham and Women's Hospital, Boston, MA, United States; 3Medicine, University of Virginia, Charlottesville, VA, United States; 4Radiology, University of Virginia, Charlottesville, VA, United States

David A. Broadbent1,2, Ananth Kidambi1, Sven Plein2, David L. Buckley2
1Division of Medical Physics, University of Leeds, Leeds, West Yorkshire, United Kingdom; 2Multidisciplinary Cardiovascular Research Centre, University of Leeds, Leeds, West Yorkshire, United Kingdom

09:00  1008. Accelerated Three-Dimensional Cine DENSE Strain Imaging in Three Minutes
Xiao Chen1, Daniel Auger2, Michael Salerno3, Craig H. Meyer1, Kenneth C. Bilichik2, Frederick H. Epstein1
1Biomedical Engineering, University of Virginia, Charlottesville, VA, United States; 2Radiology, University of Virginia, Charlottesville, VA, United States; 3Medicine, University of Virginia, Charlottesville, VA, United States; 4Cardiology, University of Virginia, Charlottesville, VA, United States; 5Medicine, Cardiovascular Medicine, University of Virginia, Charlottesville, VA, United States

09:12  1009. New Possibilities for Myocardial Strain Imaging Using Acceleration and Iterative Reconstruction
Andreas Greiser1, Christoph Forman2, Jens Wetzel2, Michael Zenge3, Marie-Pierre Jolly4, Edgar Mueller5

162
09:24 1010. Feasibility Study of a Novel Acquisition Technique of Cardiac Cine Magnetic Resonance Imaging in Patients with Atrial Fibrillation
Jian Cao1, Yining Wang1, Lingyan Kong1, Lu Lin1, Yan Yi1, Jing An1, Tianjing Zhang2, Michaela Schmidt3, Michael Zenge1, Edgar Mueller1
1Radiology, Peking Union Medical College Hospital, Beijing, Beijing, China; 2MR Collaborations NE Asia, Siemens Healthcare, Beijing, China; 3Siemens AG, Allee am R&I/246,thelheimpark, Erlangen, 91052, Germany

09:36 1011. Isotropic 3-D CINE Imaging with Sub-2mm Resolution in a Single Breath-Hold
Jens Wetzl1, Michaela Schmidt2, Michael O. Zenge1, Felix Lugauer3, Laszlo Lazar4, Mariappan Nadar5, Andreas Maier1, Joachim Hornegger2, Christoph Forman1
1Pattern Recognition Lab, Department of Computer Science, Friedrich-Alexander-Universität Erlangen-Nürnberg, Erlangen, Germany; 2Erlangen Graduate School in Advanced Optical Technologies (SAOT), Friedrich-Alexander-Universität Erlangen-Nürnberg, Erlangen, Germany; 3Siemens AG, Healthcare, Imaging & Therapy Systems, Magnetic Resonance, Erlangen, Germany; 4Siemens SRL, Corporate Technology, Brasov, Romania; 5Siemens Corporation, Corporate Technology, Princeton, NJ, United States

09:48 1012. Pericardial Fat Quantification Using Respiratory Triggered 3D-Dixon Pulse Sequence
Rami Homsi1, Alois M. Sprinkart1, Julian Luetkens1, Juergen Gieseke1, Hans H. Schild1, Michael Meier-Schroers1, Hans W. Schmid1, Darius Dabir1, Daniel Thomas1
1Radiology, University Hospital Bonn, Bonn, NRW, Germany; 2Institute of Medical Engineering, Ruhr-University Bochum, Bochum, Germany; 3Philips Healthcare, Best, Netherlands

Gradient Field Engineering & Monitoring
Room 716 A/B 08:00-10:00 Moderators: Klass P. Pruessmann, Ph.D. & Brian K. Rutt, Ph.D.

08:00 1013. Field Monitoring During High-Power Transmission Pulses: A Digital Noise Cancelling Approach
David O. Brunner1, Benjamin E. Dietrich1, Simon Gross1, Thomas Schmid1, Christoph Barnet1, Klaas P. Pruessmann1
1Institute for Biomedical Engineering, University and ETH Zurich, Zurich, Switzerland; 2Skope Magnetic Resonance Technologies LLC, Zurich, Switzerland

08:12 1014. Spiral Imaging Trajectory Mapping Using High Density 25-Channel Field Probe Array
Ying-Hua Chu1, Yi-Cheng Hsu1, Fa-Hsuan Lin1
1Institute of Biomedical Engineering, National Taiwan University, Taipei, Taiwan

08:24 1015. Placement of Field Probes for Stabilization of Breathing-Induced B0-Fluctuations in the Brain
Mads Andersen1,2, Kristoffer H. Madsen1, Lars G. Hanson1,2, Vincent Boer1, Tijl van der Velden1, Dennis Klomp1, Joep Wezel1, Matthias J. van Osch1, Andrew G. Webb2, Maarten J. Versluis3, 6
1Danish Research Centre for Magnetic Resonance, Copenhagen University Hospital, Hvidovre, Denmark; 2Biomedical Engineering Group, DTU Elektro, Technical University of Denmark, Kgs. Lyngby, Denmark; 3Danish Research Centre for Magnetic Resonance, Copenhagen University Hospital, Hvidovre, Denmark; 4Department of Radiology, University Medical Center Utrecht, Utrecht, Netherlands; 5C.J. Gorter center, Department of Radiology, Leiden University Medical Center, Leiden, Netherlands; 6Philips Healthcare, Best, Netherlands

Benjamin E. Dietrich1, David O. Brunner1, S. Johanna Vannesjo1, Yolanda Duers1, Bertram J. Wilm1, Klaas P. Pruessmann1
1Institute for Biomedical Engineering, University and ETH Zurich, Zurich, Switzerland

08:48 1017. Movement Monitoring for MRI Via Measurement of Changes in the Gradient Induced EMF in Coil Arrays
E. H. Bhuiyan1, M. E. H. Chowdhury1, P. M. Glover1, R. Bowtell1
1SPMIC, School of Physics and Astronomy, University of Nottingham, Nottingham, United Kingdom

09:00 1018. Total Current Reduced Design for Brain B0 Shim Coil Using Singular Value Decomposition
Kohjiro Iwasawa1, Yosuke Otake1, Hisaaki Ochi1
1Central Research Laboratory, Hitachi Ltd., Kokubunji, Tokyo, Japan
Friday

09:12  1019. Development of a Dedicated Asymmetric Head-Only Gradient Coil for High-Performance Brain Imaging with a High PNS Threshold
Jean-Baptiste Mathieu¹, Seung-Kyun Lee², Dominic Graziani³, Jian Lin³, Eric Budesheim³, Joseph E. Piel³, Naveen Thiagarajan⁴, Christopher J. Hardy⁴, John F. Schenck⁵, Ek Tsoon Tan⁵, Eric Fiveland⁶, Keith Park⁷, Yihe Hua⁸, Matt A. Bernstein⁹, John Huston III¹⁰, Yunhong Shu¹¹, Thomas K.-F. Foo¹²
¹GE Global Research, Niskayuna, NY, United States; ²GE Global Research, China Technology Center, Shanghai, China; ³Mayo Clinic, Rochester, MN, United States

09:24  1020. Lorentz Damping and the Field Dependence of Gradient Coil Vibroacoustics
Simone Angela Winkler¹, Trevor P. Wade¹, Andrew Alejski², Charles McKenzie², Brian K. Rutt¹
¹Dept. of Radiology, Stanford University, Stanford, CA, United States; ²Robarts Research Institute, The University of Western Ontario, London, Ontario, Canada

09:36  1021. Thermal Characterization of an All Hollow Copper Insertable Head Gradient Coil
Trevor Paul Wade¹, ⁶, Andrew Alejski¹, Janos Bartha³, Dina Tsarapkina³, Brian K. Rutt¹, Charles A. McKenzie³
¹Robarts Research Institute, Western University, London, Ontario, Canada; ³Medical Biophysics, Western University, London, Ontario, Canada; ⁶Radiology, Stanford University, Stanford, CA, United States

09:48  1022. Shielded Matrix Gradient Coil
Sebastian Littin¹, Feng Jia¹, Stefan Kroboth¹, Kelvin Layton¹, Huijun Yu¹, Maxim Zaitsev¹
¹Medical Physics, University Medical Center Freiburg, Freiburg, Germany

Diffusion Weighted Image Analyses
Room 718 A 08:00-10:00  Moderators: Andrew L. Alexander, Ph.D. & Chantal M. W. Tax, M.Sc.

08:00  1023. Noise Map Estimation in Diffusion MRI Using Random Matrix Theory
Jelle Veraart¹, Els Fieremans², Dmitry S. Novikov³
¹Center for Biomedical Imaging, NYU Langone Medical Center, New York, NY, United States; ²Center for Biomedical Imaging, NYU Langone Medical Center, New York, NY, United States

08:12  1024. Caveats of Non-Linear Fitting to Brain Tissue Models of Diffusion
Ileana O. Jelescu¹, Jelle Veraart¹, Els Fieremans¹, Dmitry S. Novikov³
¹Center for Biomedical Imaging, Dept. of Radiology, NYU Langone Medical Center, New York, United States

08:24  1025. Joint Estimation of Microstructural and Biomechanical Features of the Brain Using a Phase Sensitive Reconstruction of DWIs
Tim Sprenger¹, ², Jonathan I. Sperl², Axel Haase³, Brice Fernandez³, Christopher Hardy⁴, Luca Marinelli⁵, Michael Czisch⁶, Philipp Saemann⁷, Marion I. Menzel⁶
¹IMETUM, Technical University, Munich, Germany; ²GE Global Research, Munich, Germany; ³GE Healthcare, Munich, Germany; ⁴GE Global Research, Niskayuna, NY, United States; ⁵Max Planck Institute of Psychiatry, Munich, Select, Germany

08:36  1026. A Compressed Sensing Approach to Super-Resolution Diffusion MRI from Multiple Low-Resolution Images
Lipeng Ning¹, ², Kavin Setsompop³, ², Cornelius Eichner⁴, Oleg Michailovich⁴, Carl-Fredrik Westin¹, ², Yogesh Rathi¹, ²
¹Brigham and Women's Hospital, Boston, MA, United States; ²Harvard Medical School, Boston, MA, United States; ³Massachusetts General Hospital, MA, United States; ⁴University of Waterloo, Ontario, Canada

08:48  1027. Time to Move On: An FOD-Based DEC Map to Replace DTI’s Trademark DEC FA
Thijs Dhollander¹, Robert Elton Smith¹, Jacques-Donald Tournier¹, ², Ben Jeurissen¹, Alan Connelly¹, ⁵
¹The Florey Institute of Neuroscience and Mental Health, Melbourne, Victoria, Australia; ²Centre for the Developing Brain, King's College London, London, United Kingdom; ³Department of Biomedical Engineering, King's College London, London, United Kingdom; ⁴Minds-Vision Lab, University of Antwerp, Antwerp, Belgium; ⁵The Florey Department of Neuroscience, University of Melbourne, Melbourne, Victoria, Australia

09:00  1028. Resolving Crossing Fibers and Generalizing Biomarkers Using the Diffusion Kurtosis Tensor
Rafael Neto Henriques¹, Marta Morgado Correia¹, Rita Gouveia Nunes¹, Hugo Alexandre Ferreira¹
¹Dept. of Radiology, Stanford University, Stanford, CA, United States; ²Robarts Research Institute, The University of Western Ontario, London, Ontario, Canada
Pulmonary 3D MR imaging with ultra-short TE (UTE-MRI) has been suggested as having the potential for demonstration of ... capability of UTE-MRI for evaluation of radiological findings with TS-CT in patients with various pulmonary diseases.

19F MRI imaging was performed in a rat model of pulmonary inflammation using SF6. Fractional ventilation maps and ... the presence of inflammation using a simple and inexpensive approach that can potentially be translated to humans.

Room 718 B 08:00-10:00

Moderators: Samuel Patz, Ph.D. & Mark L. Schiebler, M.D.

08:00 1033. Fractional Ventilation Mapping Using Inert Fluorinated Gas MRI in a Rat Model of Inflammation

Marcus J. Couch1, 3, Matthew S. Fox2, 3, Chris Viel2, 3, Gowtham Gajawada1, 2, Tao Li2, Mitchell S. Albert1, 2

1Lakehead University, Thunder Bay, Ontario, Canada; 2Thunder Bay Regional Research Institute, Thunder Bay, Ontario, Canada; 3Robarts Research Institute, London, Ontario, Canada; 4Department of Medical Biophysics, Western University, London, Ontario, Canada

08:12 1034. In-Vivo Imaging of the Spectral Line Broadening of the Human Lung in a Single Breath-Hold

Flavio Carinci1, 2, Cord Meyer1, 2, Felix A. Breuer1, 2, Peter M. Jakob1, 2

1Research Center Magnetic Resonance Bavaria (MRB), Würzburg, Bayern, Germany; 2Department of Experimental Physics 5, University of Würzburg, Würzburg, Bayern, Germany

08:24 1035. Non-Contrast Enhanced Non-Invasive Detection and Follow-Up of Lung Tumors in Mice

Andrea Bianchi1, Sandrine Dufort1, 3, Pierre-Yves Fortin1, 3, François Lux1, 3, Gerard Raffard1, Nawal Tassali1, Olivier Tillement1, Jean-Luc Coll1, Yanick Crémillieux1

1Centre de Résonance Magnétique des Systèmes Biologiques, University of Bordeaux, Bordeaux, France; 2IAB-INSERM U823, University Joseph Fourier, Grenoble, France; 3Nano-H, Saint Quentin – Fallavier, France; 4Institut de Bio-Imagerie (IBIO) CNRS/UMS 3428, University of Bordeaux, Bordeaux, France; 5ILM UMR 5306, University Lyon 1, Lyon, France

08:36 1036. Pulmonary Thin-Section 3D MR Imaging with Ultra-Short TE: Comparison of Capability for Radiological Findings Assessment with Thin-Section CT

Yoshihara Ohno2, 3, Shinichiro Seki1, Hisanobu Kayama3, Aiming Lu3, Masao Yui2, Mitsue Miyazaki2, Katsusuke Kyotani2, Yoshiko Ueno2, Takeshi Yoshikawa1, 2, Sumiaki Matsumoto2, Kazuo Sugimura1

1Advanced Biomedical Imaging Research, Kobe University Graduate School of Medicine, Kobe, Hyogo, Japan; 2Division of Functional and Diagnostic Imaging Research, Department of Radiology, Kobe University Graduate School of Medicine, Kobe, Hyogo, Japan; 3Division of Radiology, Department of Radiology, Kobe University Graduate School of Medicine, Kobe, Hyogo, Japan; 4Toshiba Medical Research Institute USA, IL, United States; 5Toshiba Medical Systems Corporation, Tochigi, Japan; 6Center for Radiology and Radiation Oncology, Kobe University Hospital, KObe, Hyogo, Japan
1037. Functional 1H Lung MRI in Healthy and Emphysematous Rats Using a Self-Gated Golden Angle UTE

Ásmund Kjørstad1, Marta Tibilet1, Andrea Bianchi1, Michael Neumater1, Andrea Vögtle1, Thomas Kaulisch1, Frank G. Zöllner1, Lothar R. Schad1, Volker Rasche1, Detlef Stiller1

1Computer Assisted Clinical Medicine, Medical Faculty Mannheim, Heidelberg University, Mannheim, Germany; 2Core Facility Small Animal MRI, Ulm University, Ulm, Germany; 3Target Discovery Research, In-vivo imaging laboratory, Boehringer Ingelheim Pharma GmbH & Co. KG, Biberach an der Riss, Germany

09:00 1038. Simultaneous Imaging of Lung Structure and Function Using Oxygen-Enhanced MRI in a Mouse Model of Emphysema

Magdalena Zurek1, Louise Sladen1, Edwin Johansson1, Sonya Jackson1, Gaël Mayer1, Paul D. Hookings2

1PHB, Imaging, AstraZeneca R&D, Mölndal, Sweden; 2Drug Safety and Metabolism, AstraZeneca R&D, Mölndal, Sweden; 3RIA, Bioscience, AstraZeneca R&D, Mölndal, Sweden

09:12 1039. 3He MRI and CT Parametric Response Mapping of Small Airways Disease: The Battle-Ground for Ground Truth

Dante Capaldi1, Nanxi Zha1, Damien Pike1, Khadija Sheikh1, David G. McCormack2, Grace Parraga1, 2

1Imaging Research Laboratories, Robarts Research Institute, London, Ontario, Canada; 2Department of Medical Biophysics, The University of Western Ontario, London, Ontario, Canada; 3Division of Respirology, Department of Medicine, The University of Western Ontario, London, Ontario, Canada

09:24 1040. Isotropic 1H and Hyperpolarized 129Xe Gas- And Dissolved-Phase MRI for Longitudinal Evaluation of Lung Cancer

Rohan S. Virgincar1, Scott H. Robertson1, Simone Degani1, 2, Matthew S. Freeman1, Mu He1, Bastiaan Driehuys4

1Biomedical Engineering, Duke University, Durham, NC, United States; 2Medical Physics Graduate Program, Duke University, Durham, NC, United States; 3Center for Molecular and Biomolecular Imaging, Duke University, Durham, NC, United States; 4Radiology, Duke University Medical Center, Durham, NC, United States; 5Electrical and Computer Engineering, Duke University, Durham, NC, United States


Wei Zha1, Stanley J. Kruger1, Robert V. Cadman1, David Mummy2, David J. Niles1, Scott K. Nagle1, 3, Sean B. Fain1, 3

1Department of Medical Physics, University of Wisconsin-Madison, Madison, WI, United States; 2Department of Biomedical Engineering, University of Wisconsin-Madison, Madison, United States; 3Department of Radiology, University of Wisconsin-Madison, Madison, WI, United States

09:48 1042. Feasibility of Human Lung Ventilation MR Imaging Using Naturally-Abundant Xenon with Optimized 3D SSFP

Neil James Stewart1, Graham Norquay2, Paul David Griffiths1, Jon Michael Wild1

1Academic Unit of Radiology, University of Sheffield, Sheffield, South Yorkshire, United Kingdom

Cancer: Prostate Cancer

Room 801 A/B 08:00-10:00 Moderators: Elizabeth M. Hecht, M.D. & T.B.A.

08:00 Introduction

08:12 1043. Diagnostic Potential of Simultaneous 18F-FACBC PET/MRI in High Risk Prostate Cancer Patients

Kirsten Margrete Selnæs1, 2, Mattijs Elschot1, Brage Krüger-Stokke1, Øystein Størkersen1, Dag Linthoe Halvorsen1, Elise Sandsmark1, May-Britt Tessem1, 2, Sverre Langørgen1, Eirik Kjøbli1, Anders Angelsen1, Frode Willoch1, 2, Helena Bertillon1, 2, Siver Andreas Moestue1, 2, Tone Frost Bathy1, 2

1Department of Circulation and Medical Imaging, Norwegian University of Science and Technology, Trondheim, Norway; 2St. Olavs University Hospital, Trondheim, Norway; 3Clinic of Radiology and Nuclear Medicine, St. Olavs University Hospital, Trondheim, Norway; 4Clinic of Laboratory Medicine, St. Olavs University Hospital, Trondheim, Norway; 5Clinic of Surgery, St. Olavs University Hospital, Trondheim, Norway; 6Institute of Basic Medical Sciences, University of Oslo, Oslo, Norway; 7Aleris Cancer Center, Oslo, Norway; 8Department of Cancer Research and Molecular Medicine, Norwegian University of Science and Technology, Trondheim, Norway

08:24 1044. Hypoxia Modification During Prostate Radiotherapy: An Evaluation of Changes in the Tumour Microenvironment Using Multi-Parametric MRI (MpmRI)

Friday
Gradient Echo Signal Decays in Healthy and Cancerous Prostate at 3T Require a Gaussian Augmentation of the Mono-Exponential (GAME) Model


Utility of T2 Histogram Analysis in Active Surveillance of Prostate Cancer


Support Vector Neural Networks Versus Logistic Regression MR Based Diagnostic Model for Classification of Transition Zone Prostate Cancer

Nikolaos Dikais, Jokha Alkalbahi, Alex Kirkham, Clare Allen, Hashim Ahmed, Mark Emberton, Alex Freeman, Steve Halligan, Stuart Taylor, David Atkinson, Shonit Panwani.

Unsupervised Multi-Characteristic Framework for DW-MRI Prostate Cancer Localization


Correlation Between MRI-Derived Quantitative Biomarkers and Circulating Tumor Cells in Prostate Cancer

Radka Stoyanova, Sakhi Abraham, Adrian Breto, Zheng Ao, Anthony Williams, Jorge Torres-Munoz, Ram Datar, Richard Cote, Yosef Zeidan, Adrian Ishkanian, Matthew Abramowitz, Alan Pollack.

Assessment of Prostate Cancer Aggressiveness with Hyperpolarized Dual-Agent 3D Dynamic Imaging of Metabolism and Perfusion


Robust 3D 1H MRSI of the Prostate Without Endorectal Coil at 3T

Nassim Tayari, Isabell K. Steinseifer, Cai Xia Fu, Elisabeth Weiland, Jack J.A. van Asten, Tom W.J. Scheenen, Marnix C. Maas, Arend Heerschap.

Elastography

Constitution Hall 107 08:00-10:00 Moderators: Meng Yin, Ph.D. & T.B.A.
08:00 1052. Low Dynamic Mechanical Tissue Stimulation for High Resolution Magnetic Resonance Elastography: An In Vivo Feasibility Study in the Liver and the Brain

Florian Dietmann1, Sebastian Hirsch1, Jing Guo1, Jürgen Braun1, Ingolf Sack1

1Institute of Radiology, Charité, Berlin, Germany; 2Department of Medical Informatics, Charité, Berlin, Germany

08:12 1053. Magnetic Resonance Elastography of Slow and Fast Shear Waves Illuminates Differences in Shear and Tensile Moduli in Anisotropic Tissue

John L. Schmidt1, Dennis J. Tweten1, Maisie M. Mahoney2, Tally Portnoi1, Ruth J. Okamoto1, Joel R. Garbow1, Philip V. Bayly1, 2

1Mechanical Engineering and Materials Science, Washington University, St. Louis, MO, United States; 2Biomedical Engineering, Washington University, St. Louis, MO, United States; 3Electrical Engineering, Massachusetts Institute of Technology, Cambridge, MA, United States; 4Biomedical Magnetic Resonance Laboratory, Department of Radiology, Washington University, St. Louis, MO, United States

08:24 1054. SLIM-MRE Without Prolonged Echo Time for the Simultaneous Acquisition of the 3D Displacement Vector Applied to In Vivo Mouse Brain

Steven P. Kearney1, Spencer T. Brinker1, David A. Burns1, Thomas J. Royston2, Dieter Klatt2

1Mechanical and Industrial Engineering, University of Illinois at Chicago, Chicago, IL, United States; 2Bioengineering, University of Illinois at Chicago, Chicago, IL, United States

08:36 1055. Optimal Motion Encoding Scheme for MR Elastography

Temel Kaya Tasar1, Yifei Liu1, Dieter Klatt1, Richard L. Magin1, Thomas J. Royston3

1Radiology, Icahn School of Medicine at Mount Sinai, New York, New York, NY, United States; 2Mechanical Engineering Department, University of Illinois at Chicago, Chicago, IL, United States; 3Bioengineering Department, University of Illinois at Chicago, Chicago, IL, United States

08:48 1056. Motion Compensation and Super-Resolution in Magnetic Resonance Elastography

Guy Nie1, Ramin S. Sahebjavaher1, Septimiu E. Salcudean1

1Electrical and Computer Engineering, University of British Columbia, Vancouver, BC, Canada

09:00 1057. Stationary Super-Resolution Multi-Frequency Magnetic Resonance Elastography (SSR-MMRE) of the Human Brain

Eric Barnhill1, Ingolf Sack2, Jürgen Braun3, Jens Würfel4, Colin Brown5, Edwin van Beek1, Neil Roberts6

1Clinical Research Imaging Centre, The University of Edinburgh, Edinburgh, Scotland, United Kingdom; 2Mechanical Engineering and Materials Science, Washington University, St. Louis, MO, United States; 3Department of Medical Informatics, Charité, Berlin, Germany; 4Informatics, Charité Universitätmedizin, Berlin, Germany; 5Neuroradiology, Charité Universitätsmedizin, Berlin, Germany; 6Research and Development, The Mentholatum Company, East Kilbride, Scotland, United Kingdom

09:12 1058. Property Differences in White Matter Structures Due to Distinct Wave Propagation Directions in MR Elastography

Aaron T. Anderson1, Curtis L. Johnson2, Joseph L. Holtrop2, 3, Elijah EW Van Houten4, 5, Mathew DJ McGarry5, Keith D. Paulsen2, 6, Bradley P. Sutton1, 7, John G. Georgiadis1, 2

1Mechanical Science & Engineering, University of Illinois at Urbana-Champaign, Urbana, IL, United States; 2Beckman Institute for Advanced Science, University of Illinois at Urbana-Champaign, Urbana, IL, United States; 3Bioengineering, University of Illinois at Urbana-Champaign, Urbana, IL, United States; 4Tissue Research, New York, New York, NY, United States; 5Department of Radiology, Washington University, St. Louis, MO, United States; 6Biomedical Magnetic Resonance Laboratory, Department of Radiology, Washington University, St. Louis, MO, United States

09:24 1059. Viscoelasticity of Subcortical Gray Matter Structures

Curtis L. Johnson1, Hillary Schwab1, Mathew DJ McGarry2, Bradley P. Sutton1, Neal J. Cohen1

1Beckman Institute for Advanced Science and Technology, University of Illinois at Urbana-Champaign, Urbana, IL, United States; 2Thayer School of Engineering, Dartmouth College, Hanover, NH, United States

09:36 1060. Magnetic Resonance Elastography in the Presence of Iron Overload

Najat Salameh1, Mathieu Sarracanie1, 2, Christian Farrar3, David E J Waddington4, Bo Zhu1, 4, Arnaud Comment5, Matthew S. Rosen1, 2

1Radiology, Icahn School of Medicine at Mount Sinai, New York, New York, NY, United States; 2Department of Medical Informatics, Charité, Berlin, Germany; 3Department of Medical Informatics, Charité, Berlin, Germany; 4Research and Development, The Mentholatum Company, East Kilbride, Scotland, United Kingdom; 5Research and Development, The Mentholatum Company, East Kilbride, Scotland, United Kingdom

168
Simultaneous MR Elastography and Fat+Water Imaging
Joshua Trasko¹, Jennifer Kugel¹, Roger Grimm¹, Kevin Glaser¹, Armando Manduca¹, Philip Araoz², Richard Ehman¹
¹Mayo Clinic, Rochester, MN, United States

Multimodality Approach for Traumatic Brain Injury
Plenary Hall FG 08:00-10:00
Moderators: Roman Fleysher, Ph.D., & Toshiaki Taoka, M.D., Ph.D.

Magnetization Transfer Ratio Detects Myelin Loss in Thalamocortical Pathways More Consistently Than DTI After a Traumatic Brain Injury in Rat
Lauri Juhani Lehto¹, Alejandra Sierra¹, Asla Pitkänen¹, ², Olli Gröhn¹
¹Neurobiology, University of Eastern Finland, Kuopio, Eastern Finland, Finland; ²Neurology, Kuopio University Hospital, Kuopio, Eastern Finland, Finland

Voxelwise DTI Group Analysis in Professional Fighter Population
Wanyong Shin¹, Blessy Mathew¹, Banks Sarah⁷, Mark J. Lowe¹, Michael Phillips⁸, Modic T. Michael¹, Charles Bernick²
¹Imaging Institute, Cleveland Clinic Foundatoin, Cleveland, OH, United States; ²Lou Ruvo Center for Brain Health, Cleveland Clinic Foundation, Las Vegas, Nervada, United States; ³Neurological Institute, Cleveland Clinic Founcatoin, Cleveland, OH, United States

Widespread Hemodynamic Disturbance Following Experimental TBI
Justin Alexander Long¹, Lora Talley Watts¹, ², Wei Li¹, Qiang Shen¹, Shiliang Huang¹, Timothy Q. Duong¹, ³
¹Research Imaging Institute, UTHSCSA, San Antonio, TX, United States; ²Department of Cellular and Structural Biology, UTHSCSA, San Antonio, TX, United States; ³Department of Ophthalmology and Radiology, UTHSCSA, San Antonio, TX, United States

Neuroprotective Effects of Delayed Methylene Blue in Mild Traumatic Brain Injury
Lora Talley Watts¹, Justin Alexander Long¹, Qiang Shen¹, Timothy Q. Duong¹
¹Research Imaging Institute, University of Texas Health Science Center at San Antonio, San Antonio, TX, United States

Using Functional and Molecular MRI Techniques to Detect Neuroprotection by Pinocembrin in Rats Subjected to Traumatic Brain Injury
Wenzhu Wang¹, Dong-Hoon Lee², Hong Zhang², Jinjuan Zhou², Jian Wang¹
¹Department of Anesthesiology and Critical Care Medicine, Johns Hopkins University, Baltimore, MD, United States; ²Department of Radiology, Johns Hopkins University, Baltimore, MD, United States

Mapping of Glucose Concentration in Mild Traumatic Brain Injury Via GlucoCEST
Tsang-Wei Tu¹, Rashida Williams¹, Neekita Jikarash, L. Christine Turtzlo, Joseph Frank²
¹Radiology and Imaging Sciences, National Institutes of Health, Bethesda, MD - Maryland, United States; ²Radiology and Imaging Sciences, National Institutes of Health, MD, United States

Evidence of Altered Brain Chemistry After Repetitive Subconcussive Head Impacts
Alexander Peter Lin¹, ², Marc Muehlmann³, ², Sai Merugumala¹, Huijun Vicky Liao¹, Tyler Starr¹, David Kaufmann¹, Michael Mayinger¹, ², Denise Steffinger¹, Barbara Fisch¹, Susanne Karch¹, Florian Heinen¹, Birgit Ertl-Wagner¹, Maximilian Reiser¹, Robert A. Stern¹, Ross Zafonte³, Martha Shenton¹, ², Inga K. Koerte¹, ³
¹Center for Clinical Spectroscopy, Brigham and Women's Hospital, Boston, MA, United States; ²Psychiatry Neuroimaging Laboratory, Brigham and Women's Hospital, Boston, MA, United States; ³Institute of Physics of Biological Systems, École Polytechnique Fédérale de Lausanne, Lausanne, Switzerland

Evidence of Altered Brain Chemistry After Repetitive Subconcussive Head Impacts
1MGH/A.A. Martinos Center for Biomedical Imaging, Charlestown, MA, United States; 1Department of Physics, Harvard University, Cambridge, MA, United States; 2ARC Centre of Excellence for Engineered Quantum Systems, University of Sydney, Sydney, NSW, Australia; 3Harvard-MIT, Division of Health Sciences and Technology, Cambridge, MA, United States; 4Boston University Alzheimer's Disease Center, Boston University School of Medicine, Boston, MA, United States; 5Spaulding Rehabilitation Hospital, Massachusetts General Hospital, Boston, MA, United States; 6VA Boston Healthcare System, Boston, MA, United States
Friday

09:24 1069. 3D Echo-Planar Spectroscopic Imaging Based Metabolic Imaging and Assessment of Whole Brain Temperature in Brain Injuries
Bhanu Prakash KN1, Sanjay Kumar Verma1, Yevgen Marchenko1, Suresh Anand Sadananthan2, Yang Ming3, Sein Lwin4, Charmaine Childs4, Yeo Tseng Tsai3, Lu Jia5, Andrew Maudsley6, Sendhil Velan S1, 2
1Laboratory of Molecular Imaging, Singapore Bioimaging Consortium, A*STAR, Singapore; 2Singapore Institute for Clinical Sciences, A*STAR, Singapore; 3Division of Neurosurgery, National University Health Sciences, Singapore; 4Centre for Health and Social Care Research, Faculty of Health and Wellbeing, Sheffield Hallam University, United Kingdom; 5Combat Protection and Performance Lab, Defence Medical and Environmental Research Institute, DSO National Laboratories, Singapore; 6Miller School of Medicine, University of Miami, Miami, FL, United States

09:36 1070. Leveraging Abnormal Structural Integrity to Enhance Detection of Disease-Specific Alterations in Functional Connectivity.
Roman Fleysher1, Susan Sotardi1, Michael Stockman1, Namhee Kim1, David Gutman1, Jeremy Smith1, Craig A. Branch1, Michael L. Lipton1
1Gruss Magnetic Resonance Research Center, Department of Radiology, Albert Einstein College of Medicine, Bronx, NY, United States

09:48 1071. Mapping of Cerebral Oxidative Metabolism in Concussion Patients
Xiang He1, Serter Gumus2, Hoi-Chung Leung3, Parsey Ramin4, Mark Schweitzer1, Marion Hughes2, Lea Alhilali1, Saeed Fakhran2
1Department of Radiology, Stony Brook University, Stony Brook, NY, United States; 2Department of Radiology, University of Pittsburgh Medical Center, PA, United States; 3Department of Psychology, Stony Brook University, NY, United States; 4Department of Psychiatry, Stony Brook University, NY, United States

Plenary Session
Traumatic Brain Injury
Organizers: Robert E. Lenkinski, Ph.D.
Plenary Hall FG 10:30-11:30 Moderators: Robert E. Lenkinski, Ph.D. & Pratik Mukherjee, M.D., Ph.D.

10:30 1072. Traumatic Brain Injury in War
Geoffrey Ling

10:50 1073. Biomechanics & Pathophysiology of Traumatic Brain Injury
Ann C. McKee

Roland R. Lee

11:30 Adjournment
Modelling the Effect of White Matter Microstructure on Gradient Echo Signal Evolution

Benjamin Tendler, Samuel Wharton, Richard Bowtell

Sir Peter Mansfield Imaging Centre, University of Nottingham, Nottingham, Nottinghamshire, United Kingdom
**Plasma 10** 0013. Possible Contribution of the Extracellular Matrix to the MRI Contrast in the Brain
Yuhang Shi1, Markus Morawski2, Henrik Marschner2, Carsten Jäger2, Tobias Streubel1, Stefan Geyer1, Katja Reimann1, Andreas Schäfer1, Harald E. Möller1
1Max Planck Institute for Human Cognitive and Brain Sciences, Leipzig, Germany; 2Paul-Flechsig-Institute for Brain Research, University of Leipzig, Leipzig, Germany

**Plasma 11** 0014. Signatures of Microstructure in Conventional Gradient and Spin Echo Signals
Pippa Storey1, Sohae Chung2, Noam Ben-Eliezer1, Gregory Lemberski1, Yvonne W. Lui1, Dmitry S. Novikov1
1Radiology Department, New York University School of Medicine, New York, NY, United States

**Plasma 12** 0015. Dependance of the Apparent T2 on Magnetization Transfer
Peter van Gelderen1, Xu Jiang1, Jeff H. Duyn1
1AMRI, LFMI, NINDS, National Institutes of Health, Bethesda, MD, United States

**Plasma 13** 0016. Towards an Optimized and Standardized Amide Proton Transfer (APT) MRI Sequence and Protocol for Clinical Applications
Hye-Young Heo1, Yi Zhang1, Jochen Keupp2, Yansong Zhao3, Michael Schar1, Dong-Hoon Lee1, Peter C.M van Zijl4, Jinyuan Zhou1, 4
1Russell H Morgan Department of Radiology and Radiological Science, Johns Hopkins University, Baltimore, MD, United States; 2Philips Research, Hamburg, Germany; 3Philips Healthcare, Cleveland, OH, United States; 4F.M. Kirby Research Center for Functional Brain Imaging, Kennedy Krieger Institute, Baltimore, MD, United States

**Plasma 14** 0017. Can Nuclear Overhauser Enhancement Mediated Chemical Exchange Saturation Transfer (NOE-CEST) Offer a New Insight in Acute Stroke Diagnosis?
Yee Kai Tee1, George WJ Harston1, Nicholas Blockley1, Robert Frost1, Thomas W. Okell1, Sivarajan Thandeswaran2, Fintan Sheerin1, Peter Jezzard3, James Kennedy2, Stephen Payne2, Michael Chappell2
1Department of Mechatronics and BioMedical Engineering, Universiti Tunku Abdul Rahman, KL, Malaysia; 2Acute Stroke Programme, Radcliffe Department of Medicine, Oxford University, Oxfordshire, United Kingdom; 3Oxford Centre of Functional MRI of the Brain, Nuffield Department of Clinical Neurosciences, Oxford University, Oxfordshire, United Kingdom; 4Department of Neuroradiology, Oxford University Hospitals NHS Trust, Oxfordshire, United Kingdom; 5Department of Engineering Science, Institute of Biomedical Engineering, Oxford University, Oxfordshire, United Kingdom

**Plasma 15** 0018. GluCEST Imaging in a Primate Model of Alzheimer’s Disease
Julien Flamen1, 2, Charlotte Gary1, 2, James Koch1, 2, Fabien Piffert1, 2, Emmanuel Comoy1, Jean-Luc Picq1, Julien Valette1, 3, Marc Dhenain2, 3
1INSERM U27, CRC-MIRCen, Fontenay-aux-Roses, France; 2CEA/DSV/I2BM/MIRCen, Fontenay-aux-Roses, France; 3CNRS URA 2210, Fontenay-aux-Roses, France; 4Department of Psychology, University of Wisconsin, Oshkosh, WI, United States; 5CNRS-MHN UMR 7179, Brunoy, France; 6CEA/DSV/IMETI/SEPRA, Fontenay-aux-Roses, France; 7EA 2027, Université Paris 8, Saint-Denis, France

**Plasma 11** 0014. Signatures of Microstructure in Conventional Gradient and Spin Echo Signals
Pippa Storey1, Sohae Chung2, Noam Ben-Eliezer1, Gregory Lemberski1, Yvonne W. Lui1, Dmitry S. Novikov1
1Radiology Department, New York University School of Medicine, New York, NY, United States

**Power Pitch**

**Powerful Acquisition**

**Plasma 1** 0096. Field-Map-Free First-Order Dynamic Shimming
Yuhang Shi1, Johanna Vannesjo1, Karl Miller1, Stuart Clare1
1Oxford Centre for Functional Magnetic Resonance Imaging of the Brain, Oxford, United Kingdom

**Plasma 2** 0097. Spatial Motion Model Driven by the Noise Covariance Matrix of a Receive Array.
Anna Andreychenko1, Baudouin Denis de Senneville1, 2, Robin J.M. Naves1, Jan J.W. Lagendijk1, Cornelis A.T. van den Berg1
1Imaging Division, UMC Utrecht, Utrecht, Netherlands; 2IMB, UMR 5251 CNRS/University of Bordeaux, Bordeaux, France

**Plasma 3** 0098. Improved Reconstruction of Nonlinear Spatial Encoding Techniques with Explicit Intra-Voxel Dephasing
Kelvin Layton1, Stefan Kroboth1, Feng Jia1, Sebastian Littin1, Huijun Yu1, Maxim Zaitsev1
1Medical Physics, University Medical Center Freiburg, Freiburg, Baden-Württemberg, Germany
**Power Pitch**

**Plasma 4** 0999. Magnification Imaging by Radiofrequency-Induced Nonlinear Phase Encoding

**Jun Shen**

1NIMH, Bethesda, MD, United States

---

**Plasma 5** 0100. Reliable Phase Gradient Mapping and Phase Unwrapping for Low-SNR Images: A Novel Procedure Based on K-Space Energy Peak Quantification

**Pei-Hsin Wu**1, **Hisiao-Wen Chung**1, **Nan-Kuei Chen**1

1Institute of Biomedical Electronics and Bioinformatics, National Taiwan University, Taipei, Taiwan; 2Brain Imaging and Analysis Center, Duke University Medical Center, Durham, NC, United States

---

**Plasma 6** 0101. Orthogonally Combined Motion- And Diffusion-Sensitized Driven Equilibrium (OC-MDSDE) Preparation for Improved Vessel Signal Suppression in 3D TSE Imaging of Peripheral Nerves

**Barbara Cervantes**1, **Jinnan Wang**1, **Jan S. Bauer**1, **Hendrik Kooijman**1, **Peter Börnert**1, **Axel Haase**1, **Ernst J. Rummery**1, **Klaus Wörtl**1, **Dimitrios C. Karapetanious**1

1Diagnostic and Interventional Radiology, Technische Universität München, Munich, Germany; 2Philips Research North America, Seattle, WA, United States; 3Neuroradiologie, Technische Universität München, Munich, Germany; 4Philips Healthcare, Hamburg, Germany; 5Philips Research Laboratory, Hamburg, Germany; 6Zentralinstitut für Medizintechnik, Technische Universität München, Garching, Germany

---

**Plasma 7** 0102. Off-Resonance Positive Contrast Flow Imaging Using Extraneous Paramagnetic Biomarker-Induced Spin Labeling

**Jessica A.M. Bastiaansen**1, 2, **Helene Feliciano**1, 2, **Andrew Coristine**1, 2, **Matthias Stuber**1, 2

1Department of Radiology, University Hospital (CHUV) and University of Lausanne (UNIL), Lausanne, Switzerland; 2Center for Biomedical Imaging (CIBM), Lausanne, Switzerland

---

**Plasma 8** 0103. Hierarchically Semiseparable Generalized Encoding Matrix Compression for Fast Distortion Corrected Inverse Imaging

**Stephen F. Cauley**1, 2, **Kawin Setsompop**1, 2, **Dan Ma**1, **Yun Jiang**1, **Elfar Adalsteinsson**4, **Lawrence Wald**4, 5, **Mark Griswold**4, 5

1Athinoula A. Martinos Center for Biomedical Imaging, MGH/HST, Charlestown, MA, United States; 2Dept. of Radiology, Harvard Medical School, Boston, MA, United States; 3Dept. of Biomedical Engineering, Case Western Reserve University, Cleveland, OH, United States; 4Harvard-MIT Div. of Health Sci. and Tech., Dept. of Electrical Engineering and Computer Science, Cambridge, MA, United States; 5Dept. of Radiology, Case Western Reserve University and University Hospitals of Cleveland, Cleveland, OH, United States

---

**Plasma 9** 0104. Accelerated Multiparameter Mapping Using Low-Rank Tensors

**Anthony G. Christodoulou**1, **Zhi-Pei Liang**1

1Beckman Institute and Department of Electrical and Computer Engineering, University of Illinois at Urbana-Champaign, Urbana, IL, United States

---

**Plasma 10** 0105. Use of Pattern Recognition for Unaliasing Simultaneously Acquired Slices in Simultaneous MultiSlice Magnetic Resonance Fingerprinting

**Yun Jiang**1, **Dan Ma**1, **Himanshu Bhat**2, **Huichang Ye**3, 4, **Stephen F. Cauley**1, **Lawrence L. Wald**4, 5, **Kawin Setsompop**1, **Mark A. Griswold**1, 6

1Department of Biomedical Engineering, Case Western Reserve University, Cleveland, OH, United States; 2Siemens Medical Solutions USA Inc., Charlestown, MA, United States; 3Dept. of Radiology, Massachusetts General Hospital, Athinoula A. Martinos Center for Biomedical Imaging, Charlestown, MA, United States; 4Department of Biomedical Engineering, Zhejiang University, Hangzhou, Zhejiang, China; 5Department of Electrical Engineering and Computer Science; Harvard-MIT Division of Health Sciences a, MIT, Cambridge, MA, United States; 6Department of Radiology, Case Western Reserve University, Cleveland, OH, United States

---

**Plasma 11** 0106. Non-CPMG Multi-Spectral PROPPELLER for Diffusion-Weighted Imaging Near Metal Implants

**Kevin M. Koch**1, **Ajeet Gaddipati**1, **Ali Ersoz**1, 2, **Robert Peters**1, **Valentina Taviani**1, **Brian A. Hargreaves**1, **L. Tugan Muftuler**1

1Biophysics and Radiology, Medical College of Wisconsin, Milwaukee, WI, United States; 2GE Healthcare, Milwaukee, WI, United States; 3Biophysics, Medical College of Wisconsin, Milwaukee, WI, United States; 4Radiology, Stanford University, Stanford, CA, United States; 5Neurosurgery and Biophysics, Medical College of Wisconsin, Milwaukee, WI, United States
Coronary endothelial function (CEF) can be assessed non-invasively by measuring the vasodilatation of the coronary arteries in response to stimuli such as acetylcholine. Our framework can accurately assess CEF and provide results equivalent to those of the standard ECG-gated technique.

In Vivo Simultaneous Acquisition of Diffusion Tensor Imaging (DTI) and MR Elastography (MRE) in Mouse Brain

Ziying Yin, Steven Kearney, Richard L. Magin, Dieter Klatt
1Richard and Loan Hill Department of Bioengineering, University of Illinois at Chicago, Chicago, IL, United States; 2Department of Mechanical and Industrial Engineering, University of Illinois at Chicago, Chicago, IL, United States

Rapid and Accurate PTX B1 Mapping Using 3DREAM with Dual Interferometry

Daniel Brenner, Desmond H. Y. Tse, Patrick J. Ledden, Claudine Neumann, Tony Stöcker
1German Center for Neurodegenerative Diseases (DZNE), Bonn, Germany; 2Faculty of Psychology, Maastricht University, Maastricht, Netherlands; 3Department of Radiology, Maastricht University Medical Centre, Maastricht, Netherlands; 4Nova Medical, Inc., Wilmington, MA, United States; 5Department of Physics and Astronomy, University of Bonn, Bonn, Germany

Accelerating Bloch-Siegert B1+ Mapping Using Modified Iterative SENSE and ESPRiT (iSENSE)

Mohammad Mehdi Khalighi, Peng Lai
1Applied Science Lab, GE Healthcare, Menlo Park, CA, United States

Gradient-Induced Voltages on 12-Lead ECGs During High-Duty-Cycle MRI Sequences and a Theoretically Based Method to Remove Them

HuaLei Zhang, Zion Tsz ho Tse, Charles L. Dumoulin, Ronald Watkins, Wei Wang, Jay Ward, Raymond Kwong, William Stevenson, Ehud J. Schmidt
1Brigham and Women’s Hospital, Boston, MA, United States; 2University of Georgia, GA, United States; 3Cincinnati Children’s Hospital Medical Center, Cincinnati, United States; 4Stanford University, CA, United States; 5E-TROLZ, Inc, Andover, MA, United States

Automatic Detection of Inflammatory ‘hotspots’ in Abdominal Aortic Aneurysms to Identify Patients at Risk of Aneurysm Expansion and Rupture

1Clinical Research Imaging Centre, University of Edinburgh, Edinburgh, United Kingdom; 2Centre for Cardiovascular Science, University of Edinburgh, Edinburgh, United Kingdom; 3Toshiba Medical Visualization System - Europe, Edinburgh, United Kingdom

In-Vivo Lipid Quantification in Carotid Plaques Using Multi-Slice T2 Mapping: Histological Validation

Luca Biasotti, Joshua T. Choi, Lingqin Li, Ashok Handa, Peter Jezzard, Robin P. Choudhury, Matthew D. Robson
1AVIC, Radcliffe Department of Medicine, University of Oxford, Oxford, United Kingdom; 2OCMR, Radcliffe Department of Medicine, University of Oxford, Oxford, United Kingdom; 3MRIB, Nuffield Department of Clinical Neurosciences, University of Oxford, Oxford, United Kingdom; 4Nuffield Department of Surgical Sciences, University of Oxford, Oxford, United Kingdom

Coronary Endothelial Function Assessment Using Self-Gated Cardiac Cine MRI with Golden Angle Acquisition and K-T Sparse SENSE

Jerome Yerly, Giulia Ginami, Giovanna Nordio, Matthias Stuber
1Department of Radiology, University Hospital (CHUV) and University of Lausanne (UNIL), Lausanne, Switzerland; 2Center for Biomedical Imaging (CIBM), Lausanne, Switzerland
The effects of noise have been well described in neurological DTI, but the specific effects on cardiac DTI are less ... and underestimated at high b-values. Complex averaging reduces underestimation of MD and FA at high b-values.

We have modified a 3D LGE sequence for LGE cardiac MRI of patients with implanted cardiac devices by implementing a ... by increasing the bandwidth of the RF excitation pulse. We present results from phantom, volunteer, and patient studies.

MR simulations have been used in a limited scope in the past. In this study, we propose CMR-footprinting, a new method ... demonstrated overall T1 accuracy improvement and good performance even for long T1s with a zero seconds pause.

In this study, we evaluate the usage of Parallel Imaging and Compressed Sensing to accelerate a recently proposed four ... is implemented in C/C++ that allows clinically acceptable reconstruction time, make it feasible for practical usage.

3D whole-heart magnetic resonance angiography (CMRA) with high isotropic resolution allows the assessment of the complete ... congenital malformations and has great potential for screening, e.g. to assess the risk of sudden cardiac death.
Power Pitch

1 Developmental Biology, University of Pittsburgh, Pittsburgh, PA, United States; 2 Rangos Research Center Imaging Core, Children’s Hospital of Pittsburgh of UPMC, Pittsburgh, PA, United States; 3 Psychology, Carnegie Mellon University, Pittsburgh, PA, United States; 4 Pittsburgh NMR Center for Biomedical Research, Carnegie Mellon University, Pittsburgh, PA, United States

Plasma 14 0187. Mechanical Activation Time Mapping in Heart Failure Patients with and Without Myocardial Scar Using Cine DENSE MRI
Daniel A. Auger1, Sophia X. Cui1, Xiao Chen1, Jeffrey W. Holmes1, Kenneth C. Bilchick2, Frederick H. Epstein1, 3
1 Department of Biomedical Engineering, University of Virginia, Charlottesville, VA, United States; 2 Department of Medicine, Cardiovascular Medicine, University of Virginia, Charlottesville, VA, United States; 3 Department of Radiology and Medical Imaging, University of Virginia, Charlottesville, VA, United States

Plasma 15 0188. A Bayesian Approach for Accelerated Phase Contrast MRI
Adam Rich1, Lee C. Potter2, Ning Jin3, Joshua Ash1, Orlando Simonetti1, Rizwan Ahmad1
1 Electrical and Computer Engineering, The Ohio State University, Columbus, OH, United States; 2 Siemens Medical Solution, Columbus, OH, United States; 3 Davis Heart and Lung Research Institute, The Ohio State University, Columbus, OH, United States

Alex Frydrychowicz1, Alejandro Roldan-Alzate2, Emily Winslow1, Dan Consigny3, Camilo Campo1, Utaroh Motosugi2, Kevin M. Johnson1, Christopher J. Francois2, Oliver Wieben2, Scott B. Reeder3
1 Clinic for Radiology and Nuclear Medicine, University Hospital Schleswig-Holstein, Campus Lübeck, Lübeck, Schleswig-Holstein, Germany; 2 University of Wisconsin - Madison, WI, United States

Power Pitch

ASL Methods: Neuro
Power Pitch Theatre, Exhibition Hall Tuesday 10:00-11:00
Moderator: Susan T. Francis, Ph.D. & Jun Hua, Ph.D.

Plasma 1 0264. Time-And Vessel Encoded PCASL: A Free Lunch with All the Trimmings
Thomas W. Okelt1, Wouter Tienisse2, 3, Michael A. Chappell1, 4, Matthias J.P. van Osch1, 3
1 FMRIB Centre, Nuffield Department of Clinical Neurosciences, University of Oxford, Oxford, Oxfordshire, United Kingdom; 2 dept. of Radiology, C.J. Gorter Center for High Field MRI, Leiden University Medical Center, Leiden, Netherlands; 3 Leiden Institute for Brain and Cognition, Leiden, Netherlands; 4 IBME, Department of Engineering Sciences, University of Oxford, Oxford, United Kingdom

Plasma 2 0265. A Novel Multiphase Scheme for Simultaneous ASL and BOLD Acquisition
Paula Croal1, Emma Hall1, Penny Gowland1, Susan Francis1
1 Sir Peter Mansfield Imaging Centre, Department of Physics & Astronomy, The University of Nottingham, Nottingham, Nottinghamshire, United Kingdom

Plasma 3 0266. Wedge-Shaped Slice-Selective Adiabatic Inversion Pulse for Bolus Temporal Width Control in Pulsed Arterial Spin Labeling
Jia Guo1, Richard B. Buxton1, Eric C. Wong1, 2
1 Radiology, UC San Diego, La Jolla, CA, United States; 2 Psychiatry, UC San Diego, La Jolla, CA, United States

Plasma 4 0267. Multiband Background Suppressed Turbo-FLASH Imaging with CAIPIRINHA for Whole-Brain Distortion-Free PCASL Imaging at 3 and 7T
Yi Wang1, Steen Moeller2, Xiufeng Li2, An T. Vu2, Kate Krasileva1, Kamil Ugurbil2,essa Yacoub2, Danny JJ Wang1
1 Neurology, UCLA, Los Angeles, CA, United States; 2 Center of Magnetic Resonance Research, University of Minnesota, MN, United States

Plasma 5 0268. Single-Shot 3D-EPI PCASL with Background Suppression
Markus Boland1, Rüdiger Stirnberg1, Daniel Brenner1, Tony Stöcker1, 2
1 German Center for Neurodegenerative Diseases (DZNE), Bonn, Germany; 2 Department of Physics and Astronomy, University of Bonn, Germany
Conventional Arterial Spin Labeling (ASL) sequence is limited to the scheme of control/label pairing pulse and long post-labeling delay of a conventional pseudo-continuous ASL sequence and by adapting the orientation of the image volume if necessary. Preliminary scan result in healthy volunteers and in vascular disease patient showed promises of this novel technique.

A new signal model for time-encoded ASL-data in combination with Bayesian inference is proposed. It allows gaining perfusion quantification and reduces the need for motion correction. This makes the approach especially suited for clinical setups where data corruption e.g. by motion is common.

Dynamic arterial spin labeling (ASL) permits the tracking of a tagged blood bolus and reveals rich dynamic perfusion patterns acquired in 20 seconds per perfusion phase, with high quality perfusion images and accurate parameter quantification.

Arterial Spin Labeling (ASL) is increasingly used in clinical studies of cerebral perfusion and has shown its validity in the assessment of cerebral perfusion. However, motion can still be a limitation to the accuracy of perfusion labeling and measurement reliability. We propose a vessel-encoded pseudo-continuous arterial spin labeling (VEPCASL) that can trace the flow patterns of individual feeding vessels. This is achieved by accounting for off-resonance at the vessel locations into a method for optimizing the encoding schemes for multiple vessels.

Arterial spin labeling (ASL) is a non-invasive method to measure blood perfusion. One limitation to ASL is that motion compensation is required in order to avoid loss of signal. Prospective motion correction for artefact reduction in pseudo-continuous arterial spin labelling with a 3D GRASE readout was found. This makes the approach especially suited for clinical setups where data corruption e.g. by motion is common.

An off-resonance correction method for vessel-encoded pseudo-continuous arterial spin labeling using the optimized encoding scheme was proposed. It allows gaining perfusion data from time encoded data. This approach is particularly useful in clinical settings where data corruption due to motion is common.

Dynamic 3D ASL in 20 Seconds Per Frame with Model-Based Image Reconstruction was implemented. This approach allows acquisition of high-resolution perfusion images within a short scan time, enabling its feasibility in clinical settings.

Subtraction free arterial spin labeling: A new Bayesian-inference based approach for gaining perfusion data from time encoded data was demonstrated. This approach reduces the need for control/label pairing and post-labeling delay, making it more suitable for clinical use.

Arterial spin labeling without control/label pairing and post-labeling delay: An MR fingerprinting implementation was demonstrated. This approach allows for fast and efficient measurement of cerebral perfusion with reduced acquisition time.

Diffusion sensitivity of 3D-GRASE in ASL perfusion was studied. This approach allows for improved signal-to-noise ratio and reduced blurring, making it particularly useful for high-resolution perfusion imaging.

Power Pitch
The purpose of this work is to analyse the impact of diffusion time in estimating axonal density and axonal diameters of human white matter. In this study, we show that estimates of axonal diameter in agreement with histology can be obtained. 

In this work we explore the possibility for performing micro-anisotropy measurements on fibers with sharp undulations at short length scales. Our method is able to detect curvature and microscopic anisotropy of neurites at short length scales, offering a novel contrast for gray matter complexity.

Spherical Deconvolution (SD) is a model-based approach to retrieve angular fiber information from HARDI data. This work demonstrates the potential of SD for high angular resolution diffusion imaging of the human brain. Fiber peak detection and tractography results are shown for both simulated and in vivo human subject data.

For high-resolution diffusion-weighted imaging, which is used for microstructural characterization of human brain in vivo, it is essential to correct for T2 blurring and geometric distortions. This method enables a clear and detailed delineation of human brain structures in vivo.

Single-shot diffusion-weighted MRI of the brainstem is hampered by B0 off-resonance distortions. This work presents a method for robust and SNR efficient diffusion imaging of the brainstem at high field strength, overcoming the limitations of previous approaches.

Sub-millimeter in vivo diffusion imaging (DI) is extremely challenging. This work proposes a new slice encoding technique that enables faster and more efficient diffusion imaging of the brainstem, while maintaining high signal-to-noise ratio.

DwSTEAM
Assessing Diffusion Time Effects on Microstructural Comparment Estimates in Human White Matter Using 7T
 Jonathan I. Sperl1, Tim Sprenger, Ek T. Tan3, Marion I. Menzel1, Christopher J. Hardy3
1Martinos Center for Biomedical Imaging, Charlestown, MA, United States; 2Massachusetts Institute of Technology, Cambridge, MA, United States; 3Brigham and Irene Schwartz Center for Biomedical Imaging, Department of Radiology, New York University School of Medicine, New York, NY, United States

Diffusion Imaging of the Human Brain

In Vivo

Higher-Order Spin-Echo Selection for Reduced FOV Diffusion Imaging of the Brainstem at 7T
Bertram Jakob Wilm1, Signe Johanna Vannesjo1, Klaus Paul Pruessmann2
1University and ETH Zurich, Zurich, Switzerland

Navigated PSF Mapping for Distortion-Free High-Resolution In-Vivo Diffusion Imaging at 7T
Myung-Ho In1, Posnansky Oleg, Oliver Speck1
1Biomedical Magnetic Resonance, Otto-von-Guericke University, Magdeburg, Germany

3D Myofiber Reconstruction from In Vivo Cardiac DTI Data Through Extraction of Low Rank Modes
Martin Genet1, Constantin von Deuster1, 2, Christian T. Stoeck1, 2, Sebastian Kozerke1, 2
1Institute of Biomedical Engineering, ETHZ, Zurich, Switzerland; 2Imaging Sciences and Biomedical Engineering, KCL, London, United Kingdom

In Vivo and Ex Vivo Characterization of Extracellular Space (ECS) in Mouse GBM Using PGSE and OGSE
Olivier Reynaud1, 2, Kerriyanne V. Winters1, 2, Dung Minh Hoang1, 2, Youssuf Zaim Wadghiri1, 2, Dmitry S. Novikov1, 2, Sungheon Gene Kim1, 2
1Center for Advanced Imaging Innovation and Research (CAI2R), Department of Radiology, New York University School of Medicine, New York, NY, United States; 2Bernard and Irene Schwartz Center for Biomedical Imaging, Department of Radiology, New York University School of Medicine, New York, NY, United States

Detection of Curvature and Microscopic Anisotropy of Neurites at Short Length Scales
Jonathan Scharf Nielsen1, Tim B. Dyrby1, Henrik Lundell1
1Danish Research Centre for Magnetic Resonance, Copenhagen University Hospital Hvidovre, Hvidovre, Denmark

Assessing Diffusion Time Effects on Microstructural Comparment Estimates in Human White Matter Using 7T
DwSTEAM
Silvia De Santis1, 2, Derek K. Jones1, Alard Roebroeck2
1CUBRIC Cardiff University, Cardiff, United Kingdom; 2Maastricht University, Maastricht, Netherlands

Why Should Axon Diameter Mapping Use Low Frequency OGSE? Insight from Simulation
Ivana Drobnjak1, Hui Zhang1, Andraida Ianus1, Enrico Kaden1, Daniel C. Alexander1
1Centre for Medical Image Computing, Department of Computer Science, University College London, London, United Kingdom
MEMRI can be used for different applications such as tracing neuronal connections. However, the detailed mechanisms ... This hippocampal slice culture should be useful to study mechanisms of Mn transport in neurons and across synapses.

Citicoline as a Theranostic Agent Detected by CEST MRI

A Generative Model of White Matter Axonal Orientations Near the Cortex

Dynamic Seeding: Informed Placement of Streamline Seeds in Whole-Brain Fibre-Tracking

A Machine Learning Based Approach to Fiber Tractography

Evaluating a Semi-Continuous Multi-Compartmental Intra-Voxel Incoherent Motion (IVIM) Model in the Brain: How Does the Method Influence the Results in IVIM?

Tissue-Type Segmentation Using Non-Negative Matrix Factorization of Multi-Shell Diffusion-Weighted MRI Images

On Evaluating the Accuracy and Biological Plausibility of Diffusion MRI Tractograms

A Machine Learning Based Approach to Fiber Tractography

MEMRI of Organotypic Rat Hippocampal Slice Cultures
Plasma 3  0416. Radical-Free Mixture of Co-Polarized 13C-Metabolites for Probing Separate Biochemical Pathways Simultaneously In Vivo by Hyperpolarized 13C MR
Jessica AM Bastiaansen1, 2, Hikari AI Yoshithard1, 4, Andrea Capozzi1, Juerg Schwitter4, Matthew E. Merritt5, Arnaud Comment1
1Department of Radiology, University Hospital (CHUV) and University of Lausanne (UNIL), Lausanne, Switzerland; 2Center for Biomedical Imaging (CIBM), Lausanne, Switzerland; 3Institute of Physics of Biological Systems, EPFL, Lausanne, Switzerland; 4Division of Cardiology and Cardiac MR Center, University Hospital Lausanne (CHUV), Lausanne, Switzerland; 5Advanced Imaging Research Center, Department of Radiology, Molecular Biophysics, Biomedical Engineering, University of Texas Southwestern Medical Center, Dallas, TX, United States

Plasma 4  0417. In Vivo PH Imaging of Mouse Kidneys Using a Frequency-Dependent ParaCEST Agent
Yunkai Wu1, Shanrong Zhang1, Todd C. Soesbe1, A. Dean Sherry1, 2
1Advanced Imaging Research Center, UT Southwestern Medical Center, Dallas, TX, United States; 2Department of Chemistry, The University of Texas at Dallas, Richardson, TX, United States

Plasma 5  0418. Image-Guided Delivery of Liposomal Nano-Constructs Targeting Tumor Vascularization
Sudath Hapuarachchige1, Yoshinori Kato1, 2, Wenlan Zhu1, Joseph M. Backer3, Marina V. Backer3, Susanta K. Sarkar1, Dmitri Artemov1, 5
1Department of Radiology & Radiological Science, Johns Hopkins University School of Medicine, Baltimore, MD, United States; 2Life Science Tokyo Advanced Research Center, Hoshi University, Japan; 3Bruker Biospin, Billerica, MA, United States; 4Sanofi Oncology, Cambridge, MA, United States; 5Department of Oncology, Johns Hopkins University School of Medicine, Baltimore, MD, United States

Plasma 6  0419. Micro-MRI and Fluorescence Imaging of Myeloperoxidase Activity in Human Brain Vascular Pathology
Dung Minh Hoang1, Matthew J. Gounis1, Youssef Zaim Wadghiri1, Andrea Capozzi1, Juerg Schwitter4, Matthew E. Merritt5, Arnaud Comment1
1Department of Radiology, University Hospital (CHUV) and University of Lausanne (UNIL), Lausanne, Switzerland; 2Center for Biomedical Imaging (CIBM), Lausanne, Switzerland; 3Institute of Physics of Biological Systems, EPFL, Lausanne, Switzerland; 4Division of Cardiology and Cardiac MR Center, University Hospital Lausanne (CHUV), Lausanne, Switzerland; 5Advanced Imaging Research Center, Department of Radiology, Molecular Biophysics, Biomedical Engineering, University of Texas Southwestern Medical Center, Dallas, TX, United States

Plasma 7  0420. Molecular Imaging Studies of a Robust Gd-Sucrose Scaffold Applied to MR-Colonography
Gary V. Martinez1, Parastou Foroutan1, Valerie E. Moberg1, Suryakiran Navath1, Roha Afzal1, Robert J. Gillies1, Eugene A. Mash1, David L. Morse1
1Department of Cancer Imaging and Metabolism, H. Lee Moffitt Cancer Center & Research Institute, Tampa, FL, United States; 2Bruker Biospin, Billerica, MA, United States; 3Department of Chemistry and Biochemistry, University of Arizona, Tucson, AZ, United States

Plasma 8  0421. Two-Dimensional Shaped Voxel MRS in the Human Brain at 3 T
Patrick Wasmann1, Ralf Mokle1, Florian Schubert1, Andre Kuehne1, Tomasz Dawid Lindel1, Frank Seifert1, Oliver Speck1, Bernd Ittermann1
1Physikalisch-Technische Bundesanstalt (PTB), Braunschweig und Berlin, Berlin, Germany; 2Medical University of Vienna, Vienna, Austria; 3Otto-von-Guericke-University, Magdeburg, Germany

Plasma 9  0422. In Vivo Quantification of ATP Synthesis Rates in Rat Skeletal Muscle by 31P Spectroscopic Magnetic Resonance Fingerprinting
Charlie Yi Wang1, Yuchi Liu1, Mark Alan Griswold1, 12, Xin Yu, 12
1Biomedical Engineering, Case Western Reserve University, Cleveland, OH, United States; 2Radiology, Case Western Reserve University, Cleveland, OH, United States

Plasma 10  0423. 13C MRS of the Brain Without Decoupling
Keshav Datta1, Arif Wibowo1, Stephen R. Lynch1, Daniel Spielman3
1Dept. of Electrical Engineering, Stanford University, Stanford, CA, United States; 2Dept. of Chemistry, Stanford University, CA, United States; 3Dept. of Radiology, Stanford University, Stanford, CA, United States

Plasma 11  0424. In Vivo Assessment of Intracellular NAD+/NADH Redox State in Human Brain at 4 Tesla
Ming Lu1, Wei Chen1, Xiao-Hong Zhu1
1Center for Magnetic Resonance Research, University of Minnesota Medical School, Minneapolis, MN, United States
Plasma 12 0425. Diffusion-Weighted MR Spectroscopy Feasibility in Clinical Studies at 3 T: The Effect of Reducing the Acquisition Time Investigated by Bootstrapping
Francesca Branzoli1, 2, Daniel Garcia-Lorenzo1, 2, Romain Valabrégue1, 2, Stephane Lehéry1, 2
1Institut du Cerveau et de la Moelle épinière – ICM, Centre de Neuroimagerie de Recherche – CENIR, Paris, France; 2Sorbonnes Université, Université Pierre et Marie Curie and Inserm UMR-S1127; CNRS, UMR 7225, Paris, France

Plasma 13 0426. Metabolome Profiling by HRMAS NMR Spectroscopy of Hyperfunctioning Parathyroid Glands
Stéphane Battini1, Alessio Imperiale1, 2, David Taieb1, Karim Elbayed1, Frédéric Sebag1, Laurent Brunaud1, Izzie-Jacques Namer1, 6
1Cube laboratory UMR 7357, University of Strasbourg/CNRS and FMTS, Strasbourg, France; 2University Hospitals of Strasbourg, Department of Biophysics and Nuclear Medicine, Hautepiere Hospital, Strasbourg, France; 3La Timone University Hospital, European Center for Research in Medical Imaging, Aix-Marseille University, Marseille, France; 4Department of Endocrine Surgery, La Timone University Hospital, Aix-Marseille University, Marseille, France; 5Department of Digestive, Hepato-Biliary and Endocrine Surgery, Brabois University Hospital, Nancy, France; 6University Hospitals of Strasbourg, Department of Biophysics and Nuclear Medicine, Hautepiere Hospital, Strasbourg, France

Plasma 14 0427. Metabolomic Assessment of Succinate Dehydrogenase Dysfunction in Pheochromocytomas and Paragangliomas by 1H-HRMAS NMR Spectroscopy: Clinical and Pathophysiological Implications
Alessio Imperiale1, 2, Stéphane Battini1, Philippe Roche1, François-Marie Moussault1, Ercument A Cicek3, Frédéric Sebag1, Laurent Brunaud1, Anne Barlier1, Karim Elbayed1, Anderson Loundou1, Philippe Bachellerie1, Bernard Goichot1, Constantine A Stratakis1, 2, Karel Pacak1, David Taieb1, Izzie-Jacques Namer1, 6
1Cube laboratory UMR 7357, University of Strasbourg/CNRS and FMTS, Strasbourg, France; 2University Hospitals of Strasbourg, Department of Biophysics and Nuclear Medicine, Hautepiere Hospital, Strasbourg, France; 3Integrative Structural & Chemical Biology (iSCB) & INT-3D Molecular Modeling Platform, Cancer Resear, CNRS UMR7258; INSEMER U1068; Institut Paoli Calmettes; Aix-Marseille University UM105, Marseille, France; 4Lan Center for Computational Biology, School of Computer Science, Carnegie Mellon University, 5000 Forbes Ave, Pittsburgh, PA 15222, United States; 5Department of Endocrine Surgery, La Timone University Hospital, Aix-Marseille University, Marseille, France; 6Department of Digestive, Hepato-Biliary and Endocrine Surgery, Brabois University Hospital, Nancy, France; 7Laboratory of Biochemistry and Molecular Biology, Conception Hospital, Aix-Marseille, University, Marseille, France; 8Department of Public Health, Aix-Marseille University, Marseille, France; 9Department of Visceral Surgery and Transplantation, Hautepiere Hospital, University Hospitals of Strasbourg, Strasbourg, France; 10Department of Internal Medicine, Diabetes and Metabolic Disorders, Hautepiere Hospital, University Hospitals of Strasbourg, Strasbourg, France; 11Section on Genetics and Endocrinology (SEGEN), Program on Developmental Endocrinology and Genetics (PDEGEN), Bethesda, United States; 12Eunice Kennedy Shriver National Institute of Child Health and Human Development, National Institutes of Health, Bethesda, United States; 13Program in Reproductive and Adult Endocrinology, Eunice Kennedy Shriver National Institute of Child Health and Human Development, Bethesda, United States; 14La Timone University Hospital, European Center for Research in Medical Imaging, Marseille, France

Plasma 15 0428. Adapting Volumetric 1H Echo-Planar Spectroscopic Imaging of the Human Brain from 3 to 7 Tesla
Karim Snoussi1, 2, Joseph S. Gillen1, 2, Michael Schär1, 2, Richard A.E. Edden1, 2, Andrew A. Maudsley3, Peter B. Barker1, 2
1IKEM, Prague, Czech Republic; 2Institute of Physiology, Academy of Sciences of the Czech Republic, Prague, Czech Republic; 3University of Miami, Miami, FL, United States

Power Pitch
Neuro Power Posters

Power Pitch Theatre, Exhibition Hall Wednesday 10:00-11:00

Moderators: Bruce R. Rosen, M.D., Ph.D. & Samantha J. Holdsworth, Ph.D.

Plasma 1 0507. MR Imaging of Crocodilians Can Help for Brain Volume Estimation of Some Extinct Vertebreactes
Daniel Jirak1, Jiri Janacek2, Martin Kundrat1
1IKEM, Prague, Czech Republic; 2Institute of Physiology, Academy of Sciences of the Czech Republic, Prague, Czech Republic; 3Evolutionary Biology Centre, Uppsala University, Uppsala, Sweden

Plasma 2 0508. Improved FDG Kinetic Analysis in Brain Tumors Through Simultaneous MR/PET Acquisition
Anne-Kristin Vahle1, 2, Hari Krishna Rallapalli1, 2, Arien Mikheev1, 2, Thomas Koesters1, 2, Kai Tobias Block1, 2, Jean Logan1, 2, Timothy Shepherd1, 2, Girish Fatterpekar1, 2, David Paul1, Fernando Emilio Boada1, 2
1Center for Advanced Imaging Innovation and Research, Dept. of Radiology, New York University School of Medicine, New York, NY, United States; 2Center for Biomedical Imaging, Dept. of Radiology, New York University School of Medicine, New York, NY, United States; 3Siemens Healthcare, New York, NY, United States
Ilieana O. Jelescu1, Timothy M. Shepherd1, Dmitry S. Novikov1, Yu-Shin Ding1, Thomas Koesters1, Kent P. Friedman1, Jacqueline Smith1, James E. Galvin1, Els Fieman2, Arash Nazeri1, 2, M. Mallar Chakravarty3, 4, David J. Rotenberg1, Tarek K. Rajji1, Yogesh Rathi5, Oleg V. Michailovich6, Aristotle N. Voueskos1
1Center for Biomedical Imaging, Dept. of Radiology, NYU Langone Medical Center, New York, United States; 2Alzheimer Disease Center, Deps. of Neurology, Psychiatry and Population Health, NYU Langone Medical Center, New York, United States

Plasma 4  0510. Magnetization Prepared ZTE to Address Multiple Diagnostic Contrasts 
Peter Börnert1, 2, Jan Groen1, Jouke Smink1, Kay Nehrke1
1Philips Research, Hamburg, Germany; 2Radiology, LUMC, Leiden, Netherlands; 3Philips Healthcare, Best, Netherlands

Plasma 5  0511. Ultrashort Echo Time (UTE) Imaging of Myelin: T2* Analysis 
Vipul R. Sheth1, Hongda Shao1, Jun Chen1, Jody Corey-Bloom2, Graeme M. Bydder1, Jiang Du1
1Radiology, University of California, San Diego, CA, United States; 2Neurosciences, University of California, San Diego, CA, United States

Plasma 6  0512. Effects of Real-Time fMRI Neurofeedback of the Amygdala Specific to Major Depressive Disorder 
Vadim Zotev1, Kymberly D. Young1, Raquel Phillips1, Masaya Misaki1, Jerzy Bodurka1, 2
1Laureate Institute for Brain Research, Tulsa, OK, United States; 2College of Engineering, University of Oklahoma, Tulsa, OK, United States

Plasma 7  0513. Reduced Connectivity in 7-Year-Old Preterm Brain Networks Relates to Adverse Perinatal Events, Cognitive and Motor Impairment 
Deanne Thompson1, 2, Jian Chen1, Richard Beare1, Christopher Adamson1, Zohra Ahmadzai1, Claire Kelly1, Terrie Inder1, Lex Doyle1, 2, Marc Seal1, Peter Anderson1, 2
1Murdoch Childrens Research Institute, Parkville, Victoria, Australia; 2Florey Institute of Neuroscience and Mental Health, Parkville, Victoria, Australia; 3Brigham and Women’s Hospital, Massachusetts, United States; 4Royal Women’s Hospital, Parkville, Victoria, Australia; 5Paediatrics, University of Melbourne, Parkville, Victoria, Australia

Plasma 8  0514. Effect of Repetitive Transcranial Magnetic Stimulation on fMRI Resting-State Connectivity in Multiple System Atrophy 
Ying-hui Chou1, Hui You2, Han Wang2, Yan-Ping Zhao2, Bo Hou3, Nan-kuei Chen1, Feng Feng2
1Duke Brain Imaging and Analysis Center, Durham, NC, United States; 2Peking Union Medical College Hospital, Beijing, China

Plasma 9  0515. In-Vivo Evidence of Transcranial Direct Current Stimulation (TDCS) Induced Magnetic-Field Changes in Human Brain Revealed by MRI 
Mayank V. Jog1, Robert Smith2, Kay Jann2, Walter Dunn2, Allan Wu2, Danny JJ Wang2
1Biomedical Engineering, University of California Los Angeles, Los Angeles, CA, United States; 2Radiology, University of California Los Angeles, Los Angeles, CA, United States

Plasma 10  0516. Functional Consequences of Neurite Orientation Dispersion and Density in Humans Across the Adult Lifespan 
Arash Nazeri1, 2, M. Mallar Chakravarty3, 4, David J. Rotenberg1, Tarek K. Rajji1, Yogesh Rathi5, Oleg V. Michailovich6, Aristotle N. Voueskos1
1Centre for Addiction and Mental Health, Toronto, ON, Canada; 2Department of Psychiatry, University of Toronto, Toronto, ON, Canada; 3Department of Psychiatry, McGill University, Montreal, QC, Canada; 4Cerebral Imaging Centre, Douglas Institute, Verdun, QC, Canada; 5Laboratory of Mathematics in Imaging, Harvard Medical School, Boston, MA, United States; 6Department of Electrical and Computer Engineering, University of Waterloo, Waterloo, ON, Canada

Plasma 11  0517. Aneurysm Wall Permeability as a Measure of Rupture Risk and Bleb Formation 
Charles G. Cantrell1, Parmede Vakil1, Sameer A. Ansari2, Timothy J. Carroll3
1Biomedical Engineering, Northwestern University, Chicago, IL, United States; 2Radiology, Northwestern University, Chicago, IL, United States

182
Power Pitch

Plasma 12 0518. Intracranial Atherosclerotic Lesion Characteristics Correlate with Cerebrovascular Lesion Load After TIA or Ischemic Stroke: A 7.0 Tesla MRI Study
Nikki Dieleman1, Anja G. van der Kolk1, Jaco J.M. Zwanenburg1, 2, Manon Brundel1, Anita A. Harteveld1, Geert Jan Bissels1, Fredey Visser1, 2, Peter R. Luijten1, Jeroen Hurbise1
1Radiology, University Medical Center Utrecht, Utrecht, Netherlands; 2Image Science Institute, University Medical Center Utrecht, Utrecht, Netherlands

Plasma 13 0519. Characterization of Rat Spinal Cord Vasoreactivity Using Arterial Spins Labelling at 9.4 T
Mohamed Tachrount1, Andrew Davies2, Roshni Desai2, Kenneth Smith2, David Thomas1, Xavier Golay1
1UCL Institute of Neurology, London, United Kingdom; 2Department of Neuroinflammation, UCL Institute of Neurology, London, United Kingdom

Plasma 14 0520. Diffusion Tensor Imaging and Magnitization Transfer Parameters Correlate with the White Matter Pathology in Mild Traumatic Brain Injury
Tsang-Wei Tu1, Rashida A. Williams2, Jacob D. Lescher2, L. Christine Turtzo2, Joseph A. Frank2
1Radiology and Imaging Sciences, National Institutes of Health, Bethesda, MD - Maryland, United States; 2Radiology and Imaging Sciences, National Institutes of Health, MD, United States

Plasma 15 0521. In Vivo Evaluation of Ocular Physiology and Structural Integrity of the Optic Nerve Upon Whole Eye Transplantation Using Gadolinium-Enhanced MRI and Diffusion Tensor Imaging
Yolandi van der Merwe1, 2, Leon C. Ho1, 2, Yang Li1, Maxine R. Miller1, 2, Chiaki Komatsu1, Hongkun Wang1, Michael B. Steketee1, Seong-Gi Kim1, 2, Joel S. Schuman2, 2,1, Kia M. Washington1, 2, Kevin C. Chan1, 2, the WET Consortium1
1Neuroimaging Laboratory, University of Pittsburgh, Pittsburgh, PA, United States; 2Department of Bioengineering, University of Pittsburgh, Pittsburgh, PA, United States; 3Department of Plastic and Reconstructive Surgery, University of Pittsburgh, PA, United States; 4Department of Ophthalmology, University of Pittsburgh, Pittsburgh, PA, United States; 5Center for Neuroscience Imaging Research, Institute for Basic Science, Sungkyunkwan University, Suwon, Korea

Power Pitch Advances in fMRI
Power Pitch Theatre, Exhibition Hall Wednesday 13:30-14:30
Moderators: Karla L. Miller, Ph.D. & T.B.A.

Plasma 1 0589. Individual-Subject Mapping of Functional Networks from Sparse Spontaneous BOLD Events
Cesar Caballero Gaudes1, Ziad Saad2, Mathijs Raemaekers3, Nick F. Ramsey4, Natalia Petridou4
1BCBL, Basque Center on Cognition, Brain and Language, Donostia, Guipuzcoa, Spain; 2Statistical and Scientific Computing Core, National Institute of Mental Health, Bethesda, MD, United States; 3Brain Center Rudolf Magnus, Department of Neurology and Neurosurgery, UMC Utrecht, Utrecht, Netherlands; 4Radiology, Imaging Division, UMC Utrecht, Utrecht, Netherlands

Plasma 2 0590. A Machine Learning Case for a Higher Order Control Plexus in the Frontal Pole Cortex
Nishant Zachariah1, Zhihao Li2, 3, Jason Langley2, Shiyang Chen2, Mark Davenport2, Justin Romberg2, Xiaoping Hu2
1Department of Electrical and Computer Engineering, Georgia Institute of Technology, Atlanta, GA, United States; 2Department of Biomedical Engineering, Emory University and Georgia Institute of Technology, Atlanta, GA, United States; 3Institute of Affective and Social Neuroscience, Shenzhen University, Shenzhen, Guangdong, China

Plasma 3 0591. Calibrating BOLD Latency with High Temporal Resolution Precision Using Magnetic Resonance Inverse Imaging
Ruo-Ning Sun1, Ying-Hua Chu1, Yi-Cheng Hsiao1, Wen-Jui Kuo2, Fa-Hsuan Lin1
1Institute of Biomedical Engineering, National Taiwan University, Taipei, Taiwan; 2Institute of Neuroscience, National Yang Ming University, Taipei, Taiwan

Plasma 4 0592. Cortical Depth Dependence of Physiological Fluctuations and Whole-Brain Resting-State Functional Connectivity at 7T
Jonathan R. Polimeni1, Marta Bianciardi1, Boris Keil1, Lawrence L. Wald1, 2
1Althousa A. Martins Center for Biomedical Imaging, Department of Radiology, Harvard Medical School, Massachusetts General Hospital, Charlestown, MA, United States; 2Harvard-MIT Division of Health Sciences and Technology, Massachusetts Institute of Technology, Cambridge, MA, United States

183
To elucidate the neural basis of resting state fMRI, we separated and characterized the fractal and oscillatory activity in the human brain. We found that these patterns are likely result from common neural modulation pathways with diffusive projects that innervate the entire cortex.

In this study, we combined high-field (7 T) VASO with a simultaneous multi-slice (SMS) acquisition scheme. We used this approach to evaluate the simultaneous measurement of cerebral blood volume (CBV) and oxygen extraction fraction (OEF) with good signal-to-noise ratio (SNR) and specificity, across multiple brain regions.

A dual-gas calibrated MRI paradigm designed to measure multiple cerebrovascular parameters was directly compared in 15 healthy volunteers. We found no significant correlation between MRI OEF and 15-O PET OEF, but no correlation was found with NIRS OEF and either of the other modalities.

We present a new approach for calibrated BOLD fMRI in which BOLD and CBF are measured alongside direct quantification of blood oxygenation measured with NIRS. This approach can be applied to studies of hyperoxia, without the usual requirement of end-tidal O2 monitoring or the need to assume baseline Yv.

Typical task-fMRI studies aim to compute brain activation maps through voxel-wise correlation of measured and modeled parameters. However, we show that both hypotheses are inappropriate here, and are therefore not generalizable to slowly changing stimuli.

We investigated the relation between brain neurotransmitter concentrations, venous oxygen saturation, and oxygen extraction fraction. We show that venous oxygen saturation is inversely proportional to the ratio of GABA/Glx.

Slice-specific spokes pulses were designed for and applied to high resolution 2D EPI imaging at 9.4T in order to mitigate B1+ inhomogeneity. This approach is applied to BOLD fMRI scans, and we discuss its potential for improving the specificity and resolution of fMRI data.

Power Pitch
1Vanderbilt University Institute of Imaging Science, Nashville, TN, United States; ©Radiology and Radiological Sciences, Vanderbilt University, Nashville, TN, United States; ?Vanderbilt University Institute of Imaging Science, Nashville, TN, United States

Plasma 15 0603. Subcortical Grey Matter Susceptibility Mapping from Standard fMRI Studies

Hongfu Sun1, Peter Seres1, Alan H. Wilman1
1Biomedical Engineering, University of Alberta, Edmonton, Alberta, Canada

Power Pitch
Cancer
Power Pitch Theatre, Exhibition Hall Wednesday 16:00-17:00
Moderators: Bachir Taouli, M.D. & T.B.A.


Alina Tudorica1, David C. Newitt1, Karen Y. Oh1, Nicole Roy1, Stephen Y-C Chui1, Arpana Naik1, Megan L. Troxell1, Yiyi Chen1, Anaela Azfal1, Megan L. Holtor1, Nola M. Hylton1, Wei Huang1
1Oregon Health & Science University, Portland, OR, United States; 2University of California, San Francisco, CA, United States

Plasma 2 0667. Can Model Weighting Improve the Accuracy of DCE-MRI Parameter Estimation?

Xia Li1, Lori R. Arlinghaus1, Erin Rericha1, Thomas Yankeelov1
1Vanderbilt University, Nashville, TN, United States

Plasma 3 0668. Impact of Non-Rigid Motion Correction on Pharmaco-Kinetic Analysis for Breast Dynamic Contrast-Enhanced MRI

Venkata Veerendra Nadh Chebrolu1, Dattesh Shanbhag1, Reem Bedair2, Sandeep Gupta1, Patrice Hervo4, Scott Reid4, Fiona Gilbert7, Andrew Patterson7, Martin Graves7, Rakesh Mullick9
1Medical Image Analysis Lab, GE Global Research, Bangalore, Karnataka, India; 2Radiology, University of Cambridge, Cambridge, United Kingdom; 3Biomedical Image Analysis Lab, GE Global Research, NY, United States; 4GE Healthcare, Buc, France; 5GE Healthcare, Amersham, United Kingdom; 6Cambridge University Hospitals Trust, Cambridge, United Kingdom; 7Diagnostics & Biomedical Technologies, GE Global Research, Bangalore, Karnataka, India

Plasma 4 0669. Dynamic Contrast Enhanced MRI Estimate of Tumor Interstitial Fluid Pressure in Solid Brain Tumors

Madhava P. Aryal1, Tavarekere N. Nagaraja1, Rasha Elmghribi1, Kelly A. Keenan1, Swayamprava Panda1, Glauber Cabral1, Stephen L. Brown13, James R. Ewing13
1Radiology, University of Texas Southwestern Medical Center, Dallas, TX, United States; 2Pathology, University of Texas Southwestern Medical Center, Dallas, TX, United States; 3Biomedical Image Analysis Lab, GE Global Research, NY, United States; 4GE Healthcare, Buc, France; 5GE Healthcare, Amersham, United Kingdom; 6Cambridge University Hospitals Trust, Cambridge, United Kingdom; 7Diagnosics & Biomedical Technologies, GE Global Research, Bangalore, Karnataka, India

Plasma 5 0670. Quantitative Perfusion Measurements in Renal Masses with Arterial Spin Labeling and Dynamic Contrast Enhanced MRI at 3T Correlate with Microvessel Density at Histopathology

Yue Zhang1, Fayal Kapur1, Qing Yuan1, Ananth Madhuranthakam1, Ingrid Carvo5, Sabina Signoretti5, Ivan Dimitrov1, Yin Xi1, Katherine Wicks1, Jeffrey Cadeddu1, Vitaly Margulis1, James Brugarolas1, Ivan Pedrosa1, Radiology, University of Texas Southwestern Medical Center, Dallas, TX, United States; 2Pathology, University of Texas Southwestern Medical Center, Dallas, TX, United States; 3Urology, University of Texas Southwestern Medical Center, Dallas, TX, United States; 4Advanced Imaging Research Center, University of Texas Southwestern Medical Center, Dallas, TX, United States; 5Pathology, Brigham and Women’s Hospital, Boston, MA, United States; 6Philips Medical Systems, Cleveland, OH, United States; 7Internal Medicine, University of Texas Southwestern Medical Center, Dallas, TX, United States; 8Developmental Biology, University of Texas Southwestern Medical Center, Dallas, TX, United States

Plasma 6 0671. Classification of Tumor Sub-Volumes Based on Dynamic Contrast Enhanced MRI Model Hierarchy for Locally Advanced Cervical Cancer

Jesper Folsted Kallehave1, Thomas Nielsen1, Markus Alber1, Soren Haack1, Erik Morre Pedersen1, Jacob Christian Lindegaard1, Anne Ramlov1, Kari Tanderup1
1Dept. of Medical Physics, Aarhus University Hospital, Aarhus, Denmark; 2Dept. of Oncology, Aarhus University Hospital, Aarhus, Denmark; 3CFIN/Mindlab, Aarhus University Hospital, Aarhus, Denmark; 4Dept. of Clinical Engineering, Aarhus University Hospital, Aarhus, Denmark; 5Dept. of Radiology, Aarhus University Hospital, Aarhus, Denmark; 6Dept. of Experimental Clinical Oncology, Aarhus University Hospital, Aarhus, Denmark; 7Dept. of Clinical Medicine, Aarhus University, Aarhus, Denmark
Plasma 7 0672. Evaluation of Stretched-Exponential Model for Diffusion-Weighted Imaging of Breast Lesions Using High B Values: Comparison with Monoexponential Diffusion Weighted Imaging
Chunling Liu1, Changhong Liang1, Yingjie Mei2, Zaiyi Liu1, Jine Zhang1
1Department of Radiology, Guangdong General Hospital/Guangdong Academy of Medical Sciences, Guangzhou, Guangdong, China; 2Philips Healthcare, Guangzhou, Guangdong, China

Plasma 8 0673. SUV-ADC Mapping of Malignant and Benign Prostate Lesions with PET-MRI
Yachao Liu1, Jianguang Gao1, Jiabin Liu1, Hui Liu1, Yong Xu2, Baixuan Xu1, Jihe Tian1
1Nuclear Medicine Department, PLA 301 General Hospital, Beijing, China; 2Urology Department, PLA 301 General Hospital, Beijing, China; 3NEA MR Collaboration, Siemens Ltd., China, Shanghai, China

Plasma 9 0674. Simultaneous 18F-FACBC PET/MRI for Loco-Regional Staging of Prostate Cancer: Considerations on Imaging Protocol Design
Mattijs Elschot1, Kirsten M. Selnes1,2, Brage Krüger-Stokke1,3, Øystein Størkersen4, Helena Bertilsson5,6, Siver A. Moestue1,2, Tone F. Bæthien1,7
1Department of Circulation and Medical Imaging, Norwegian University of Science and Technology, Trondheim, Sør-Trøndelag, Norway; 2St Olavs Hospital, Trondheim, Sør-Trøndelag, Norway; 3Department of Radiology, St Olavs Hospital, Trondheim, Sør-Trøndelag, Norway; 4Department of Pathology, St Olavs Hospital, Trondheim, Sør-Trøndelag, Norway; 5Department of Urology, St Olavs Hospital, Trondheim, Sør-Trøndelag, Norway; 6Department of Cancer Research and Molecular Medicine, Norwegian University of Science and Technology, Trondheim, Sør-Trøndelag, Norway

Plasma 10 0675. Multiparametric Hybrid 18FDG-PET/MRI in Patients with Multiple Myeloma: Initial Experience
Jennifer Mosebach1, Christos Sachpekidis1, Martin Freitag1, Jens Hillengass1, Antonia Dimitrakopoulou-Strauss1, Uwe Haberkorn1, Heinz-Peter Schlemmer1, Stefan Delorme1
1Department of Radiology, German Cancer Research Center, Heidelberg, Germany; 2Clinical Cooperation Unit Nuclear Medicine, German Cancer Research Center, Heidelberg, Germany; 3Department of Medicine V, Multiple Myeloma Section, University of Heidelberg, Heidelberg, Germany; 4Division of Nuclear Medicine, University of Heidelberg, Heidelberg, Germany

Plasma 11 0676. 4D Echo Planar Correlated Spectroscopic Imaging and DWI of Breast Cancer
Rajakumar Nagarajan1, Neil Wilson1, Nanette DeBruhl1, Brian Burns1, Melissa Joines1, Matihili Gopalakrishnan1, Fausto Rendon1, Lawrence W. Bassett1, M. Albert Thomas1
1Radiological Sciences, UCLA School of Medicine, Los Angeles, CA, United States

Plasma 12 0677. Relaxation-Weighted Sodium MRI of Breast Lesions at 7T
Stefan Zby1, Olga Zoric1, Vladimir Juras1, Katja Pinker2, Alex Farr1, Nadia Benkhedh1, Pascal Balzer2, Vladimir Mylnarik1, Armin Nagel1, Christian Singer1, Thomas Heilich1, Wolfgang Bogner1, Siegfried Trattnig1
1High Field MR Center, Department of Biomedical Imaging and Image-guided Therapy, Medical University of Vienna, Vienna, Austria; 2Division of Molecular and Gender Imaging, Department of Biomedical Imaging and Image-guided Therapy, Medical University of Vienna, Vienna, Austria; 3Department of Gynecology and Obstetrics, Medical University of Vienna, Vienna, Austria; 4Department of Medical Physics in Radiology, German Cancer Research Center (DKFZ), Heidelberg, Germany

Plasma 13 0678. Noninvasive Assessment of Lymphatic Impairment and Interstitial Protein Accumulation Using Chemical Exchange Saturation Transfer (CEST) MRI
Manus Donahue1,2, Paula CM Donahue1,4, Swati Rane1, Megan K. Strother1, Allison O. Scott1, Seth A. Smith1
1Radiology and Radiological Sciences, Vanderbilt University Medical Center, Nashville, TN, United States; 2Physics and Astronomy, Vanderbilt University, Nashville, TN, United States; 3Physical Medicine and Rehabilitation, Vanderbilt University Medical Center, Nashville, TN, United States; 4Dayani Center for Health and Wellness, Nashville, TN, United States

Plasma 14 0679. Combining ‘omics’: Metabolic Breast Cancer Subclass Correlation with Protein and Gene Expression Subtypes
Tonje H. Haukaas1,2, Leslie R. Eueda1, Guro F. Giskeødågard1, Marti Krohn1,4, Ellen Schlichting1, Rolf Kåresen1,3, Sandra Nyberg1,4, Kristine Kleivi Sahlberg1,4, Anne-Lise Børresen-Dale1,4, Tone F. Bæthien1,7
1Department of Circulation and Medical Imaging, Faculty of Medicine, NTNU, Trondheim, Norway; 2K.G. Jebsen Center for Breast Cancer Research, Institute of Clinical Medicine, Faculty of Medicine, University of Oslo, Oslo, Norway; 3K.G. Jebsen Center for Breast Cancer Research, Institute of Clinical Medicine, Faculty of Medicine, University of Oslo, Oslo, Norway; 4Department of Genetics, Institute for Cancer Research Oslo University Hospital, , The Norwegian Radium Hospital, Oslo, Norway; 5Department of Surgery, Oslo University Hospital, Ullevål, Oslo, Norway
Power Pitch

High Field Applications

Power Pitch Theatre, Exhibition Hall

Thursday 10:30-11:30

Moderators: Gregory J. Metzger, Ph.D. & T.B.A.

Plasma 1 0754. Whole Brain Pulsed Arterial Spin Labelling at Ultra High Field with a B1+-Optimised Adiabatic Labelling Pulse
Kieran O’Brien†1, 2, Fabian Zimmer†1, Steffen Bollmann2, Josef Pfeuffer3, Keith Heberlein4, Markus Barth5
1Healthcare Sector, Siemens Ltd, Brisbane, Australia; 2The Centre for Advanced Imaging, The University of Queensland, Brisbane, Australia; 3Siemens Healthcare, Erlangen, Germany; 4Siemens Healthcare, Boston, MA, United States

Plasma 2 0755. 7T Imaging of Patients with Focal Epilepsy Who Appear Non-Lesional in Diagnostic 1.5T and 3T MRI Scans: First Results
Rebecca Emily Fieldman1, Hadrien Dyvorne1, Bradley Neil Delman1, Madeline Cara Fields2, Lara Vanessa Marcuse2, Priti Balchandani2
1Radiology, Icahn School of Medicine at Mount Sinai, New York, United States; 2Department of Neurology, Mount Sinai Hospital, New York, United States

Plasma 3 0756. In Vivo 37Cl MRI of Human Calf Muscle at 7T
Judith Schork1, Anna Kollefrath1, Manuela B. Rössler1, Reiner Umathum1, Armin M. Nagel1
1Medical Physics in Radiology, German Cancer Research Center (DKFZ), Heidelberg, Germany

Plasma 4 0757. T1rho and T2 Relaxation Times in Patients with Knee Osteoarthritis at 3 Tesla and 7 Tesla
Cory Wyatt1, Aditi Guha1, Anand Venkatachari1, Xiaojuan Li3, Roland Krug1, Douglas A.C. Kelley2, Thomas M. Link1, Sharmila Majumdar3
1Radiology, University of California San Francisco, San Francisco, CA, United States; 2GE Healthcare Technologies, San Francisco, CA, United States

Plasma 5 0758. Saturation Recovery Single-Shot Acquisition (SASHA) for T1 Mapping in the Human Heart at 7T
Christopher T. Rodgers1, Yuehui Tao1, Stefan Piechnik2, Alexander Liu3, Jane Francis3, Stefan Neubauer3, Matthew D. Robson2
1University of Oxford, Oxford, Oxon, United Kingdom

Plasma 6 0759. Theoretical and Experimental Comparisons of Single Breath-Hold Renal Perfusion Imaging Between 3T and 7T
Xiufen Li1, Edward J. Auerbach1, Pierre-Francois Van de Moortele1, Kamil Ugurbil2, Gregory J. Metzger3
1Radiology-CMRR, University of Minnesota, Minneapolis, MN, United States

Plasma 7 0760. Ultra-Short T2 STEAM Improves Hepatic Lipid Quantification and Profiling at 7T
Martin Gajdošík1, Gregorz Chadzynski3, 4, Vladimir Mlynarik2, Marek Chmelik2, Wolfgang Bogner1, Ladislav Valkovic1, 4, Ivica Just Kukurová3, Siegfried Trattneg1, Martin Krššák3, 5
1MRCE, Department of Biomedical Imaging and Image-guided Therapy, Medical University of Vienna, Vienna, Austria; 2Department of Biomedical Magnetic Resonance, University of Tübingen, Tübingen, Germany; 3Department of High-Field Magnetic Resonance, Max Planck Institute for Biological Cybernetics, Tübingen, Germany; 4Institute of Measurement Science, Slovak Academy of Sciences, Bratislava, Slovakia; 5Department of Internal Medicine III, Medical University of Vienna, Vienna, Austria

Plasma 8 0761. Ultra-High Field In Vivo Localized Two Dimensional Correlated MR Spectroscopy to Probe Membrane Degradation During Progression of Alzheimer’s Disease
A Alia1, 2, Niels Braakman1
1Leiden Institute of Chemistry, Leiden University, Leiden, South Holland, Netherlands; 2Institute of Medical Physics and Biophysics, Leipzig University, Leipzig, Germany
Plasma 9 0762. *In Vivo MR Microscopy of the Nervus Opticus at 3.0 T and 7.0 T: Anatomical and Diffusion Weighted Imaging in Healthy Subjects and Patients with Optic Nerve Glioma*

Katharina Paul, Andreas Graessl, Jan Rieger, Darius Lysiak, Till Huelnhagen, Lukas Winter, Antje Els, Beate Endemann, Tobias Lindner, Stefan Hadlich, Paul-Christian Krueger, Oliver Stacks, Soenke Langner, Thoralf Niendorf

1Max-Delbrueck Centre for Molecular Medicine, Berlin Ultra-high Field Facility (B.U.F.F.), Berlin, Germany; 2University Medicine Rostock, Pre-clinical Imaging Research Group, Rostock, Germany; 3University of Greifswald, Institute for Diagnostic Radiology and Neuroradiology, Greifswald, Germany; 4University Medicine Rostock, Department of Ophthalmology, Rostock, Germany; 5Experimental and Clinical Research Center, a joint cooperation between the Charite Medical Faculty and the Max-Delbrueck Center, Berlin, Germany

Plasma 10 0763. *In-Vivo Proton MR Spectroscopic Imaging of the Human Brain Gliomas at 9.4 Tesla: Evaluation of Metabolite Coordinates*

Grzegorz L. Chadzynski, Gisela Hagberg, Jonas Bause, G. Shajan, Sotirios Bisdas, Rolf Pohmann, Klaus Scheffler

1Dept. Biomedical Magnetic Resonance, University of Tuebingen, Tuebingen, Germany; 2Dept. High-field Magnetic Resonance, Max Planck Institute for Biological Cybernetics, Tuebingen, Germany; 3Dept. Diagnostic and Interventional Neuroradiology, University of Tuebingen, Tuebingen, Germany

Plasma 11 0764. *An Investigation of Lateral Geniculate Nucleus (LGN) Volume in Patients with Glaucoma Using 7T MRI.*

Hye Jin Jeong, Jong Yeon Lee, Jong Hwan Lee, Yu Jeong Kim, Eung Yeop Kim, Yong Yeon Kim, Zang-Hee Cho, Young-Bo Kim

1Neuroscience Research Institute, Gachon University, Incheon, Korea; 2Department of Ophthalmology, Gachon University, Gil Hospital, Incheon, Korea; 3Department of Radiology, Gachon University, Incheon, Korea; 4Department of Ophthalmology, Korea University College of Medicine, Seoul, Korea

Plasma 12 0765. *Giant Intracranial Aneurysms at 7 Tesla MRI: A New Diagnostic Approach to Understand This Rare Intracranial Vascular Pathology*

Bixia Chen, Toshinori Matsushige, Stefan Maderwald, Sören Johst, Harald H. Quick, Mark Edward Ladd, Ulrich Sure, Karsten Henning Wrede

1Erwin L. Hahn Institute for Magnetic Resonance Imaging, University Duisburg-Essen, Essen, NRW, Germany; 2Department of Neurosurgery, University Hospital Essen, University Duisburg-Essen, Essen, NRW, Germany; 3Department of Neurosurgery, Hiroshima University Hospital, Hiroshima University, Hiroshima Prefecture, Japan; 4High Field and Hybrid MR Imaging, University Hospital Essen, University Duisburg-Essen, Essen, NRW, Germany; 5Medical Physics in Radiology, German Cancer Research Center (DKFZ), Heidelberg, BW, Germany

Plasma 13 0766. *High Resolution Spectroscopic Imaging with Ultra Short TE in Patients with Multiple Sclerosis and Brain Tumors at 7T*

Gilbert Hangl, Bernhard Strasser, Michal Povaćar, Stephan Gruber, Marek Chmelík, Georg Widhalm, Engelbert Knosp, Assunta Dal-Bianco, Fritz Leutmezer, Siegfried Trautig, Wolfgang Bogner

1MCRE, Department of Biomedical Imaging and Image-guided Therapy, Medical University of Vienna, Wien, Vienna, Austria; 2MCRE, Department of Biomedical Imaging and Image-guided Therapy, Medical University of Vienna, Wien, Vienna, Austria; 3Department of Neurosurgery, Medical University of Vienna, Wien, Vienna, Austria; 4Department of Neurology, Medical University of Vienna, Wien, Vienna, Austria

Plasma 14 0767. *Examples of Clinical Imaging at 7T: Successes and Challenges*

Stephen E. Jones, Se-Hong Oh, Erik Beall, Michael Phillips, Ken Sakai, Irene Wang, Mark Lowe

1Imaging Institute, Cleveland Clinic, Cleveland, OH, United States; 2Neurologic Institute, Cleveland Clinic, Cleveland, OH, United States

Plasma 15 0768. *Towards Clinical Cardiac MR at 7.0 T: Early Experience with Black Blood RARE Imaging in Patients with Hypertrophic Cardiomyopathy*

Till Huelnhagen, Katharina Paul, Andreas Pohlmann, Andreas Graessl, Jan Rieger, Darius Lysiak, Christof Thalhammer, Marcel Prothmann, Jeanette Schulz-Menger, Thoralf Niendorf

1Berlin Ultra-high Field Facility (B.U.F.F.), Max-Delbrueck Center for Molecular Medicine (MDC), Berlin, Germany; 2MRI.TOOLS GmbH, Berlin, Germany; 3Dept. of Cardiology and Nephrology, HELIOS Klinikum Berlin-Buch, Berlin, Germany; 4Experimental and Clinical Research Center, a joint cooperation between the Charite Medical Faculty and the Max-Delbrueck Center, Berlin, Germany
Power Pitch

Body

Power Pitch Theatre, Exhibition Hall  Thursday 13:30-14:30

Moderators: Elizabeth M. Hecht, M.D. & Valentina Taviani, Ph.D.

Plasma 1 0838. Does Using a 16-Element Receive-Array Improve Whole-Liver $^{31}$P Metabolite Ratio Quantification at 7T?
   Lucian A. B. Purvis$^1$, William T. Clarke$^1$, Michael Pavlides$^1$, Stefan Neubauer$^2$, Matthew D. Robson$^1$, Christopher T. Rodgers$^1$
   $^1$Department of Cardiovascular Medicine, University of Oxford, Oxford, Oxfordshire, United Kingdom

   Peter Bannas$^1$, $^2$, Candice A. Bookwalter$^3$, Tim Ziemlewicz$^2$, Utaroh Motosugi$^4$, Richard Bruce$^1$, Theodora A. Potretzke$^1$, Scott B. Reeder$^3$, $^5$
   $^1$Radiology, University of Wisconsin-Madison, Madison, WI, United States; $^2$Radiology, University Medical Center Hamburg-Eppendorf, Hamburg, Germany; $^3$Medical Physics, University of Wisconsin-Madison, WI, United States

Plasma 3 0840. Adipose Tissue Hydration as a Potential Non-Invasive Marker for Adipose Tissue Hypertrophy
   Navin Michael$^1$, Suresh Anand Sadanathan$^1$, Jadegoud Yaligar$^1$, Swee Shean Lee$^1$, Melvin Khee-Shing Leow$^1$, Chin Meng Khoo$^1$, Eric Yin Hao Khoo$^1$, Kavita Venkataraman$^1$, Yang Seng Lee$^2$, $^3$, Yap Seng Chong$^1$, $^4$, Peter D. Gluckman$^1$, E. Shyong Tai$^4$, S. Sendhil Velan$^5$, $^6$
   $^1$Singapore Institute for Clinical Sciences, A*STAR, Singapore; $^2$Singapore BIOMAGING Consortium, A*STAR, Singapore; $^3$Department of Endocrinology, Tan Tock Seng Hospital, Singapore; $^4$Department of Medicine, Yong Loo Lin School of Medicine, National University of Singapore, Singapore; $^5$Saw Swee Hock School of Public Health, National University of Singapore, Singapore; $^6$Department of Paediatrics, Yong Loo Lin School of Medicine, Singapore; $^7$Department of Obstetrics & Gynaecology, Yong Loo Lin School of Medicine, Singapore; $^8$Clinical Imaging Research Centre, A*STAR, Singapore

Plasma 4 0841. Modelling Skull Dynamics During Brain Magnetic Resonance Elastography to Evaluate Wave Delivery Strategies
   Deirdre M. McGrath$^1$, $^2$, Alejandro F. Frangi$^1$, Iain D. Wilkinson$^2$, Zeike A. Taylor$^2$
   $^1$CISTIB, Center for Computational Imaging & Simulation Technologies in Biomedicine, University of Sheffield, Sheffield, South Yorkshire, United Kingdom; $^2$Academic Radiology, University of Sheffield, Sheffield, Sheffield, South Yorkshire, United Kingdom

Plasma 5 0842. Isocaloric Fructose Restriction for 10 Days Reduces MR-Measured Liver, Pancreatic and Visceral Fat in High Sugar-Consuming, Obese Children
   Susan M. Noworolski$^1$, Kathleen Mulligan$^1$, Natalie Kom$^1$, Molly Gibson$^1$, Viva W. Tai$^2$, $^3$, Michael Wen$^1$, Ayca Erkin-Cakmak$^1$, Alejandro Gugliucci$^1$, Robert H. Lustig$^4$, Jean-Marc Schwarz$^5$
   $^1$Radiology & Biomedical Imaging, University of California, San Francisco, CA, United States; $^2$Medicine, University of California, San Francisco, CA, United States; $^3$CTSI-CRS, University of California, San Francisco, CA, United States; $^4$Pediatrics, University of California, San Francisco, CA, United States; $^5$Research, Touro University College of Osteopathic Medicine, Vallejo, CA, United States; $^6$Basic Science, Touro University College of Osteopathic Medicine, Vallejo, CA, United States

Plasma 6 0843. The Effect of Parallel Radiofrequency Transmission on Arterial Input Function Selection in 3T DCE-MRI of Prostate Cancer
   Hatim Chañ$^1$, Saba N. Elias$^1$, Huyjn Nguyen$^2$, Harry T. Friel$^3$, Michael V. Knopp$^2$, BeiBei Guo$^4$, Steven B. Heymsfield$^5$, Guang Jia$^1$
   $^1$Department of Physics and Astronomy, Louisiana State University, Baton Rouge, LA, United States; $^2$Department of Radiology, The Ohio State University, Columbus, OH, United States; $^3$Clinical Science Operations, Philips Healthcare, Highland Heights, OH, United States; $^4$Department of Experimental Statistics, Louisiana State University, Baton Rouge, LA, United States; $^5$Metabolism - Body Composition, Pennington Biomedical Research Center, Baton Rouge, LA, United States

Plasma 7 0844. Automatic Combined Whole-Body Muscle and Fat Volume Quantification Using Water-Fat Separated MRI in Postmenopausal Women
   Janne West$^1$, $^2$, Thobias Romu$^3$, $^4$, Anna-Clara Spetz Holm$^5$, Hanna Lindblom$^6$, Lotta Lindh-Astrand$^7$, Magnus Borga$^8$, Mats Hammar$^9$, Olof Dahlqvist Leinhard$^{10}$, $^1$
   $^1$Department of Medical and Health Sciences, Linköping University, Linköping, Sweden; $^2$Center for Medical Imaging Science and Visualization, Linköping, Sweden; $^3$Department of Biomedical Engineering, Linköping University, Linköping, Sweden; $^4$Department of Clinical and Experimental Medicine, Linköping University, Linköping, Sweden

189
Power Pitch

Plasma 8 0845. Stimulated Echo Diffusion Weighted Imaging of the Liver at 3T
Hui Zhang1, Aiqi Sun1, Xiaodong Ma1, Zhe Zhang1, Ed X. Wu2,3, Hua Guo1
1Center for Biomedical Imaging Research, Department of Biomedical Engineering, School of Medicine, Tsinghua University, Beijing, China; 2Laboratory of Biomedical Imaging and Signal Processing, The University of Hong Kong, Hong Kong SAR, China; 3Department of Electrical and Electronic Engineering, The University of Hong Kong, Hong Kong SAR, China

Plasma 9 0846. Characterizing Water Diffusion and Perfusion Features of the Healthy and Malignant Pancreas Using Diffusion-Tensor and Diffusion Weighted MRI
Noam Nissan1, Talia Golan2, Edna Furman-Haran3, Sara Apter2, Yael Inbar2, Arie Ariche2, Barak Bar Zakay2, Yuri Goldes4, Michael Schvimer5, Dov Grobgeld6, Hadassa Degani7
1Weizmann Institute of Science, Rehovot, Israel; 2Sheba Medical Center, Israel

Plasma 10 0847. Utility of Combined Ga-68 DOTA-TOC PET and Eovist MRI Utilizing PET/MRI
Thomas A. Hope1, Carina Mari Apariel1, Eric Nakakura1, Henry Van Brocklin1, Miguel Hernandez Pumpaloni1, James Slater1, Salma Jivan1, Judy Yee1, Emily Bergsland1
1Radiology and Biomedical Imaging, UCSF, San Francisco, CA, United States; 2Department of Surgery, UCSF, San Francisco, CA, United States; 3Department of Medicine, UCSF, San Francisco, CA, United States

Plasma 11 0848. Imaging of Dissolved-Phase Hyperpolarized Xenon-129 in Human Kidneys
John P. Mugler, III1, G. Wilson Miller1, Craig H. Meyer2, Kun Qing1, Jaime F. Mata3, Steven Guan2, Kai Ruppert1,3, Iulian C. Rasde1,3, F. William Hersman4,5, Talissa A. Altes3
1Radiology & Medical Imaging, University of Virginia, Charlottesville, VA, United States; 2Biomedical Engineering, University of Virginia, Charlottesville, VA, United States; 3Cincinnati Children's Hospital, Cincinnati, OH, United States; 4Xemed, LLC, Durham, NH, United States; 5Physics, University of New Hampshire, Durham, NH, United States

Plasma 12 0849. Renal Blood Oxygenation Level-Dependent Imaging in Longitudinal Follow-Up of the Donated and the Remaining Kidney in Renal Transplantation
Maryam Seif1, Ute Eisenberger1, Tobias Binser1, Harriet C. Thoeny1, Fabienne Krauer1, Chris Boesch1, Bruno Vogt2, Peter Vermathen1
1Depts. Radiology and Clinical Research, University Bern, Bern, Switzerland; 2Dept. Nephrology, University Hospital Essen-Duisburg, Essen, Germany; 3Dept. Radiology, Neuroradiology and Nuclear Medicine, University Hospital of Bern, Bern, Switzerland

Plasma 13 0850. Redistribution of Fractional Ventilation After Circumscribed Primary Lung Injury and Atelectasis
Yi Xin1, Maurizio Cereda1, Hooman Hamedani1, Harrilla Profka1, Justin Clapp1, Stephen Kadlecck1, Brian P. Kavanagh1, Rahim R. Rizi1
1Radiology, University of Pennsylvania, Philadelphia, PA, United States; 2Anesthesiology and Critical Care, University of Pennsylvania, Philadelphia, PA, United States; 3Hospital for Sick Children, Toronto, Ontario, Canada

Plasma 14 0851. Three-Dimensional Pulmonary 1H MRI Multi-Region Segmentation Using Convex Optimization
Fumin Guo1,2, Sarah Svenningsen1,3, Aaron Fenster1,2, Grace Parraga1,2
1Imaging Research Laboratories, Robarts Research Institute, London, Ontario, Canada; 2Graduate Program in Biomedical Engineering, The University of Western Ontario, London, Ontario, Canada; 3Department of Medical Biophysics, The University of Western Ontario, London, Ontario, Canada

Plasma 15 0852. Ventilation Heterogeneity in Obstructive Airways Disease – Comparing Multi-Breath Washout-Imaging with Global Lung Measurements
Felix C. Horn1, Helen Marshall1, Salman Siddiqui2, Alexander Horsley1, Laurie Smith1, Ina Aldag4, Richard Kay1, Christopher J. Taylor1, Juan Parra-Robles1, Jim M. Wild2
1Sheffield University, Sheffield, United Kingdom; 2University of Leicester, United Kingdom; 3University of Manchester, United Kingdom; 4Sheffield Children’s NHS Foundation Trust, NHS, United Kingdom; 5Novartis, Switzerland
1075. 3D Textural Features of Conventional MRI Predict Survival in Childhood Medulloblastoma
Ahmed E. Fetit, Jan Novak, Simrandip K. Gill, Martin Wilson, Andrew C. Peet, Theodoros N. Arvanitis
1Institute of Digital Healthcare, WMG, University of Warwick, Coventry, West Midlands, United Kingdom; 2Birmingham Children's Hospital NHS Foundation Trust, Birmingham, West Midlands, United Kingdom; 3University of Birmingham, Birmingham, West Midlands, United Kingdom.

There has been an increasing interest in childhood brain tumour characterisation using non-invasive MR image analysis. Metabolic heterogeneity is a feature of medulloblastomas and could predict the survival of paediatric medulloblastoma – the most common malignant brain tumour occurring in childhood.

1076. Hyperpolarized 13C Diffusion MRS of Copolarized Pyruvate and Fumarate Detects Evidence for Increased Lactate Export in 8932 Pancreas Carcinoma Cells Compared to MCF-7 Cells
Benedikt Feuerecker, Markus Durs, Dieter Saur, Marion I. Menzel, Markus Schwaiger, Franz Schilling
1Nuclear Medicine, Technische Universität München, Munich, Bavaria, Germany; 2GE Global Research, Munich, Germany; 3Internal Medicine, Technische Universität München, Munich, Bavaria, Germany; 4GE Global Research, Garching, Bavaria, Germany.

Upregulation of glycolysis in tumors results in increased lactate concentrations in both intra- and extratumoral areas, and is a hallmark of tumor aggressiveness. Therefore, the detection of lactate can enable the diagnosis and staging of cancer.

1077. High Spatial Resolution DWI for Evaluation of Breast Tumor Early Treatment Response: Association of ADC Changes with PCR
Lisa J. Wilmes, Wei-Ching Lo, David C. Newitt, Suchandrima Banerjee, Evelyn Proctor, Emine U. Saritas, Ajit Shankaranarayanan, Nola M. Hylton
1University of California San Francisco, San Francisco, CA, United States; 2GE Healthcare, Menlo Park, CA, United States; 3Bilkent University, Ankara, Turkey.

This work measured tumor ADC using a high resolution reduced field of view diffusion weighted imaging (HR-DWI) technique to evaluate breast tumor early treatment response. The association of ADC changes with PCR was investigated.

Jorge E. Jimenez, Leah C. Henze Bancroft, Roberta M. Strigel, Kevin M. Johnson, Scott B. Reeder, Walter F. Block
1Department of Medical Physics, University of Wisconsin-Madison, Madison, WI, United States; 2Department of Radiology, University of Wisconsin School of Medicine and Public health, Madison, WI, United States; 3Department of Biomedical Engineering, University of Wisconsin-Madison, Madison, WI, United States.

Successful MR methods must combine capabilities for rapid acquisition, reliable fat suppression, and significant data reduction. Further study is necessary to determine the lower limit of the temporal footprint the method will support.

1079. Breast DCE with Fat Suppression: Enabling Quantitative Measurements
Maria A. Schmidt, Eva Kousi, Araminta Ledger, Erica Scarr, Cheryl Richardson, Georgina Hopkinson, Elizabeth O'Flynn, Steven Allen, Romney Pope, Robin Wilson, M Leach
1CR-UK and EPSRC Cancer Imaging Centre, Royal Marsden NHS Foundation Trust and Institute of Cancer Research, Sutton, Surrey, United Kingdom; 2Department of Radiology, Royal Marsden NHS Foundation Trust, Chelsea, London, United Kingdom.

Breast Dynamic Contrast-Enhanced (DCE) examinations are usually performed with fat suppression, providing qualitative images. The process of fat suppression interferes with the determination of T1 values. Therefore, T1 measurements are viable in fat-suppressed breast DCE.

1080. A Quadrant-Based Quantitative Analysis of Background Parenchymal Enhancement in Breast MRI
Ella F. Jones, Natalie Hartman, Helen Park, Ania Aziz, David C. Newitt, John Kornak, Catherine Kilfa, Bonnie N. Joe, Nola M. Hylton
1Radiology and Biomedical Imaging, University of California, San Francisco, San Francisco, CA, United States; 2Epidemiology and Biostatistics, University of California, San Francisco, San Francisco, CA, United States.

This work presents a systematic quadrant-based analysis of background parenchymal enhancement (BPE) in 172 patients with breast carcinoma. The goal is to investigate if regional variations in BPE will influence the corresponding qualitative BI-RADS BPE assessment.

1081. High-Resolution Proton Density Weighted Dixon Sequences Maximize Precision of Breast Density Measurements
Araminta EW Ledger, Maria A. Schmidt, Marco Borri, Erica D. Scarr, Julie Hughes, Alison Macdonald, Toni Wallace, Robin Wilson, Martin O. Leach
1CR-UK Cancer Imaging Centre, The Institute of Cancer Research and Royal Marsden NHS Foundation Trust, Sutton, Surrey, United Kingdom; 2Radiology, The Royal Marsden NHS Foundation Trust, Sutton, Surrey, United Kingdom.
1082. Modelling Vasculature and Cellular Restriction in Breast Tumours Using Diffusion MRI
Colleen Bailey1, Sarah Vinnicombe2, Eleftheria Panagiotaki1, Shelley A. Waugh2, John H. Hipwell1, Patsy Whelehant2, Sarah E. Pinder2, Andrew Evans2, Daniel C. Alexander2, David J. Hawkes1
1Centre for Medical Image Computing, University College London, London, United Kingdom; 2Dundee Cancer Centre, Ninewells Hospital and Medical School, Dundee, United Kingdom; 3Breast Research Pathology, Research Oncology, King's College London and Guy's Hospital, London, United Kingdom

1083. Clinical Experience of Acquiring Both High Spatial and High Temporal Resolution Breast Dynamic Datasets Utilising a Differential Subsampling with Cartesian Ordering K-Space Acquisition Scheme
Martin D. Pickles1, Dan W. Rettmann2, Kang Wang2, Lindsay W. Turnbull1
1Centre for Magnetic Resonance Investigations, Hull York Medical School at University of Hull, Hull, East Yorkshire, United Kingdom; 2Global MR Applications and Workflow, GE Healthcare, Rochester, MN, United States; 3Global MR Applications and Workflow, GE Healthcare, Madison, WI, United States

Martin D. Pickles1, Daniel Litwiller2, Ersin Bayram2, Lloyd Estkowski3, Lindsay W. Turnbull1
1Centre for Magnetic Resonance Investigations, Hull York Medical School at University of Hull, Hull, East Yorkshire, United Kingdom; 2Global MR Applications and Workflow, GE Healthcare, Rochester, MN, United States; 3Global MR Applications and Workflow, GE Healthcare, Waukesha, WI, United States; 4Global MR Applications and Workflow, GE Healthcare, Menlo Park, CA, United States

1085. T1 Mapping of Human Breast Tissue Using T1, T2 and PD Weighted MRI Images at 3T
Anup Singh1, Prativa Sahoo2, Vedant Kabra2, Indrajit Saha2, Meenakshi Singhal3, Rakesh Kumar Gupta3
1Center for Biomedical Engineering, Indian Institute of Technology Delhi, New Delhi, Delhi, India; 2Philips India Limited, Gurgaon, Haryana, India; 3Fortis Memorial Research Institute, Gurgaon, Haryana, India

1086. Automatic Segmentation of Breast Images Using Clustering and Dynamic Programming
José Angel Rosado-Toro1, Tomoe Barr2, Marilyn T. Marron3, Jean-Philippe Galons4, Patricia Thompson5, Alison Stopec5, Jeffrey Joel Rodríguez5, Maria I. Altbach4
1Electrical and Computer Engineering, University of Arizona, Tucson, AZ, United States; 2Biomedical Engineering, University of Arizona, Tucson, AZ, United States; 3Arizona Cancer Center, University of Arizona, Tucson, AZ, United States; 4Medical Imaging, University of Arizona, Tucson, AZ, United States; 5Electrical and Computer Engineering, University of Arizona, Tucson, Arizona, United States

1087. Correlation of 3D MR-Based Percent Breast Density with Apparent Diffusion Coefficient of the Breast Fibroglandular Tissue
Jeon-Hor Chen1, 2, Hon J. Yu1, Yifan Li3, Yoon Jung Choi3, Po Yun Huang4, Min-Ying Su1
1Center for Functional Onco-Imaging, University of California, Irvine, CA, United States; 2Department of Radiology, Eda Hospital and I-Shou University, Kaohsiung, Taiwan; 3Department of Radiology, Kangbuk Samsung Hospital, Seoul, Korea; 4Department of Medical Imaging, China Medical University, Taichung, Taiwan

1088. A Comparison of Breast Tissue T1 Mapping Using Conventional Multi-Flip Angle and 2-Point Dixon Techniques
Reem Bedair1, Mary McLean2, Andrew Patterson3, Roie Manavski1, John Griffiths5, Fiona Gilbert1, Martin Graves3
1University of Cambridge, Department of Radiology, Cambridge, Cambridgeshire, United Kingdom; 2Cancer Research UK Cambridge Research Institute, Cambridge, Cambridgeshire, United Kingdom; 3Department of Radiology, Cambridge University Hospitals NHS Foundation Trust, Cambridge, Cambridgeshire, United Kingdom

1089. Optimisation of B-Value Distribution for Intravoxel Incoherent Motion (IVIM) Imaging of Breast Cancer with Clinical Results
Nina L. Purvis1, Peter Gibbs2, Martin D. Pickles2, Lindsay W. Turnbull1
1Centre for MR Investigations, Hull York Medical School, Hull, East Yorkshire, United Kingdom; 2Centre for MR Investigations, University of Hull at HYMS, Hull, East Yorkshire, United Kingdom
1090. **Highly Accelerated DCE-MRI Pharmacokinetic Map Estimation Through Frequency Domain Based Tofts Model (HAET)**

*Nithin N. Vajjulla*, C K Dharmendra Kumar, Manoj G. Bhosale, Sairam Geethanath

1Medical Imaging Research Centre, Dayananda Sagar College of Engineering, Bangalore, Karnataka, India; 2Government College of Engineering (COEP), Pune, Maharashtra, India

1091. **Design of a Spatially Varying Saturation Pulse Through Least-Squares**

*Zhi Zuo*, Tatiana Syrovets, Felicitas Genze, Alireza Abaei, Genshan Ma, Thomas Simmet, Volker Rasche

1Medical Imaging Research Centre, Dayananda Sagar College of Engineering, Bangalore, Karnataka, India; 2Department of Cardiology, Zhongda Hospital, Medical School of Southeast University, Nanjing, Jiangsu, China

**Traditional Poster**

**Cancer: Preclinical Studies of Animal Models**

Power Pitch Theatre, Exhibition Hall | Monday 10:45-12:45

1092. **Monitoring Cancer Treatment: Quantitative MRI of Tumor Micro-Structure and Metabolism with Chemical Exchange Saturation Transfer and Diffusion Weighted MRI**

*Rozhin Yousefi*, Xiaoqiong Huang, Stanley K. Liu, Greg J. Sianisz

1Medical Biophysics, University of Toronto, Toronto, ON, Canada

1093. **Determination of Tumor Response to Hypoxia-Activated Prodrug TH-302 in Rat Glioma Models**

*Ashley M. Stokes*, Charles P. Hart, C. Chad Quarles

1Institute of Imaging Science, Radiology and Radiological Sciences, Vanderbilt University, Nashville, TN, United States; 2Threshold Pharmaceuticals, CA, United States

1094. **Multimodal Imaging of a Mouse Model of Colorectal Carcinoma Metastasis in the Liver**


1Centre for Advanced Biomedical Imaging, University College London, London, Greater London, United Kingdom; 2Cancer Institute, University College London, London, Greater London, United Kingdom; 3Institute for Women’s Health, University College London, London, Greater London, United Kingdom

1095. **In Vivo Magnetic Resonance Elastography in Pediatric Brain Tumor Models**

*Jessica K.R. Boul*†, Jin Li†, Yann Jamin†, Maria Vinci†, Sergey Popov†, Karen Barker, Zai Ahmad, Craig Cummings†, Suzanne A. Eccles, Jeffrey C. Bamber†, Ralph Sinkus†, Louis Chesler†, Chris Jones†, Simon P. Robinson†

1Division of Radiotherapy and Imaging, The Institute of Cancer Research, London, United Kingdom; 2Division of Molecular Pathology, The Institute of Cancer Research, London, United Kingdom; 3CR-UK Division of Cancer Therapeutics, The Institute of Cancer Research, London, United Kingdom; 4Division of Clinical Studies, The Institute of Cancer Research, London, United Kingdom; 5Division of Imaging Sciences & Biomedical Engineering, Kings College London, London, United Kingdom

1096. **High-Resolution MRI Analysis of Breast Cancer Xenografts on the CAM @ 11.7T**

*Zhi Zuo*, Tatiana Syrovets, Felicitas Genze, Alireza Abaei, Genshan Ma, Thomas Simmet, Volker Rasche

1Internal Medicine II, University Hospital Ulm, Ulm, Baden-Württemberg, Germany; 2Core Facility Small Animal MRI, Medical Faculty, Ulm University, Ulm, Baden-Württemberg, Germany; 3Institute of Pharmacology of Natural Products and Clinical Pharmacology, Ulm University, Ulm, Baden-Württemberg, Germany; 4Department of Cardiology, Zhongda Hospital, Medical School of Southeast University, Nanjing, Jiangsu, China

1097. **OKN-007 Decreases Tumor Necrosis and Tumor Cell Proliferation and Increases Apoptosis in a Pre-Clinical F98 Rat Glioma Model**

*Rheal A. Towner*, Patricia Coutinho De Souza, Kritika Balasubramanian, Charity Njoki, Nataliya Smith, David L. Gillespie, Andrea Schwager, Osama Abdullah, Kar-Ming Fung, Debra Saunders, Randy L. Jensen

1Medical Biophysics, University of Toronto, Toronto, ON, Canada

193
1098. Oxidative Ketone Body Metabolism in Rat Brain Tumors and the Effect of the Ketogenic Diet: Evidence from In Vivo 1H-[13C] MRS
Henk M. De Feyter1, Kevin L. Behar2, Kevan L. Ip1, Fahmeed Hyder1, Lester L. Drewes1, Robin A. de Graaf1, Douglas Marie-France Penet1, Balaji Krishnamachary1, Flonné Wildes1, Yelena Mironchik1, Chien-Fu Hung2, TC Wu2, Zaver Youping Xiao1, Yunbin Chen1, Jianji Pan2, Ying Chen1, Yiqi Yao1, Xiang Zheng1, Xiangyi Liu1, Dechun Zheng1, Weibo Lara Leoni1, Martin Andrews2, Chin-Tu Chen3, Barry Lai4, Brian B. Roman5

1Department of Diagnostic Radiology, Yale University, New Haven, CT, United States; 2Department of Psychiatry, Yale University, CT, United States; 3Department of Biomedical Sciences, University of Minnesota, MN, United States

1099. MnMRI of Pancreatic Cancer
Lara Leon1, Martin Andrews2, Chin-Tu Chen3, Barry Lat4, Brian B. Roman5
1University of Chicago, Chicago, IL, United States; 2University of Chicago, IL, United States; 3Radiology, University of Chicago, IL, United States; 4Argonne National Laboratory, IL, United States; 5Radiology, university of chicago, Chicago, IL, United States

1100. Intravoxel Incoherent Motion Diffusion Weighted Imaging(IVIM-DWI) on a Mouse Xenografts Model of Human Nasopharyngeal Carcinoma CNE-2 Cell Line: A Preliminary Study on 3.0T MRI
Youping Xiao1, Yunbin Chen1, Jianji Pan2, Ying Chen1, Yiqi Yao1, Xiang Zheng1, Xiangyi Liu1, Dechun Zheng1, Weibo Chen3
1Radiology, Fujian Provincial Cancer Hospital, Fuzhou, Fujian, China; 2Radiation Oncology, Fujian Provincial Cancer Hospital, Fuzhou, Fujian, China; 3Philips Healthcare, Shanghai, China

1101. Mechanical Characterization of a Mouse GL261 Glioma Model Using MR Elastography
Jing Guo1, Simon Bayerl2, Jürgen Braun3, Peter Vajkoczy2, Ingolf Sack1
1Radiology, Charité - Universitätsmedizin Berlin, Berlin, Germany; 2Department of Neurosurgery, Charité - Universitätsmedizin Berlin, Berlin, Germany; 3Department of Medical Informatics, Charité - Universitätsmedizin Berlin, Berlin, Germany

1102. MR Characterization of a Syngeneic Orthotopic Ovarian Tumor Model
M. Bhujwalla1, Erica Markiewicz1, Marta Zamora1, Xiaobing Fan1, Jeffrey Mueller2, Suzanne D. Conzen3, Gregory S. Karczmar1
1JHU ICMIC Program, Division of Cancer Imaging Research, The Russell H Morgan Department of Radiology, The Johns Hopkins University School of Medicine, Baltimore, MD, United States; 2Department of Pathology, The Johns Hopkins University School of Medicine, Baltimore, MD, United States

1103. MRI Accurately Identifies Early Murine Mammary Cancers and Reliably Differentiates Between in Situ and Invasive Cancer: Correlation of MRI with Histology
Devkumar Mustafi1, Erica Markiewicz1, Marta Zamora1, Xiaobing Fan1, Jeffrey Mueller2, Suzanne D. Conzen3, Gregory S. Karczmar1
1Radiology, The University of Chicago, Chicago, IL, United States; 2Pathology, The University of Chicago, Chicago, IL, United States; 3Medicine, Section of Hematology and Oncology, The University of Chicago, Chicago, IL, United States

1104. Validation of Anti-VEGF Therapy in a Radiation Necrosis Mouse Model
Carlos J. Perez-Torres1, Liya Yuan2, Robert E. Schmidt2, Keith M. Rich2, Robert E. Drzymala3, Joseph JH Ackerman1, Joel R. Garbow2
1Radiology, Washington University, Saint Louis, MO, United States; 2Neurosurgey, Washington University, Saint Louis, MO, United States; 3Neuropathology, Washington University, Saint Louis, MO, United States; 4Radiation Oncology, Washington University, Saint Louis, MO, United States; 5Chemistry, Washington University, Saint Louis, MO, United States
1105. Correlation of Quantitative MRI-Derived Tumor Characteristics with Histology in Breast Cancer Murine Models
Anna G. Sorace1,2, Stephanie L. Barnes1,2, Jennifer G. Whisenant1,2, Mary E. Loveless1, Thomas E. Yankeelov1,2
1Radiology and Radiological Sciences, Vanderbilt University, Nashville, TN, United States; 2Vanderbilt University Institute of Imaging Science, Vanderbilt University, Nashville, TN, United States

1106. Importance of Characterizing Water Content in Quantifying Metabolites in Pancreatic Cancer and Normal Pancreas
Marie-France Penel1, Balaji Krishnamachary1, Tariq Shah1, Yelena Mironchik1, Anirban Maitra2, Zaver M. Bhujwalla1
1Department of Pathology, Chiba University, Chiba, Japan; 2Graduate School of Engineering, Osaka Prefecture University, Sakai, Osaka, Japan

1107. Evaluation of Nanoparticle Accumulation and Treatment Efficacy for a Combined Heavy-Ion-Beam Irradiation and Drug-Delivery Tumor Therapy
Daisuke Kokuryo1, Eiji Yuba1, Kenji Kono1, Tsuneo Saga1, Ichio Aoki1
1Institute of Biomaterials & Biomedical Engineering, University of Toronto, Toronto, Ontario, Canada

1108. NMR Based Pharmacometabolomics for Evaluating the Drug Response of Polyherbal Formulations
Gaurav Sharma1, Som Nath Ghatak1, Arun Kumar Verma1, Thirumurthy Velpandian1, Rama Jayasundar1
1NMR, All India Institute of Medical Sciences, New Delhi, Delhi, India; 2Biotechnology, All India Institute of Medical Sciences, New Delhi, Delhi, India; 3Pharmacology, All India Institute of Medical Sciences, New Delhi, Delhi, India

Traditional Poster
Cancer: Clinical & Preclinical Studies on New Contrast Mechanisms
Exhibition Hall Monday 10:45-12:45

1109. Relaxation Along Fictitious Field, Diffusion Weighted Imaging, and T2 Mapping of Prostate Cancer: Correlation of Quantitative Values with Gleason Score
Ivan Jambor1, Marko Pesola1, Harri Merisaari2, Pekka Taimen3, Peter J. Boström4, Timo Liimatainen5, Hannu J. Aronen1
1Department of Diagnostic Radiology, University of Turku, Turku, Finland; 2Turku PET Centre, University of Turku, Turku, Finland; 3Department of Pathology, Turku University Hospital, Turku, Finland; 4Department of Urology, Turku University Hospital, Turku, Finland; 5Department of Biotechnology and Molecular Medicine, A.I. Virtanen Institute for Molecular Sciences, University of Eastern Finland, Kuopio, Finland

1110. Repairing the Brain with Physical Exercise: Insights from Cortical Thickness Analysis of an Exercise Trial in Pediatric Brain Tumor Survivors
Kamila U. Szulc1, Ade Oyefiade1, Lily Riggs1,2, Eric Bouffer1, Suzanne Laughlin1, Brian W. Timmons1, Jason P. Lerch1, Cynthia B. de Medeiros2, Jovanka Skocic1, Donald J. Mabbott1,2
1Neurosciences and Mental Health, Hospital for Sick Children, Toronto, Ontario, Canada; 2Department of Psychology, Hospital for Sick Children, Toronto, Ontario, Canada; 3Division of Haematology/Oncology, Hospital for Sick Children, Toronto, Ontario, Canada; 4Department of Pediatrics, Hospital for Sick Children, Toronto, Ontario, Canada; 5Diagnostic Imaging, Hospital for Sick Children, Toronto, Ontario, Canada; 6Department of Pediatrics, McMaster University, Hamilton, Ontario, Canada; 7Mouse Imaging Centre, Hospital for Sick Children, Toronto, Ontario, Canada

1111. Manganese-Enhanced MRI of Minimally Gadolinium-Enhancing Breast Tumors
Hai-Ling Margaret Cheng1,2, Tameshwar Ganesh1, Reza Bayat Mokhtari1, Mosa Alhamami1, Herman Yeger1
1Institute of Biomaterials & Biomedical Engineering, University of Toronto, Toronto, Ontario, Canada; 2Physiology & Experimental Medicine, Hospital for Sick Children, Toronto, Ontario, Canada; 3Developmental & Stem Cell Biology, Hospital for Sick Children, Toronto, Ontario, Canada
1112. Investigating PH and Other Effects of a Proton Pump Inhibitor (PPI) in Cancer Models with $^{31}$P Magnetic Resonance
Gopal Varma¹, Xiaoen Wang¹, Han Xie², Gerburg Wulf³, Pankaj Seth⁴, David C. Alsop¹, Aaron K. Grant⁵, Vikas P. Sukhatme⁶
¹Radiology, Division of MR Research, Beth Israel Deaconess Medical Center, Harvard Medical School, Boston, MA, United States; ²Department of Medicine, Beth Israel Deaconess Medical Center, Harvard Medical School, Boston, MA, United States; ³Division of Hematology and Oncology, Department of Medicine, Beth Israel Deaconess Medical Center, Harvard Medical School, Boston, MA, United States

Proton pump inhibitors (PPIs) hold potential for treatment of cancer treatment by disrupting the transport of excess hydrogen ions. The effects of PPIs in cancer models were investigated using $^{31}$P magnetic resonance spectroscopy. A significant increase in the ratio of inorganic phosphate ($P_i$) to ATP was observed in cancer models treated with a PPI. In addition, a more significant increase in the $P_i/γATP$ ratio from pre- to post-injection periods was observed.

1113. 19F MRSI of Capecitabine in the Liver Using Broadband TxRx Antennas and Dual-Frequency Excitation Pulses at 7T
Jetse van Gorp¹, Peter Seevinck¹, Anna Andreychenko², Alexander Raaijmakers², Peter Luijten¹, Miriam Koopman³, Vincent Boer³, Dennis Klomp³
¹Image Sciences Institute, University Medical Center Utrecht, Utrecht, Netherlands; ²Department of Radiotherapy, University Medical Center Utrecht, Utrecht, Netherlands; ³Department of Radiology, University Medical Center Utrecht, Utrecht, Netherlands

In this work, the feasibility to detect orally administered chemotherapy (capecitabine) in the liver was investigated at 7T. The results show that it is feasible to monitor chemotherapy metabolism at 7T in the human body.

1114. Mean-Shift Clustering for Assessing Response Heterogeneity in Bone Metastases
Sarah Ann Mason¹, Nina Tunariu¹, Dow-Mu Koh², David J. Collins¹, Martin O. Leach¹, Matthew D. Blackledge¹
¹Institute of Cancer Research and Royal Marsden Hospital, Sutton, Surrey, United Kingdom

No single MR sequence can fully represent the underlying biology in bone metastases, which necessitates that clinicians have tools to assess response heterogeneity. Mean-shift clustering was used to analyze multi-parametric MRI data and assess response heterogeneity. The method was found to be more robust than conventional image analysis techniques and provides a promising approach for evaluating response heterogeneity.

1115. cPLA2 Inhibition Affects the Relationship Between Vascular Function and Structure in a Patient-Derived Breast Cancer Model: A Correlation Study of DCE-MRI Vs. Micro-CT
Eugene Kim¹, Astrid Jullumstrø Feuerherm²,³, Berit Johansen²,³, Olav Engebraaten¹, Gunhild Mari Mælandsmo⁴, Tone Frost Bathen¹, Siver Andreas Moestue¹
¹MR Cancer Group, Department of Circulation and Medical Imaging, Norwegian University of Science and Technology, Trondheim, Norway; ²Department of Biology, Norwegian University of Science and Technology, Trondheim, Norway; ³Avexxin AS, Trondheim, Norway; ⁴Department of Tumor Biology, Institute for Cancer Research, Oslo University Hospital, Oslo, Norway

DCE-MRI and ex vivo micro-CT angiography were used to investigate the relationship between tumor vascular function and structure in a patient-derived breast cancer model. The results show that cPLA2 inhibition affects the relationship between vascular function and structure, indicating that the inhibition has a spatially heterogeneous effect on blood flow and/or vessel permeability.

1116. Assessing the Utility of Oxygen-Enhanced Magnetic Resonance Imaging (OE-MRI) to Predict Radiation Response of Rat Prostate Tumors
Derek A. White¹,², Zhang Zhang³, Heling Zhou¹, Debu Saha⁴, Peter Peschke⁵, Zhongwei Zhang¹, Ralph P. Mason⁵
¹Radiology, University of Texas Southwestern, Dallas, TX, United States; ²Bioengineering, University of Texas at Arlington, TX, United States; ³Radiation Oncology, University of Texas Southwestern, Dallas, TX, United States; ⁴Clinical Cooperation Unit Molecular Radiooncology, German Cancer Center, Heidelberg, Germany; ⁵Radiology, University of Texas Southwestern, Dallas, TX, United States

Non-invasive prognostic biomarkers promise new insights into tumor pathophysiology potentially allowing therapy to be tailored to individual patients. The utility of OE-MRI was assessed to predict radiation response in rat prostate tumors. Correlations were found with R1 and R2* assessed before the first dose of radiation.

1117. Quantitative Analysis of Multi-Parametric FLT-PET/MRI in Evaluating Early Treatment Response in Renal Cell Carcinoma
Jacob Antunes¹, Satish Viswanath¹, Mirabela Rusu¹, Laia Valls², Norbert Avril², Christopher Holmes², Anant Madabhushi¹
¹Center for Computational Imaging and Personalized Diagnostics, Case Western Reserve University, Cleveland, OH, United States; ²University Hospitals Case Medical Center, Cleveland, OH, United States

We present a framework for quantitatively evaluating early treatment response of renal cell carcinoma (RCC). A single RCC patient was imaged using multi-parametric PET/MRI. The results show high specificity in identifying early treatment response in metastatic RCC.

1118. Early Detection of Treatment-Induced Apoptosis in Tumors Using Temporal Diffusion Spectroscopy MRI
Xiaoyu Jiang¹, Hua Li¹, Ping Zhao¹, H. Charles Manning¹, Junzhong Xu¹, John C. Gore¹
¹Institute of Imaging Science, vanderbilt university, nashville, TN, United States

The restoration of apoptosis in cancer cells is a critical strategy in the development of novel anti-cancer therapies. Early, non-invasive and specific detection of the microstructural variations associated with treatment-induced apoptosis is needed. The results show that temporal diffusion spectroscopy MRI can be used for this purpose.
1119. **Highly Accelerated DCE-MRI Using Region of Interest Compressed Sensing**  
Amaresha Shridhar Konar1, Nithin N. Vajuvalli1, Rashmi R. Rao1, Divya Jain1, Dharmendra CK Kumar1, Sairam
Geethanath1  
1Medical Imaging Research Center, Dayananda Sagar College of Engineering, Bangalore, Karnataka, India

1120. **Perfusion Correlated Heterogeneity in NSCLC Patient Tumor Glucose Metabolism**  
Christopher Hensley1, Eunsook Jin2,3, Naama Lev-Cohain4, Qing Yuan4, Kemp Kernstine5, Craig Malloy6,7, Robert Lenkinski,6, Ralph Deberardinis8,9  
1Children's Research Institute, University of Texas Southwestern Medical Center, Dallas, TX, United States; 2Advanced Imaging Research Center, University of Texas Southwestern Medical Center, TX, United States; 3Internal Medicine, University of Texas Southwestern Medical Center, TX, United States; 4Radiology, University of Texas Southwestern Medical Center, TX, United States; 5Cardiovascular and Thoracic Surgery, University of Texas Southwestern Medical Center, TX, United States; 6Advanced Imaging Research Center, University of Texas Southwestern Medical Center at Dallas, TX, United States; 7Radiology, University of Texas Southwestern Medical Center at Dallas, TX, United States; 8Children's Research Institute, University of Texas Southwestern Medical Center at Dallas, TX, United States; 9Pediatrics, University of Texas Southwestern Medical Center at Dallas, TX, United States

1121. **Monitoring Quantitative Tumor Blood Volume in Mouse Brain Under Bevacizumab by the RSST1-MRI Method.**  
Michel Sarraf1,2, Flavien Caraguel1, François Berger1, Boudewijn Van Der Sanden1, Hana Lahrech1  
1CEA-CLINATEC, Grenoble, Isère, Rhône-Alpes, France; 2Saint Joseph University, Beyrouth, Lebanon

1122. **13C NMR Studies of Lymphoma and Melanoma Cells in the Perfusion Bioreactor and In Vivo Xenografts for Flux Calculation**  
Seung-Cheol Lee1, Jeffrey Roman1, Kavindra Nath1, David Nelson1, Kevin Muriuki1, Alexander Shestov1, Jerry Glickson1  
1Department of Radiology, University of Pennsylvania, Philadelphia, PA, United States

1123. **13C MRS/Bioreactor Technique to Study Melanoma: Quantifying Glutaminolysis and De Novo Lipogenesis**  
Alexander A. Shestov1, Anthony Mancuso2, Pierre Gilles Henry3, Dennis B. Leeper4, Jerry David Glickson5  
1Radiology, University of Pennsylvania, Philadelphia, PA, United States; 2Radiology, University of Pennsylvania, PA, United States; 3University of Minnesota, MN, United States; 4Radiation Oncology, Thomas Jefferson University, PA, United States; 5Radiology, University of Pennsylvania, PA, United States

1124. **Noninvasive Image-Based Quantification of 18F-Fluoromisonidazole (FMISO) Uptake Using PET/MRI**  
Dragana Savic1, Youngho Seo1, Randall Hawkins1, Soomneer Cha2, Miguel Pampaloni1, Sharmila Majumdar1, Ramon Barajas1  
1Radiology and Biomedical Imaging, University of California, San Francisco (UCSF), San Francisco, CA, United States

1125. **Investigation of Prostate Cancer Metabolomics with Prostate Biopsy Cores**  
Emily Decelle1, Taylor Fuss1, Shulin Wu1, Adam Feldman1, Douglas Dahl1, Aria Olumi2, W Scott McDougal2, Chin-Lee Wu1, Leo L. Cheng1  
1Pathology, Massachusetts General Hospital, Boston, MA, United States; 2Urology, Massachusetts General Hospital, Boston, MA, United States; 3Pathology and Radiology, Massachusetts General Hospital, Boston, MA, United States
Traditional Poster

1126. Differences in Phospholipid and Lipid Metabolism Between Cancer Cells in Culture and in Solid Tumors
Noriko Mori1, Fionné Wildes1, Tomoyo Takagi1, Kristine Glunde2, Zaver M. Bhujwalla1, 2
1The Russell H. Morgan Department of Radiology and Radiological Science, The Johns Hopkins University School of Medicine, Baltimore, MD, United States; 2The Sidney Kimmel Comprehensive Cancer Center, The Johns Hopkins University School of Medicine, MD, United States

1127. Glutamate Dehydrogenase Inhibition Reduces Glutamine Conversion Into 2HG in IDH1-Mutated Cancer Cells as Detected by 13C MRS
Tom Peeters1, Vincent Breukels1, Corina van den Heuvel2, Anna Navis2, Sanne van Lith2, Jack van Asten1, Remco Molenaar3, William Leenders2, Arend Heerschap3
1Department of Radiology and Nuclear Medicine, Radboudumc, Nijmegen, Netherlands; 2Department of Pathology, Radboudumc, Nijmegen, Netherlands; 3Department of Cell Biology and Histology, Academic Medical Center, Amsterdam, Netherlands

1128. In Vivo High Resolution Multifrequency MR Elastography of Neuro Tumors Compared to Single Cell Mechanical Properties
Ingolf Sack1, Anatol Fritsch2, Steve Pawlizak2, Martin Reiss-Zimmermann3, Karl-Titus Hoffmann3, Felix Arlt4, Wolf Yongming Dai1, Junxiang Zhang2, Dongmei Wu3
1Radiology, University of Wisconsin, Madison, WI, United States; 2Medical Physics, University of Wisconsin, Madison, WI, United States; 3Shanghai Key Laboratory of Magnetic Resonance, East China Normal University, Shanghai, China; 4Diagnostic Imaging and Nuclear Medicine, Kyoto University Hospital, Kyoto, Japan

1129. Amine as a Novel Biomarker for Differentiating Malignancy of Breast Cancer Cells
Xiao-Yong Zhang1, Jingping Xie1, Hua Li1, Junzhong Xu1, John C. Gore1, Zhongliang Zua1
1Institute of Imaging Science, Vanderbilt University, Nashville, TN, United States

Traditional Poster

Breast Cancer Clinical
Exhibition Hall Monday 10:45-12:45

1130. Assessment of Tumor Morphology on Diffusion-Weighted Breast MRI: Diagnostic Value of Reduced FOV High Resolution Diffusion-Weighted Imaging
Maarten W. Barentsz1, Valentina Taviani1, Jung M. Chang1, Debra M. Ikeda1, Kanae K. Miyake1, Suchandrima Banerjee1, Maurie A.A.J. van den Bosch1, Brian A. Hargreaves1, Bruce L. Daniel2
1Radiology, Stanford University, Stanford, CA, United States; 2Radiology, Stanford University Hospital, Stanford, CA, United States

1131. DW-PSIF in Breast MRI
Catherine J. Moran1, Jung Min Chang2, Marcus T. Alley1, Kanae Kawai Miyake1, Debra M. Ikeda1, Brain A. Hargreaves1, Kristin L. Granlund1, Bruce L. Daniel1
1Radiology, Stanford University, Stanford, CA, United States; 2Seoul National University Hospital, Seoul, Korea

1132. Breast Tumors Characterization Using Diffusion Kurtosis Imaging
Yongming Dai1, Junxiang Zhang2, Dongmei Wu3
1Philips Healthcare, Shanghai, China; 2Department of Radiology, The First Affiliated Hospital of Bengbu Medical College, Anhui, China; 3Shanghai Key Laboratory of Magnetic Resonance, East China Normal University, Shanghai, China

1133. Novel Dynamic Contrast Enhanced Breast MRI with High Spatiotemporal Resolution and Fat Separation: Image Quality Compared to the Clinical Standard-Of-Care MRI
Robert M. Strigel1, 2, Courtney K. Morrison1, Leah C. Herzenz Bancroft1, James H. Holmes1, Kang Wang1, Wendy B. DeMartini1, Alejandro Munoz del Rio1, 2, Frank R. Korosec1, 2
1Radiology, University of Wisconsin, Madison, WI, United States; 2Medical Physics, University of Wisconsin, Madison, WI, United States; 3Global MR Applications and Workflow, GE Healthcare, Madison, WI, United States
1134. MRI Functional Parameters in Breast Cancer: T2*, ADC and Contrast Agent Uptake
Evanthia Kouzi1, Maria A. Schmidt1, Marco Borri1, Cheryl Richardson2, Georgina Hopkinson3, Elizabeth A.M. O'Flynn1, Robin P. Wilson2, Steven Allen2, Romney J.E. Pope2, Martin O. Leach1
1CR-UK and EPSRC Imaging Centre, Royal Marsden NHS Foundation Trust and Institute of Cancer Research, Sutton, Surrey, United Kingdom; 2Department of Radiology, Royal Marsden NHS Foundation Trust, Chelsea, London, United Kingdom

1135. Magnetization Transfer Ratio Variations in Malignant Breast Lesions and Parenchyma
Andrew J. Patterson1, Mary M. McLean2, Reem Bedair1, Andrew N. Priest1, John R. Griffiths2, Martin J. Graves1, Fiona J. Gilbert1
1Department of Radiology, Cambridge University Hospitals NHS Foundation Trust, Cambridge, England, United Kingdom; 2Cancer Research UK Cambridge Institute, Li Ka Shing Cambridge, Cambridge, England, United Kingdom

1136. Evaluation of Lipid Composition in Patients with Benign Tissue and Cancer Using Multiple Gradient Echo MRI
Melanie Freed1, 2, Pippa Storey1, Alana Amarosa Lewin1, Melanie Moccaldi1, Linda Moy1, Sungheon G. Kim1, 2
1Center for Biomedical Imaging, Department of Radiology, NYU School of Medicine, New York, NY, United States; 2Center for Advanced Imaging Innovation and Research (CAI2R), Dept. Radiology, NYU School of Medicine, New York, NY, United States

Elisabeth Weiland1, Sandra Peter2, Dominik Nickel1, Rolf Janka2, Michael Uder2, Evelyn Wenkel2
1MR Application Development, Siemens Healthcare, Erlangen, Germany; 2Radiology, University of Erlangen, Germany

1138. Alterations to Breast Tissue Chemistry in Women at Risk of Cancer: 2D MR Spectroscopy In Vivo Study
Jessica Buck1, Saadallah Ramadan1, Leah Best2, Judith Silcock3, Jameen Arm3, Scott Quadrelli3, Gorane Santamaria1, Kin Men Leong2, Peter Lau2, Peter Malycha1, David Clark1, 3, Carolyn Mountford1, 4
1Centre for MR in Health, University of Newcastle, Newcastle, NSW, Australia; 2Calvary Mater Hospital, Newcastle, NSW, Australia; 3The Breast and Endocrine Centre, Gateshead, NSW, Australia; 4Centre for Clinical Spectroscopy, Department of Radiology, Brigham and Women's Hospital, Harvard Medical School, Boston, MA, United States

1139. Assessment of Background Parenchymal Enhancement in Breast MRI of BRCA 1/2 Mutation Carriers Compared to Matched Controls
Alana Amarosa Lewin1, Sungheon Kim1, James S. Babbi1, Amy N. Melsaether1, Jason McKellogg1, Melanie Moccaldi2, Ana Paula Klautau Leite1, Linda Moy3
1Radiology, New York University School of Medicine, New York, United States; 2Radiology, New York University Cancer Institute, New York, United States; 3Radiology, Hospital das Clinicas, School of Medicine, University of Sao Paulo, Brazil

1140. A Practical Approach to Pharmacokinetic Modelling in Monitoring Neoadjuvant Chemotherapy in Breast Cancer
Reem Bedair1, Andrew Patterson2, Mary McLean1, Roie Manavaki1, Scott Reid1, John Griffiths1, Martin Graves2, Fiona Gilbert1
1University of Cambridge, Department of Radiology, Cambridge, Cambridgeshire, United Kingdom; 2Department of Radiology, Cambridge University Hospitals NHS Foundation Trust, Cambridge, Cambridgeshire, United Kingdom; 3Cancer Research UK Cambridge Research Institute, Cambridge, Cambridgeshire, United Kingdom; 4GE Healthcare, Diagnostic Imaging, Buckingham, Buckinghamshire, United Kingdom

1141. Characterization of Invasive Breast Cancer Using Quantitative DCE-MRI at 3.0T
Reem Bedair1, Martin Graves2, Mary McLean1, Scott Reid1, Roie Manavaki1, John Griffiths1, Andrew Patterson2, Fiona Gilbert1
1University of Cambridge, Department of Radiology, Cambridge, Cambridgeshire, United Kingdom; 2Department of Radiology, Cambridge University Hospitals NHS Foundation Trust, Cambridge, Cambridgeshire, United Kingdom; 3Cancer Research UK Cambridge Research Institute, Cambridge, Cambridgeshire, United Kingdom; 4GE Healthcare, Diagnostic Imaging, Buckingham, Buckinghamshire, United Kingdom
1142. Influence of Breast Cancer Receptor Status on Multi-Parametric Magnetic Resonance Imaging for Predicting Treatment Response: Preliminary Results
Xia Li1, Vandana G. Abramson1, Lori R. Arlinghaus1, Hakmook Kang1, Jason M. Williams1, Richard G. Abramson1, A. Bapsi Chakravarthy1, Praveen Pendyala1, Thomas E. Yankee1
1Vanderbilt University, Nashville, TN, United States

1143. Does Peritumoral Tissue Hold Valuable Information for Texture Analysis?
Michael Fox1, Peter Gibbs1, Martin Pickles1, Lindsay W. Turnbull1
1Centre for MR Investigations, HYMS at University of Hull, Hull, East Yorkshire, United Kingdom

1144. The Association of Breast Density with Tumor Subtypes: Evaluation with 3D MRI
Jeon-Hor Chen1, 2, Yifan Li1, Yoon Jung Choi3, Chen-Pin Chou4, Tsung-Lung Yang4, Min-Ying Su1
1Center for Functional Onco-Imaging, University of California, Irvine, CA, United States; 2Department of Radiology, Eda Hospital and I-Shou University, Kaohsiung, Taiwan; 3Department of Radiology, Kangbuk Samsung Hospital, Seoul, Korea; 4Department of Radiology, Kaohsiung Veterans General Hospital, Kaohsiung, Taiwan

1145. Minkowski Functionals in MRI: A New Texture Analysis Tool in Breast MRI
Michael Fox1, Peter Gibbs1, Martin Pickles1, Lindsay W. Turnbull1
1Centre for MR Investigations, HYMS at University of Hull, Hull, East Yorkshire, United Kingdom

1146. Estimation of Fat Fractions in Different Subtypes of Breast Cancer Using In-Vivo 1H MRS Study
Khushbu Agarwal1, Uma Sharma1, Smriti Hari2, Vurthaluru Seenu1, Rajinder Parshad1, Naranamangalam R. Jagannathan1
1Department of NMR & MRI Facility, All India Institute of Medical Sciences, New Delhi, Delhi, India; 2Department of Radiodiagnosis, All India Institute of Medical Sciences, New Delhi, Delhi, India; 3Department of Surgical Disciplines, All India Institute of Medical Sciences, New Delhi, Delhi, India

Traditional Poster
Cancer: Prostate
Exhibition Hall Monday 10:45-12:45

1147. Rapid Quantitative T2-Mapping of the Prostate Using 3D Dual Echo Steady State (DESS)
Isabel Dregely1, Daniel AJ Margolis1, Kyung Sung1, Novena Rangwala1, Steve Raman1, Holden H. Wu1
1Radiological Sciences, University of California Los Angeles, Los Angeles, CA, United States; 2University of California Los Angeles, CA, United States

1148. Modelling Tissue Microstructure in Bone Metastases from Prostate Cancer Using VERDICT MRI
Colleen Bailey1, Eleftheria Panagiotaki1, Nina Tunariu1, Matthew R. Orton1, Veronica A. Morgan1, Thorsten Feiweier1, David J. Hawkes1, Martin O. Leach1, David J. Collins1, Daniel C. Alexander1
1Centre for Medical Image Computing, University College London, London, United Kingdom; 2Radiology, Royal Marsden NHS Foundation Trust and Institute of Cancer Research, Sutton, United Kingdom; 3CR-UK and EPSRC Cancer Imaging Centre, Institute of Cancer Research and Royal Marsden NHS Foundation Trust, London, United Kingdom; 4Healthcare Sector, Siemens AG, Erlangen, Germany

1149. A Novel Prostate MR Elastography Technique Based on Image Similarity
Seyed Reza Mousavi1, Seyed Mohammad Hosaghar2, Timothy Scholl1, 2, Abbas Samani1, 3
1Clinical Neurological Sciences, University of Western Ontario, London, Ontario, Canada; 2Medical Biophysics, University of Western Ontario, London, Ontario, Canada; 3Robarts Research Institute, London, Ontario, Canada

200
1150. DCE-MRI Appearance of Prostate After Androgen Deprivation Therapy – Preliminary Results  
Lucy E. Kershaw1,2, Andrew J. McPartlin,3, Ananya Choudhury2,4  
1CMPE, The Christie NHSFT, Manchester, United Kingdom; 2Institute of Cancer Sciences, The University of Manchester, Manchester, United Kingdom; 3Oncology, The Christie NHSFT, Manchester, United Kingdom

1151. Comparison of Prostate Tumor Volume Delineation Between Multi-Parametric MRI Sequences When Planning for Hypofractionated Radiotherapy  
Hugh Harvey1, Veronica Morgan2, David Dearnaley1, Sharon Giles2, Alison Macdonald2, Julia Murray1, Nandita deSouza1  
1CRUK Cancer Imaging Centre, The Institute of Cancer Research, Sutton, Surrey, United Kingdom; 2The Royal Marsden NHS Foundation Trust, Surrey, United Kingdom; 3Radiotherapy & Imaging, The Institute of Cancer Research, London, United Kingdom

1152. Sensitive Detection of Zinc(II) in the Prostate with a Gadolinium-Based MRI Contrast Agent  
Veronica Clavijo Jordan1,2, Christian Preihs1, Shiuhwei Chen3, Shanrong Zhang1, Wen-hong Li1, Neil Rofsky2, Dean Sherry1,4  
1Advanced Imaging Research Center, UT Southwestern Medical Center, Dallas, TX, United States; 2Department of Radiology, UT Southwestern Medical Center, Dallas, TX, United States; 3Departments of Cell Biology and of Biochemistry, UT Southwestern Medical Center, Dallas, TX, United States; 4Department of Chemistry, UT Dallas, TX, United States

1153. Bi-Exponential Diffusion Analysis in Normal Prostate and Prostate Cancer: Transition Zone and Peripheral Zone Considerations  
Thiele Kobus1,2, Andriy Fedorov1, Clare Tempany1, Robert Mulkern3, Ruth Dunne1, Stefan Maier1  
1Radiology, Brigham and Women's Hospital, Boston, MA, United States; 2Radiology, Radboud UMC, Nijmegen, Netherlands; 3Radiology, Children's Hospital, Boston, MA, United States

1154. A Novel Computer-Assisted Approach for Prostate Cancer Diagnosis on T2w MRI  
Haibo Wang1, Satish Viswanath2, Asha Singanamalli3, Anant Madabhushi4  
1Case Western Reserve University, Cleveland Heights, OH, United States; 2Biomedical Engineering, Case Western Reserve University, Cleveland Heights, OH, United States; 3Case Western Reserve University, OH, United States; 4Biomedical Engineering, Case Western Reserve University, OH, United States

1155. MRI-Guided Focal Laser Ablation of Prostate Cancer: Comparison of Targeted and Ablated Volumes  
Holden H. Wu1, Alan Priester2,3, Shyam Natarajan3,4, Kyunghyun Sung1, Daniel Margolis1, Warren Grundfest3,4, Leonard Marks3,4, Steven Raman1  
1Radiological Sciences, University of California Los Angeles, Los Angeles, CA, United States; 2Biomedical Engineering, University of California Los Angeles, CA, United States; 3Center for Advanced Surgical and Interventional Technology (CASIT), University of California Los Angeles, CA, United States; 4Urology, University of California Los Angeles, CA, United States

1156. Pilot: MRI Differences Associated with Dutasteride and Finasteride Treatments in Patients with Low Risk Prostate Cancer  
Olga Starobinets1,2, John Kornak3, John Kurhanewicz1,2, Susan M. Noworolski1,2  
1Radiology and Biomedical Imaging, UCSF, San Francisco, CA, United States; 2Graduate Group in Bioengineering, UC Berkeley, Berkeley, CA, United States; 3Epidemiology and Biostatistics, UCSF, San Francisco, CA, United States

1157. Diagnostic Performance of 68Ga-PSMA-PET/MRI Versus 68Ga-PSMA-PET/CT in the Evaluation of Lymph Node and Bone Metastases of Prostate Cancer  
Martin Thomas Freitag1, Jan Radtke1,2, Boris Hadaschik2, Uwe Haberkorn1, Heinz-Peter Schlemmer1, Matthias Roethke1, Ali Afsar-Oromieh1  
1Department of Radiology, German Cancer Research Center, Heidelberg, Baden-Wuerttemberg, Germany; 2Department of Urology, University hospital of Heidelberg, Heidelberg, Baden-Wuerttemberg, Germany; 3Department of Nuclear Medicine, University hospital of Heidelberg, Heidelberg, Baden-Wuerttemberg, Germany
1158. The Influence of Polyamines on Metabolite Ratios in the Prostate at 7 Tesla
Mariska P. Lutjtej1, Catalina S. Arteaga de Castro2, Peter R. Luijten1, Marco van Vulpen3, Uulke A. van der Heide4, Dennis WJ Klomp3
1Imaging Division, University Medical Center Utrecht, Utrecht, Netherlands; 2Department of Radiotherapy, the Netherlands Cancer Institute - Antoni van Leeuwenhoek hospital, Amsterdam, Netherlands; 3Department of Radiology Physics, University Hospitals Coventry & Warwickshire NHS Trust, Coventry, Warwickshire, United Kingdom; 4Department of Urology, University Hospitals Coventry & Warwickshire NHS Trust, Coventry, Warwickshire, United Kingdom

1159. Clinical Assessment of B1+ Inhomogeneity Effects on Quantitative Prostate MRI at 3.0 T
Xinran Zhong1, Novena Rangwala1, Steven Raman1, Daniel Margolis1, Holden Wu1, Kyunghyun Sang1,2
1Radiological Sciences, University of California Los Angeles, Los Angeles, CA, United States; 2Biomedical Physics Interdepartmental Program, University of California Los Angeles, Los Angeles, CA, United States

1160. Validation of Real Time Virtual Sonography (RVS) for Targeted MR-Ultrasound Guided Transrectal Prostate Biopsies Against Transperineal Template Saturation Biopsies for Service Development
Victoria Sherwood1, Donald MacDonald2, James Harding1, Nicholas Hedley1, Kieran Jefferson2, Chris Koller3, Charles Hutchinson4
1Department of Radiology Physics, University Hospitals Coventry & Warwickshire NHS Trust, Coventry, Warwickshire, United Kingdom; 2Department of Urology, University Hospitals Coventry & Warwickshire NHS Trust, Coventry, Warwickshire, United Kingdom; 3Department of Radiology, University Hospitals Coventry & Warwickshire NHS Trust, Coventry, Warwickshire, United Kingdom

1161. T2-Weighted 3D Variable-Flip Angle Turbo Spin Echo Compared to Standard 2D T2-Weighted Imaging at 3T for Prostate Cancer Detection in a Patient Cohort Undergoing MR/US Fusion Biopsy
Steven M. Shea1, Joseph M. Yacoub2, Gopal N. Gupta2, Grace Yoon3, Ari Goldberg4
1Radiology, Loyola University Chicago, Maywood, IL, United States; 2Urology, Loyola University Chicago, Maywood, IL, United States; 3Stritch School of Medicine, Loyola University Chicago, Maywood, IL, United States

1162. In Vivo Sodium Imaging of Human Prostate Cancer
Justin Charles Peterson1, Adam Farag2, Trevor Szekeres2, Eli Gibson3,4, Aaron D. Ward5, Joseph Chin5, Stephen Paulier5, Glenn Bauman5, Cesare Romagnoli5, Robert Barthal5,6, Timothy J. Scholl6,7
1Medical Biophysics, Western University, London, Ontario, Canada; 2Robarts Research Institute, Ontario, Canada; 3Biomedical Engineering, Western University, Ontario, Canada; 4London Health Sciences Centre, Ontario, Canada; 5St. Joseph's Health Care, Ontario, Canada

1163. Initial Evaluation of T2 Shine-Through Elimination with Relax DWI
Paul Summers1, Daniel Chong2, Valentina Elli2, Daniele Giardiello3, Mehran Vaziri4, Giuseppe Petralia5, Massimo Bellomi6
1European Institute of Oncology, Milan, Italy; 2Stillpig Software, Sarawak, Malaysia; 3University of Milan, Milan, Italy; 4University of Milan - Bicocca, Milan, Italy

1164. Using Multiparametric MRI to Differentiate Prostate Cancer in the Anterior Aspect of the Gland
Olga Starobinets1,2,3,4, Jeffrey Simko5,6, Kyle Kuchinsky6, Sonam Machingal5, John Kurhanewicz7,2, Peter R. Carroll8, Kirsten L. Greene1, Susan M. Noworolski1,2
1Radiology and Biomedical Imaging, UCSF, San Francisco, CA, United States; 2Graduate Group in Bioengineering, UC Berkeley, Berkeley, CA, United States; 3Pathology, UCSF, San Francisco, CA, United States; 4Urology, UCSF, San Francisco, CA, United States

1165. Validation of T2 Mapping for Treatment Response Monitoring in Longitudinal Multi-Center Clinical Trials
Petra J. van Houdt1, Harsh K. Agarwal2, Laurens B. van Buuren1, Marko Ivancevic3, Soren Haack4, Jesper Folsted Kallehave5, Peter L. Choyke6, Uulke A. van der Heide7
1Radiation Oncology, the Netherlands Cancer Institute, Amsterdam, Netherlands; 2Philips Research NA, Briarcliff Manor, MD, United States; 3National Cancer Institute, National Institutes of Health, Bethesda, MD, United States; 4Philips Healthcare, Best, Netherlands; 5Clinical Engineering, Aarhus University Hospital, Aarhus, Denmark; 6Medical Physics, Aarhus University Hospital, Aarhus, Denmark
1166. A Multi-Site Study to Develop a New Pseudo-Quantitative T2w MRI Map for Prostate Cancer Characterization: Preliminary Findings
Satish Easwar Viswanath, Chun Yeung Yim, Nicolas Bloch, Mark Rosen, John Kurhanewicz, Anant Madabhushi
Case Western Reserve University, Cleveland, OH, United States; Rutgers University, New Brunswick, NJ, United States; Boston University, MA, United States; University of Pennsylvania, PA, United States; University of California San Francisco, CA, United States; Case Western Reserve University, OH, United States

1167. Diagnostic Performance of the ESUR PI-RADS Scoring System for Multiparametric MRI of the Prostate: Systematic Comparison of Four Parameters Versus Three Parameters for Detection and Grading of Prostate Cancer
Stephan Polanec, Katja Pinker, Martin Suasani, Peter Brader, Dietmar Georg, Thomas Helbich, Pascal Baltzer
General Hospital of the Medical University of Vienna, Vienna, Austria

1168. Radiogenomics of Prostate Cancer: Association Between Quantitative Multi-Parametric MRI Features and PTEN Expression
Aytekin Oto, David VanderWeele, Yulei Jiang, Stephanie Marie McCann, Xiaobing Fan, Jianing Wang, Tatjana Antic
Radiology, The University of Chicago Medicine, Chicago, IL, United States; Internal Medicine, The University of Chicago Medicine, Chicago, IL, United States; Pathology, The University of Chicago Medicine, Chicago, IL, United States

Adam T. Froemming, Eric A. Borisch, Joshua D. Trzasko, Roger C. Grimm, Armando Manduca, Phillip Young, Stephen J. Riederer, Akira Kawashima
Radiology, Mayo Clinic, Rochester, MN, United States; Physiology and Biomedical Engineering, Mayo Clinic, MN, United States; Radiology, Mayo Clinic, MN, United States

1170. Pre-Operative T Stage Evaluation of Esophageal Carcinoma: A Comparison Study Between Self-Gating Radial VIBE and Breath-Hold VIBE
Fengguang Zhang, Jirong Qiu, Hui Liu, Xiang Li, Hongkai Zhang, Hailiang Li, Grimm Robert, Kiefer Berthold, Xuejun Chen
Radiology, Henan Tumor Hospital, Zhengzhou, Henan, China; NEA MR Collaboration, Siemens Ltd., China, Shanghai, China; Healthcare, Siemens AG, Erlangen, Germany

1171. Isotropic Diffusion Spectrum Imaging Constrained by Independent Component Analysis with a Ball and Stick Model to Assess Cellularity of Brain Tumors
JEONG-WON JEONG, Csaba Juhász, Sandeep Mittal, Edit Bosnyák, Diane C. Chugani
Pediatrics and Neurology, Wayne State University, Detroit, MI, United States; Children's Hospital of Michigan, Detroit, MI, United States; Karmanos Cancer Institute, Detroit, MI, United States; Neurosurgery and Oncology, Wayne State University, Detroit, MI, United States

1172. Comparison of Intravoxel Incoherent Motion Characteristics Between Different Tumor Stages and Grades in Rectal Cancer
Hongliang Sun, Yanyan Xu, Aiping Song, Wu Wang
Radiology, China-Japan Friendship Hospital, Beijing, China; China-Japan-Friendship Hospital, Beijing, China
1173. Whole Body Multi-Parametric MRI: a Comparison of the Diagnostic Performance of Different Sequences
Arash Latifoltojar, Margaret Hall-Craggs, Alan Bainbridge, Charles House, Kannan Rajesparan, Stuart Taylor, Kwee Yong, Neil Rabin, Shonit Punwani
1University College London, London, United Kingdom; 2University College London Hospital, London, United Kingdom

Jose D Sergio Almeida, Flora Gröning, Jiabao He
1Aberdeen Biomedical Imaging Centre, University of Aberdeen, Aberdeen, Scotland, United Kingdom; 2Anatomy and Musculoskeletal Research Programme, University of Aberdeen, Aberdeen, Scotland, United Kingdom

1175. Bone Imaging Using an Inversion Recovery Prepared UTE Sequence
Michael Carl, Jiang Du, Graeme M. Bydder
1GE Healthcare, San Diego, CA, United States; 2UCSD, CA, United States

1176. RF and Coil Inhomogeneity Correction in 2D Leg Images: A New Method Comparing with LEMS
Faezeh Fallah, Christian Wuerslin, Fritz Schick, Bin Yang
1Section on Experimental Radiology, University Clinic of Tübingen, Tübingen, Baden-Wuerttemberg, Germany; 2Institute of Signal Processing and System Theory, University of Stuttgart, Stuttgart, Baden-Wuerttemberg, Germany

1177. Accurate Quantitative Assessment of Synovitis in Rheumatoid Arthritis Using Pixel by Pixel, Time-Intensity Curve Shape Analysis
Taro Sakashita, Tamotsu Kamishima, Hiroyuki Sugimori, Meiki Tod, Atsushi Noguchi, Michihito Kawano, Tatsuya Atsumi
1Graduate School of Health Sciences, Hokkaido University, Sapporo, Hokkaido, Japan; 2Faculty of Health Sciences, Hokkaido University, Hokkaido, Japan; 3Department of Radiology, Hokkaido University Hospital, Hokkaido, Japan; 4Graduate School of Health Sciences, Hokkaido University, Hokkaido, Japan; 5Internal Medicine 2, Hokkaido University Hospital, Hokkaido, Japan; 6Obihiro-Kosei General Hospital, Hokkaido, Japan

1178. Quantitative Evaluation of Synovial Membrane and Effusion in Knee Osteoarthritis:
Junghyo Kim, Takashi Nishii, Hiroshi Hamada, Masaki Takao, Takashi Sakai, Tetsuya Tomita, Kazuma Futai, Hisashi Tanaka, Hideki Toshikawa, Nobuhiko Sugano
1Department of Orthopaedic Surgery, Osaka University Graduate School of Medicine, Suita, Osaka, Japan; 2Department of Orthopaedic Medical Engineering, Osaka University Graduate School of Medicine, Osaka, Japan; 3Departments of Orthopedic Biomaterial Science, Osaka University Graduate School of Medicine, Suita, Osaka, Japan; 4Department of Radiology, Osaka University Graduate School of Medicine, Suita, Osaka, Japan

1179. Fat Suppression with Double Off-Resonance RF Pulses for Musculoskeletal Imaging at 3.0T
Yeji Han, Yeon Chul Ryu, Jun-Young Chung
1Department of Biomedical Engineering, Gachon University, Incheon, Korea; 2Neuroscience Research Institute, Gachon University, Incheon, Korea

1180. Assessment of Acetabular Cartilage and Labrum for Painful Hips Using Radial MRI with Biochemical and Morphological Sequences: Arthroscopic Verification
HIDETOSHI HAMADA, Takashi Nishii, Kim Junghyo, Hisashi Tanaka, Nobuhiko Sugano
1Departments of Orthopedic Surgery, Osaka University Graduate School of Medicine, Suita, Osaka, Japan; 2Department of Diagnostic and Interventional Radiology, Osaka University Graduate School of Medicine, Suita, Osaka, Japan
1181. Cartilage Evaluation by GagCEST at 3 Tesla After Arthroscopic Partial Meniscectomy
Olgica Zaric1, Pavol Szomolany1, Vladimir Mlynarik1, Vladimir Juras1, Siegfried Trautig2
1High Field MR Center, Department of Biomedical Imaging and Image-guided Therapy, Medical University of Vienna, Vienna, Austria

1182. Knee Cartilage Evaluation Using Gag-CEST Imaging at 3T: Correlation to the Arthroscopic Grading
Takako Aoki1, Hiroshi Kawaguchi1, Takahiro Watanabe, Yomei Tachibana1, Hiroshi Imai1, Benjamin Schmitt1, Mamoru Niitsu1
1Radiology, Saitama medical university hospital, Moroyama-machi, Iruma-gun, Japan; 2National Institute of Radiological Sciences, Japan; 3Siemens Japan K.K., Japan; 4Healthcare Sector, Siemens Ltd., Australia

1183. Detection of Patellofemoral Overload by T1ρ MRI
Kevin D'Aquilla1, Miltiadis Zgonis2, J. Bruce Kneeland3, Hari Haririhan1, Ravinder Reddy1
1Center for Magnetic Resonance and Optical Imaging, Department of Radiology, University of Pennsylvania, Philadelphia, PA, United States; 2Department of Orthopedic Surgery, Hospital of the University of Pennsylvania, Philadelphia, PA, United States; 3Department of Radiology, Hospital of the University of Pennsylvania, Philadelphia, PA, United States

1184. Assessment of Inter-Operator Agreement in Manual Image-Segmentation of Femoral Cartilage
Hon J. Yu1, Taiki Nozaki1, Yasuhiro Kaneko1, Kayleigh Kaneshiro1, Ran Schwarzkopf1, Hiroshi Yoshioka1
1Radiological Sciences, University of California, Irvine, CA, United States; 2Tu & Yuen Center for Functional Onco-Imaging, University of California, Irvine, CA, United States; 3Orthopaedic Surgery, University of California, Irvine, CA, United States

1185. Ultra Structure of Articular Cartilage
Soorena Azam Zanganeh1, Chantal Paul1, Christine B. Chung1, Eric Chang1, Graeme M. Bydder1, Darryl DLima1, Jiang Du1
1Radiology, University of California, San Diego, San Diego, CA, United States; 2Department of Molecular and Experimental Medicine, the Scripps Research Institute, San Diego, CA, United States; 3Radiology, University of California, San Diego, San Diego, CA, United States

1186. Multi-Echo SWI of Knee Cartilage
Joanna Yuen1, Jachin Hung2, Vanessa Wiggermann1, Robert McCormack2, Agnes d'Entremont1, Alexander Rauscher1, 2
1UBC MRI Research Centre, Vancouver, British Columbia, Canada; 2Department of Physics and Astronomy, The University of British Columbia, Vancouver, British Columbia, Canada; 3Department of Orthopaedics, The University of British Columbia, Vancouver, British Columbia, Canada; 4Department of Mechanical Engineering, The University of British Columbia, Vancouver, British Columbia, Canada; 5Centre for Hip Health and Mobility, Vancouver, British Columbia, Canada

1187. Sodium Inversion Recovery MRI on the Knee Joint with an Optimal Inversion Pulse
Jae-Seung Lee1, Ding Xia1, Ravinder R. Regatte1
1Department of Radiology, New York University, New York, NY, United States

1188. Patients at Risk for Tendinopathy and Chondropathy in Patients with Diabetes Mellitus Type I – Identification by Means of Quantitative Sodium MR Imaging at Ultra High Field (7 Tesla) – a Feasibility Study
Wolfgang Marik1, Stefan Nemec, Stefan Zbyn2, Martin Zalaudek1, Bernhard Ludvik1, Manuela Karner2, Siegfried Trautig2
1Department of Biomedical Imaging and Image-guided Therapy, Medical University of Vienna, Vienna, Austria; 2MR Centre of Excellence, Department of Biomedical Imaging and Image-guided Therapy, Medical University of Vienna, Vienna, Austria; 3Clinic for Internal Medicine III, Department of Endocrinology and Metabolism, Medical University of Vienna, Vienna, Austria

1189. Topographic Modifications of T1-Gd in Early Osteoarthritic Tibial Cartilage by MRI at Microscopic Resolution
Ji hyun Lee1, Farid Badar2, Yang Xia1, 4
1Radiology, Saitama medical university hospital, Moroyama-machi, Iruma-gun, Japan; 2National Institute of Radiological Sciences, Japan; 3Siemens Japan K.K., Japan; 4Healthcare Sector, Siemens Ltd., Australia
1190. **Multiparametric MR Relaxometry for Articular and Epiphyseal Cartilage During Skeletal Maturation in a Goat Model**  
Luning Wang1, Mikko J. Nissi2, Ferenc Toth, Cathy Carlson, Jutta Ellermann3  
1Center for Magnetic Resonance Research, University of Minnesota, Twin Cities, Minneapolis, MN, United States; 2Medical Research Center Oulu, Oulu University Hospital and University of Oulu, Oulu, Finland

1191. **Validation of Adiabatic T1ρ and T2ρ Mapping of Articular Cartilage at 3T**  
Victor Casula1, 2, Jonas Auto3, Mikko J. Nissi3, 5, Michaeli Shalom4, Silvia Mangia4, Edward Auerbach4, Jutta Ellermann4, Eveliina Lammentausta3, Miika T. Nieminen1, 3  
1Department of Radiology, Oulu University Hospital, Oulu, Finland; 2Medical Research Center Oulu, Oulu University Hospital and University of Oulu, Oulu, Finland; 3Department of Diagnostic Radiology, Oulu University Hospital, Oulu, Finland; 4Center for Magnetic Resonance Research, Department of Radiology, University of Minnesota, Minneapolis, United States

1192. **Importance of Biexponential T2* and Partial Volume Effect Corrections on Quantification of Sodium Concentrations and Fixed Charge Density of Articular Cartilage with 23Na-MRI at 7T**  
Lasse P. Räsänen1, Stefan Zbyn2, Miika T. Nieminen3, 4, Eveliina Lammentausta3, Xeli Deligianni5, 6, Oliver Bieri5, Martin Krämer1, Karl-Heinz Herrmann1, Heide Boeth2, Christoph von Tycowicz3, Christian König2, Stefan Zachow3, Siegfried Trattnig2, Rami Korhonen1  
1Oakland Univ, Rochester, MI, United States; 2Oakland Univ, MI, United States; 3Physics, Oakland University, Rochester, MI, United States; 4Center for Biomedical Research, Oakland University, MI, United States

1193. **Reduction of Magic Angle Effect for Quantitative MRI of Articular Cartilage In Vivo**  
Mikko Johannes Nissi1, 2, Victor Casula1, 2, Eveliina Lammentausta, 23, Shalom Michaeli4, Silvia Mangia4, Edward Auerbach4, Jutta Ellermann4, Eveliina Lammentausta3, Miika T. Nieminen1, 3  
1Department of Radiology, Institute of Diagnostics, University of Oulu, Oulu, Finland; 2Medical Research Center Oulu, Oulu University Hospital and University of Oulu, Oulu, Finland; 3Department of Diagnostic Radiology, Oulu University Hospital, Oulu, Finland; 4Department of Radiology, University of Oulu, Oulu, Finland; 5Division of Radiological Physics – Department of Radiology, University of Basel Hospital, Basel, Switzerland; 6Merian Iselin Klinik, Basel, Switzerland

1194. **A Multi-Purpose Flexible Antenna for Musculoskeletal MR Imaging at 3T**  
Fan Jia1, Rui Zhang2, Hongyang Yuan2, Jue Zhang1, 2, Diange Zhou1, 2, Xiaoying Wang, 1, 2, Jing Fang1, 2  
1Academy for Advanced Interdisciplinary Studies, Peking University, Beijing, China; 2College of Engineering, Peking University, Beijing, China; 3Arthritis Clinic and Research Center, Peking University People's Hospital, Beijing, China; 4Academy for Advanced Interdisciplinary Studies, Peking University, Beijing, China; 5Dept. of Radiology, Peking University First Hospital, Beijing, China

1195. **Measuring 3D Knee Dynamics Using Center Out Radial Ultra-Short Echo Time Trajectories with a Low Cost Experimental Setup**  
Martin Krämer1, Karl-Heinz Herrmann1, Heide Boeth2, Christoph von Tycowicz3, Christian König2, Stefan Zachow3, Rainald M. Ehrig4, Hans-Christian Hege4, Georg N. Duda4, Siegfried Trattnig2, Rami Korhonen1  
1Oakland Univ, Rochester, MI, United States; 2Oakland Univ, MI, United States; 3Physics, Oakland University, Rochester, MI, United States; 4Center for Biomedical Research, Oakland University, MI, United States

1196. **Simultaneous Time-Resolved Measurement of Blood Flow, Perfusion and Oxygen Consumption in Lower Leg During Recovery from Exercise.**  
Adil Bashir1, Robert Gropler1, Jie Zheng1  
1Mallinckrodt Institute of Radiology, Washington University, St. Louis, MO, United States
1197. Imaging of the Knee Using 3D Fast Spin Echo with Compressed Sensing
Scott A. Reid1, Kevin F. King2, David J. Lomas3, Florine van der Wolf-de Lijster4, Lloyd Estkowski2, Martin J. Graves3
1GE Healthcare, Chalfont St Giles, United Kingdom; 2GE Healthcare, Waukesha, WI, United States; 3Radiology, Addenbrooke's Hospital & University of Cambridge, Cambridge, Cambridgeshire, United Kingdom

1198. 3D TSE Imaging Using Sparse-Sense Acceleration: Comparison with Conventional 2D TSE Imaging for Detection of Internal Derangement of the Knee
Michael Paul Recht1, Ricardo Otazo2, Leon Rybak2, Soteros Gyftopoulos2, Catherine Petchprapa3, Christian Gepper3, Mary Bruno4, Esther Raithel5
1Radiology, NYU School of Medicine, New York, United States; 2Radiology, NYU School of Medicine, NY, United States; 3Siemens Healthcare, Germany

1199. Effect of 16-Channel Flex Array Coil on PET Standardized Uptake Values for PET/MR Imaging of the Knee
Feliks Kogan6, Jarrett Rosenberg7, Sloane Brazina7, Audrey Fan7, Dawn Holley7, Garry Gold7
1Department of Radiology, Stanford University, Stanford, CA, United States

1200. A Primary Study of In Vivo Morphological Semi-Quantitative Assessment of Knee Osteoarthritis Using Dual-Echo 3D UTE Imaging: Compared with Traditional Sequences
Shihong Li1, Guangwu Lin1, Chantao Ye1, Haiwen Qian1, Panli Zuo2, Caixia Fu3, Yanqing Hua1, David M. Grodzki4, Ming Ji2
1Radiology, Huadong Hospital, Fudan University, Shanghai, China; 2Siemens Healthcare, MR Collaborations NE Asia, Beijing, China; 3Application R&D Department, Siemens Shenzhen Magnetic Resonance Ltd., Shanghai, China; 4Magnetic Resonance, Siemens Healthcare, Erlangen, Germany

1201. High Resolution T1ρ-Mapping of Articular Cartilage in the Wrist at 3T
Joep van Oorschot1, Mark Gosselin1, Fredy Visser1, Alexandra de Rotte1, Dennis Klomp1
1University Medical Center Utrecht, Utrecht, Netherlands; 2Philips Healthcare, Best, Noord-Brabant, Netherlands

1202. Regional Variation in Canine Knee Cartilage T2 Relaxation Times: Assessment of Normative Values
Sarah L. Pownder1, Kei Hayashi2, Parina H. Shah1, Hollis G. Potter1, Matthew F. Koff4
1Department of Radiology and Imaging - MRI, Hospital for Special Surgery, New York, United States; 2College of Veterinary Medicine, Cornell University, Ithaca, NY, United States

1203. T1rho Mapping of the Entire Femoral Cartilage Using Novel Depth and Angle Dependent Analysis
Taiki Nozaki1, Yasuhito Kaneko1, Hon J. Yu1, Kayleigh Kaneshiro2, Ran Schwarzkopf1, Takeshi Harada1, Hiroshi Yoshioka1
1Radiological Sciences, University of California, Irvine, Orange, CA, United States; 2Orthopaedic Surgery, University of California, Irvine, Orange, CA, United States; 3Intelligent Image Information, Gifu University Graduate School of Medicine, Gifu, Japan

1204. Positional Reproducibility of a Displacement Controlled MRI-Compatible Loading Device to Assess In Vivo Articular Cartilage Deformation
Hongsheng Wang1, Parina H. Shah2, Suzanne Maher2, Scott Rodeo3, Hollis G. Potter2, Matthew F. Koff3
1Department of Biomechanics, Hospital for Special Surgery, New York, United States; 2Department of Radiology and Imaging - MRI, Hospital for Special Surgery, New York, United States; 3Sports Medicine and Shoulder Service, Hospital for Special Surgery, New York, United States

1205. Robust T2 Mapping of Knee Cartilage Under in Situ Mechanical Loading Using Prospective Motion Correction
Thomas Lange1, Michael Herbst1,*, Benjamin R. Knowles1, Kaywan Izadpanah2, Maxim Zaitsev1
1Department of Radiology, Medical Physics, University Medical Center Freiburg, Freiburg, Germany; 2John A. Burns School of Medicine, University of Hawaii, Honolulu, HI, United States; *Department of Orthopedic and Trauma Surgery, University Medical Center Freiburg, Freiburg, Germany
1206. Normal T2 Map Profile of the Entire Femoral Cartilage Using a Novel Angle/layer Dependent Approach  
Yasuhiro Kaneko1, Taiki Nozaki1, Hou Yu1, Kayleigh Kaneshiro1, Ran Schwarzkopf2, Takeshi Harag1, Hiroshi Yoshioka1  
1Radiological Sciences, University of California, Irvine, Orange, CA, United States; 2Orthopaedic Surgery, University of California, Irvine, Orange, CA, United States; 3Division of Regeneration and Advanced Medical Sciences, Gifu University Graduate School of Medicine, Gifu, Japan

1207. T1ρ Measurements in the Intervertebral Discs: Analysis of Reproducibility and Diurnal Changes  
Volkan Emre Arpinar1, Weitian Chen2, L Tugan Muftuler1, 3  
1Department of Neurosurgery, Medical College of Wisconsin, Milwaukee, WI, United States; 2Global Applied Science Laboratory, GE Healthcare, CA, United States; 3Center for Imaging Research, Medical College of Wisconsin, Milwaukee, WI, United States

1208. High Spatial Resolution MRI of Temporo-Mandibular Joint at 7.0 Tesla Using a Modestly Shaped 8 Channel Transceiver RF Coil Array  
Jan Rieger1, Claudia Kronnerwetter2, Andreas Graessl1, Helmar Waiczies1, Roman Leicht1, Beate Endemann1, Siegfried Trattnig2, Thoralf Niendorf3, 4  
1MRTOOLS GmbH, Berlin, Germany; 2High Field MR Centre, Department of Biomedical Imaging and Image-guided Therapy, Medical University of Vienna, Vienna, Austria; 3Berlin Ultrahigh Field Facility (B.U.F.F.), Max-Delbrueck-Center for Molecular Medicine, Berlin, Germany; 4Experimental and Clinical Research Center, a joint cooperation between the Charité Medical Faculty a, Berlin, Germany

1209. Regional Variation in Canine Knee Meniscus T2* Relaxation Times: Assessment of Normative Values and Histologic Correlation  
Sarah L. Pownder1, Parina H. Shah1, Kei Hayashi2, Hollis G. Potter1, Matthew F. Koff1  
1Department of Radiology and Imaging - MRI, Hospital for Special Surgery, New York, United States; 2College of Veterinary Medicine, Cornell University, Ithaca, NY, United States

1210. In Vitro Demonstration of the Vasculature of Human and Bovine Meniscus of the Knee with MRI at 11.7T  
Ju Chen1, Qun He1, Ji Hyo Baek1, Daryl D’Lima1, Jiang Du1, Nikolaus M. Szeverenyi1, Graeme Bydder1  
1University of California, San Diego, CA, United States

1211. Real Time Fat Suppressed MRI of the Knee Joint During Flexion/extension Allows the Study of PCL Motion  
Valentina Mazzoli1, 3, Andre Sprengers1, Aart J. Nederveen1, Gustav J. Strijkers1, 2, Klaas Nicolay3, Nico Verdonschot4, 5  
1Biomedical NMR, Department of Biomedical Engineering, Eindhoven University of Technology, Eindhoven, Netherlands; 2Department of Radiology, Academic Medical Center, Amsterdam, Netherlands; 3Orthopaedic Research Lab, Radboud University Medical Center, Nijmegen, Netherlands; 4Biomedical Engineering and Physics, Academic Medical Center, Amsterdam, Netherlands; 5Laboratory of Biomechanical Engineering, University of Twente, Enschede, Netherlands

1212. Preliminary Results of Early Detection of Baseball Elbow Using Low Field Magnetic Resonance Imaging Specialized for Small Joints  
Yoshikazu Okamoto1, Kiyoshi Maehara1, Tetsuya Kanahori1  
1University of Tsukuba, Tsukuba, Ibaraki, Japan

1213. T2 Mapping of the Supraspinatus Tendon: A Feasibility Study  
Soterios Gyftopoulos1, Konstantin Krepkin2, Mary Bruno3, Jose G. Raya4  
1Radiology, NYU Langone Medical Center, New York, NY, United States; 2Radiology, NYU Langone Medical Center, New York, NY, United States; 3Bernard and Irene Schwartz Center for Biomedical Imaging, New York University School Of Medicine, New York, NY, United States
1214. **Non-Gaussian Diffusion Weighted Imaging for Assessing Degenerative Changes in Intervertebral Disc Composition**

Masaki Katsura1, Yuichi Suzuki2, Akihiro Kasahara2, Harushi Mori1, Akira Kunimatsu1, Yoshitaka Masutani1, 
Masaaki Hori4, Shigeki Aoki1, Kuni Ohtomo1

1Radiology, Graduate School of Medicine, The University of Tokyo, Tokyo, Japan; 2Radiology, The University of Tokyo Hospital, Tokyo, Japan; 3Intelligent Systems, Hiroshima City University, Hiroshima, Japan; 4Radiology, School of Medicine, Juntendo University, Tokyo, Japan

1215. **Characterization of an Animal Model of Spinal Instability Using MR Elastography and Mechanical Testing**

Ephraim I. Ben-Abraham1, Jun Chen2, Richard L. Ehman2

1Mayo Graduate School, Mayo Clinic, Rochester, MN, United States; 2Radiology, Mayo Clinic, Rochester, MN, United States

1216. **Whole Spine Vertebral Bone Marrow Proton Density Fat Fraction Mapping: Anatomical Variation and Gender-Specific Reference Database**

Thomas Baum1, Samuel P. Yap1, Michael Dieckmeyer1, Stefan Ruschke1, Holger Eggers2, Hendrik Kooijman3, Ernst J. Rummery1, Jan S. Bauer1, Dimitrios C. Karampinos1

1Department of Radiology, Klinikum rechts der Isar, Technische Universität München, Munich, Germany; 2Radiology Laboratory, Hamburg, Germany; 3Philips Healthcare, Hamburg, Germany; 4Section of Neuroradiology, Klinikum rechts der Isar, Technische Universität München, Munich, Germany

1217. **A Comparison of Three Approaches for Defining Nucleus Pulposus and Annulus Fibrosus on Sagittal MR Images.**

Yi-Xiang Wang1, Greta SP Mok2, Duo Zhang1, Shu-Zhong Chen1, Jing Yuan4

1Dept Imaging and Interventional Radiology, The Chinese University of Hong Kong, Shatin, NT, Hong Kong; 2Department of Electrical and Computer Engineering, University of Macau, Macau SAR, Macau; 3Department of Electrical and Computer Engineering, University of Macau, Macau SAR, Macau; 4Medical Physics and Research Department, Hong Kong Sanatorium & Hospital, Happy Valley, Hong Kong

1218. **Assessment of the Stiffness of Intervertebral Disk in Rat Model with Magnetic Resonance Elastography**

Yifei Liu1, Julia Zelenakova1, Kejia Cai1, Robert Kleps4, Thomas J. Royston1, 2, Richard L. Magin2, Andrew Larson5, Weiguo Li3

1Department of Mechanical & Industrial Engineering, University of Illinois at Chicago, Chicago, IL, United States; 2Department of Bioengineering, University of Illinois at Chicago, Chicago, IL, United States; 3Department of Radiology, University of Illinois at Chicago, Chicago, IL, United States; 4Research Resource Center, University of Illinois at Chicago, Chicago, IL, United States; 5Department of Radiology, Northwestern University, Chicago, IL, United States

1219. **3D Ultra-Short TE Imaging of the Spine for Vertebral Segmentation**

Wingchi Edmund Kwok1, 2, Terry K. Koo3

1Department of Imaging Sciences, University of Rochester, Rochester, NY, United States; 2Rochester Center for Brain Imaging, University of Rochester, Rochester, NY, United States; 3Department of Research, New York Chiropractic College, Seneca Falls, NY, United States

1220. **Vertebral Bone Marrow Fat Content Measured by MRI Associated with Lower Bone Mineral Density: A Human Cadaver Study**

Miyuki Takasu1, Yoji Akiyama1, Ryuji Akita1, Kazushi Yokomachi1, Yoko Kaichi1, Shuji Date1, Masatoshi Honda2, Kazuo Awai1

1Diagnostic Radiology, Hiroshima University Hospital, Hiroshima, Japan; 2Philips Electronics, Tokyo, Japan

1221. **Frequency Dependant Shear Properties of Bovine Ex Vivo Intervertebral Disc.**

Delphine Perle1, Pierre-Francois Beauchemin1, Phil Bayly2, Joel R. Garbow1, John Schmidt2, Ruth Okamoto2, Farida Cheriet1

1Mechanical Engineering, Polytechnique Montreal, Montreal, Quebec, Canada; 2Mechanical Engineering and Materials Science, Washington University in St. Louis, Saint Louis, MO, United States
1222. Value of 3D FSE STIR Images with Blood-Suppression Pulse Technique for the Brachial Plexus at 3T
   Tsutomu Iioka1, Masayuki Odashima1, Mitsuyuki Tozawa1, Hiroyuki Nakazawa1, Masahiro Sogawa1, Tomoya Nakatsuka1, Rumiko Kasai1, Hitoshi Terada1
   1Radiology, Toho University Sakura Medical Center, Sakura, Chiba, Japan

1223. MR Diffusion Is Sensitive to Mechanical Loading in Human Intervertebral Disks
   Ron N. Alkalay1, Carl-Fredrik Westin2, Dominik Meier2, David B. Hackney2
   1Orthopedics, Beth Israel Deaconess Medical Center, Boston, MA, United States; 2Radiology, Brigham and Women's Hospital, Boston, MA, United States

1224. Water–Fat Separated MRI for Detecting Increased Fat Infiltration in the Multifidus Muscle in Patients with Severe Neck Problems Due to Chronic Whiplash Associated Disorder
   Annette Karlsson1, 2, Anneli Peolsson1, Janne West, 23, Ulrika Åslund1, Thobias Romu1, 2, Örjan Smedby, 23, Peter Zsigmond1, Olof Dahlqvist Leinhard, 23
   1Department of Biomedical Engineering, Linköping University, Linköping, Sweden; 2Center for Medical Image Science and Visualization (CMIV), Linköping University, Linköping, Sweden; 3Department of Medical and Health Sciences, Linköping University, Linköping, Sweden

1225. Dynamic Measurement of Muscle R2, R2' and R2* During Ischemia and Reactive Hyperemia
   Chengyan Wang1, Rui Zhang2, Xiaodong Zhang1, He Wang3, Kai Zhao1, Jue Zhang1, 2, Xiaoying Wang, 13, Jing Fang1, 2
   1Academy for Advanced Interdisciplinary Studies, Peking University, Beijing, China; 2Department of Engineering, Peking University, Beijing, China; 3Department of Radiology, Peking University First Hospital, Beijing, China

1226. Muscular Fat Fraction Determination by Quantitative T2-MRI, Reproducibility in Facioscapulohumeral Muscular Dystrophy and Healthy Volunteers
   Linda Heskamp1, Barbara Helena Janssen1, Arend Heerschap1
   1Radiology, Radboud university medical center, Nijmegen, Netherlands

1227. Modeling Duchenne Muscular Dystrophy Disease Progression: A Longitudinal Multicenter MRI Study
   William D. Rooney1, Yosef Berlow1, Sean C. Forbes2, Rebecca J. Willcocks1, James Pollaro1, William T. Triplitt1, Dah-Jyu1, Barry J. Byrne2, Richard Finkel1, Barry S. Russman1, Erika L. Finanger1, Michael J. Daniels1, H. Lee Sweeney1, Glenn A. Walter1, Krista H. Vandenborne1
   1Advanced Imaging Research Center, Oregon Health & Science University, Portland, OR, United States; 2Department of Physical Therapy, University of Florida, Gainesville, FL, United States; 3Physiology and Functional Genomics, University of Florida, Gainesville, FL, United States; 4Department of Pediatrics, University of Florida, Gainesville, FL, United States; 5Department of Radiology, Children's Hospital of Philadelphia, Philadelphia, PA, United States; 6Division of Statistics & Scientific Computation, University of Texas, Austin, TX, United States; 7Shriners Hospital, Portland, OR, United States; 8Department of Pharmacology and Therapeutics, University of Florida, Gainesville, FL, United States

1228. MRI Monitoring for Muscular Dystrophy Mice Treated with Gene Therapy
   Joshua Park1, Jacqueline Wicki2, Sue Koblaugh1, Jeffrey Chamberlain1, 4, Donghoon Lee1
   1Radiology, University of Washington, Seattle, WA, United States; 2Neurology, University of Washington, Seattle, WA, United States; 3Fred Hutchinson Cancer Research Center, Seattle, WA, United States; 4Biochemistry, University of Washington, Seattle, WA, United States

1229. Inter-Echo Time Dependence of CPMG Relaxation Rate Around Capillaries in Skeletal Muscle Tissue
   Felix T. Kurz1, Thomas Kampf1, Lukas R. Buschle1, Sabine Heiland1, Martin Bendzus1, Christian H. Zienert1
   1Heidelberg University, Heidelberg, BW, Germany; 2University of Wuerzburg, Bavaria, Germany; 3German Cancer Research Center, Heidelberg, BW, Germany; 4Heidelberg University, BW, Germany
1230. Quantification of the Inflammatory Process in Muscles of Patients with Facioscapulohumeral Muscular Dystrophy.
Linda Heskamp¹, Barbara H. Janssen¹, Arend Heerschap¹
¹Radiology, Radboud university medical center, Nijmegen, Netherlands

1231. MRI Characterization of Individual Muscles in Patients with Sporadic Inclusion Body Myositis (SIBM) Using a Semi-Automatic Segmentation Approach
Didier Laurent¹, Attila Nagy², Steve Pieper², Harlem Gongxeka³, Celeste Pretorius³, Stefan Baumann¹
¹Biomarker Department, Novartis, Basel, Switzerland; ²Isomics, Inc, Cambridge, Ma, United States

1232. Improvement of Thigh Muscle MRI Image Processing Efficiency Using a Batch-Scripted N4ITK Intensity Normalization Algorithm Implemented in 3D Slicer
Prashant Bansal¹, David Bennett¹, Xiaodong Tao¹, Sally Warner¹
¹Medical Imaging, PAREXEL Informatics, Billerica, MA, United States

1233. Quantifying Muscle Inflammation with Diffusion Basis Spectrum Imaging
Carlos J. Perez-Torres¹, Neva B. Watson¹, Yong Wang¹,², Paul T. Massa¹,², Sheng-Kwei Song¹,³
¹Radiology, Washington University, St. Louis, MO, United States; ²Microbiology & Immunology, SUNY Upstate Medical University, Syracuse, NY, United States; ³Hope Center for Neurological Disorders, Washington University, St. Louis, MO, United States; ⁴Neurology, SUNY Upstate Medical Center, Syracuse, NY, United States

1234. Time-Dependent Diffusion as a Biomarker for Rotator Cuff Atrophy
Gregory Lemberskiy¹,², Dmitry Novikov¹, Mary Bruno¹, Els Fieremans¹, Soterios Gyftopoulos¹
¹Bernard and Irene Schwartz Center for Biomedical Imaging, Department of Radiology, New York University School of Medicine, New York, NY, United States; ²Sackler Institute of Graduate Biomedical Sciences, New York University School of Medicine, New York, NY, United States

1235. Skeletal Muscle Perfusion Measured with Pseudo-Continuous Arterial Spin-Labeling MRI After Dorsiflexion Contractions
Sean C. Forbes¹, Jingfeng Ma¹, Glenn A. Walter¹, Krista Vandenborne¹, Song Lai¹
¹University of Florida, Gainesville, FL, United States

1236. Towards Clinical Ultrahigh Field Musculoskeletal MRI: Comparison of Shoulder Imaging at 1.5T, 3.0T and 7.0T
Marko Hoehne¹,², Andreas Graessel², Jan Rieger³, Antje Els⁴, Beate Endemann², Thomas Herold¹, Thoralf Niendorf⁵
¹HELIOS Klinikum Berlin Buch, Berlin, Germany; ²Berlin Ultrahigh Field Facility (B.U.F.F.), Max Delbrück Center for Molecular Medicine (MDC), Berlin, Germany; ³MRI.TOOLS GmbH, Berlin, Germany; ⁴Berlin Ultrahigh Field Facility (B.U.F.F.), Max Delbrück Center for Molecular Medicine (MDC), Berlin, Germany; ⁵Experimental and Clinical Research Center (ECRC), Charite Campus Berlin Buch, Humboldt-University, Berlin, Germany

1237. Canine MRI for X-Linked Myotubular Myopathy
Joshua Park¹, Martin Childers¹, Donghoon Lee¹
¹Radiology, University of Washington, Seattle, WA, United States; ²Rehabilitation Medicine, University of Washington, Seattle, WA, United States

Anne Tonson¹,², Jonathan Kasper², Ronald A. Meyer³,⁴, Robert W. Wiseman⁵,⁶
¹Physiology Department, Michigan State University, East Lansing, MI, United States; ²Biomedical Imaging Research Center, Michigan State University, East Lansing, MI, United States; ³Physiology and Radiology Departments, Michigan State University, East Lansing, MI, United States; ⁴Biomedical Imaging Research Center, East Lansing, MI, United States; ⁵Physiology and Radiology Departments, Michigan State University, East Lansing, MI, United States
1239. Depiction of Muscle Activation Induced by Electromyostimulation in the Calf Muscle by Using T2-Weighted MRI at 3.0 T
Reinhard Rzanny1, Patrick Hepe1, Kevin Tschiesche1, Alexander Gussew1, Norman Statz2
1AG Medical Physics, University Hospital Jena, Jena, Thüringen, Germany; 2Institute of Sport- and Movement science, University of Stuttgart, Stuttgart, Baden-Württemberg, Germany

1240. Is Intramyocellular Lipid a Diffusion-Restricting Factor in Skeletal Muscle Cells?
Yoshikazu Okamoto1, Shintaro Mori1, Tomonori Iseb1, Yuji Hirano1, Hiroaki Suzuki1, Manabu Minami1
1University of Tsukuba, Tsukuba, Ibaraki, Japan

1241. MR Characterization of Murine Model of Dystrophy on a DBA Background
Ravneet Vohra1, Sean Forbes2, Krista Vandenhorne1, Elizabeth Mcnally2, Glenn Walter3
1Physiology and Functional Genomics, University of Florida, Gainesville, FL, United States; 2Physical Therapy, University of Florida, Gainesville, FL, United States; 3Physical Therapy, University of Florida, FL, United States; 4Department of Medicine, University of Chicago, Chicago, IL, United States; 5Physiology and Functional Genomics, University of Florida, Gainesville, FL, United States

1242. Skeletal Muscle Motion Maps from Post-Contraction Gradient Echo Spin Saturation Effect
Andrew D. Davis1, Michael D. Noseworthy2
1Medical Physics and Applied Radiation Sciences, McMaster University, Hamilton, Ontario, Canada; 2Electrical and Computer Engineering, McMaster University, Ontario, Canada

1243. Obesity Decrease the Eigenvalues of Muscles
Yasuharu Watanabe1, Keisaku Kimura1, Masahiro Umeda1, Tomokazu Murase3, Toshihiro Higuchi1, Chuzo Tanaka1, Shoji Naruse3
1Medical Informatics, Meiji University of Integrative Medicine, Kyoto, Japan; 2Health Promoting and Preventive Medicine, Meiji University of Integrative Medicine, Kyoto, Japan; 3Neurosurgery, Meiji University of Integrative Medicine, Kyoto, Japan; 4Health Care and Checkup, Daini Okamoto General Hospital, Kyoto, Japan

1244. Myogenic Differentiation of Magnetically Labeled Mesenchymal Stem Cells
Natalie M. Pizzimenti1, Christiane Mallett1, Robert W. Wiseman1, 2, Erik M. Shapiro2
1Physiology Department, Michigan State University, East Lansing, MI, United States; 2Radiology Department, Michigan State University, East Lansing, MI, United States

1245. Multimodal Determination of Load Changes in the Muscle - A Combination of 1H-MEGA-PRESS and Blood Sampling
Kevin Tschiesche1, Alexander Gussew1, Maria Glückner2, Steffen Derlien2, Jürgen R. Reichenbach1
1Medical Physics Group, Institute of Diagnostic and Interventional Radiology, Jena University Hospital - Friedrich Schiller University Jena, Jena, Germany; 2Institute for Physiotherapy, Jena University Hospital - Friedrich Schiller University Jena, Jena, Germany

1246. Acute Effects of Exercise on Quantum Filtered Sodium Spectroscopy in Human Calf Muscle
Alireza Akbari1, Dinesh Kumbhare2, 3, Michael Noseworthy1
1School of Biomedical Engineering, McMaster University, Hamilton, Ontario, Canada; 2Department of Medicine, University of Toronto, Ontario, Canada; 3University Health Network, Toronto Rehabilitation Institute, Ontario, Canada; 4Electrical and Computer Engineering, McMaster University, Ontario, Canada; 5School of Biomedical Engineering, McMaster University, Ontario, Canada

1247. Simultaneous Multi-Slice Echo Planar Imaging with Blipped CAIPIRINHA: A Promising Technique for Accelerated Diffusion Imaging of Skeletal Muscle
Lukas Filli1, Marco Piccirelli1, David Kenkel1, Roman Guggenberger1, Gustav Andreisek1, Val M. Runge1, Andreas Boss1
1University Hospital Zurich, Zurich, ZH, Switzerland
1248. **In Vivo Imaging of the Motion of the Temporomandibular Joint Components Using a Pseudo-Dynamic 3D Imaging Technique**

Reni Biswas\(^1\), Karen Chen\(^1\), Eric Y. Chang\(^2\), Sheronda Statum\(^1\), Won C. Bae\(^1\), Christine B. Chung\(^2,3\)

\(^1\)Department of Radiology, University of California, San Diego, San Diego, CA, United States; \(^2\)VA San Diego Healthcare System, San Diego, CA, United States; \(^3\)University of California, San Diego, CA, United States

**Assessment of Resting Skeletal Muscle Alkaline Pi Pool and PDE Concentration by \(^{31}\)P-MRS at 7T and Its Relation to Mitochondrial Capacity and Pi-To-ATP Exchange Rate**

Ladislav Valkovic\(^1,2\), Marjeta Tušek Jelenc\(^1\), Barbara Ukropecová\(^1,4\), Wolfgang Bogner\(^1\), Matej Vajda\(^2\), Thomas Heckmann\(^6\), Miroslav Baláz\(^3\), Marek Chmelič\(^4\), Ivan Frollo\(^2\), Norbert Bachšt\(^6\), Jozef Ukropec\(^1\), Siegfried Trattnig\(^1\), Martin Krššák\(^1\), \(^7\)

\(^1\)High Field MR Centre, Department of Biomedical Imaging and Image-guided Therapy, Medical University of Vienna, Vienna, Austria; \(^2\)Department of Imaging Methods, Institute of Measurement Science, Slovak Academy of Sciences, Bratislava, Slovakia; \(^3\)Obesity section, Diabetes and Metabolic Disease Laboratory, Institute of Experimental Endocrinology, Slovak Academy of Sciences, Bratislava, Slovakia; \(^4\)Institute of Pathophysiology, Faculty of Medicine, Comenius University, Bratislava, Slovakia; \(^5\)Faculty of Physical Education and Sport, Comenius University, Bratislava, Slovakia; \(^6\)Department of Sports and Physiological Performance, University of Vienna, Vienna, Austria; \(^7\)Division of Endocrinology and Metabolism, Department of Internal Medicine III, Medical University of Vienna, Vienna, Austria

1250. **Muscle Mitochondrial Dysfunction Relates to Decreased Peripheral Insulin Sensitivity in Female Youth with Type 2 Diabetes**

Mark S. Brown\(^1\), Abhinav Gupta\(^2\), Melanie Cree-Green\(^2\), Gregory Coe\(^2\), Amy Baumgartner\(^2\), Bradley R. Newcomer\(^3\), Kristen J. Nadeau\(^2\)

\(^1\)Radiology, University of Colorado Anschutz, Aurora, CO, United States; \(^2\)Pediatrics, University of Colorado Anschutz, Aurora, CO, United States; \(^3\)Diagnostic and Clinical Sciences, University of Alabama, Birmingham, AL, United States

**Veterinary Diagnostic MRI at an Academic Medical Center: Tips, Tricks, and Pathological Confirmation**

Dara L. Kraitchman\(^1,2\), Larry Gainsburg\(^3\), Jan Fritz\(^2\), Patrick R. Gavin\(^4\), Nathan Pate\(^5\), Elizabeth Ihms\(^5\), Joseph Kraitchman\(^1,2\), Rebecca Krimins\(^1,2\)

\(^1\)Center for Image-Guided Animal Therapy, Johns Hopkins University, Baltimore, MD, United States; \(^2\)Russell H Morgan Department of Radiology and Radiological Science, Johns Hopkins University, Baltimore, MD, United States; \(^3\)Mid-Atlantic Veterinary Neurology and Neurosurgery, Catonsville, MD, United States; \(^4\)M.R. Vets, Sagle, ID, United States; \(^5\)Molecular and Comparative Pathobiology, Johns Hopkins University, Baltimore, MD, United States

**Assessment of Experimental Cerebral Malaria Using Diffusion Tensor Imaging at Ultra-High Magnetic Field**

Teodora-Adriana Perles-Barbacaru\(^1,2\), Bruno Miguel de Brito Robalo\(^1,3\), Emilie Pecchi\(^1,2\), Georges Emile Raymond Grañ\(^1\), Monique Bernard\(^1,2\), Angèle Viola\(^1,2\)

\(^1\)Centre de Résonance Magnétique Biologique et Médicale, CRMBM UMR CNRS 7339, Marseille, France; \(^2\)Aix-Marseille Université, Marseille, France; \(^3\)University of Lisbon, Institute of Biophysics and Biomedical Engineering, Lisbon, Portugal; \(^4\)Department of Pathology, Sydney Medical School, The University of Sydney, Camperdown, Australia

**Custom-Fit, 3D-Printed Marmoset Brain Holders for Comparison of Histology with MRI**

Joseph Guy\(^1,2\), Pascal Sati\(^1\), Steven Jacobson\(^3\), Afonso C. Silva\(^4\), Daniel S. Reich\(^1\)

\(^1\)Translational Neuroradiology Unit, Neuroimmunology Branch, National Institute of Neurologic Disorders and Stroke, Bethesda, MD, United States; \(^2\)Department of Biochemistry, University of Cambridge, Cambridge, Cambridgeshire, United Kingdom; \(^3\)Viral Immunology Section, Neuroimmunology Branch, National Institute of Neurologic Disorders and Stroke, Bethesda, MD, United States; \(^4\)Cerebral Microcirculation Unit, Laboratory of Functional and Molecular Imaging, National Institute of Neurologic Disorders and Stroke, Bethesda, MD, United States
Inspiration Drives Cerebrospinal Fluid Flow in Humans
Steffi Dreha-Kulczewski1, Arun Jospeh2,3, Klaus-Dietmar Merboldt2, Hans Ludwig4, Jutta Gaertner4, Jens Frahm2,3
1Department of Pediatrics and Adolescent Medicine, Division of Pediatric Neurology, University Medical Center, Goettingen, Germany; 2Department of Pediatrics and Adolescent Medicine, Division of Pediatric Neurology, University Medical Center, Goettingen, Germany; 3partner site Goettingen, German Center for Cardiovascular Research, Germany; 4Department of Neurosurgery, Division of Pediatric Neurosurgery, University Medical Center Goettingen, Germany; 5Department of Pediatrics and Adolescent Medicine, Division of Pediatric Neurology, University Medical Center, Goettingen, Germany
1262. Sparsity-Based Superresolution MR Imaging Using Dual Dictionaries  
Jean-Christophe Brisset1, Riccardo Otazo1, Yulin Ge1  
1Department of Radiology, New York University School of Medicine, New York, NY, United States

1263. Diffusion-Weighted Thermometry Using Subarachnoid Space Cerebrospinal Fluid in Subacute Carbon Monoxide Poisoning Patients  
Shunrou Fujitawa1, Yoshichika Yoshikawa2, Tsuyoshi Matsuda3, Hideaki Nishimoto1, Toshiyuki Murakami1, Akira Ogawa1, Kuniki Ogawa2, Makoto Sasaki1, Takaki Beppu3, 4  
1Department of Neurosurgery, Iwate Medical University, Morioka, Iwate, Japan; 2WPI Immunology Frontier Research Center, Osaka University, Suita, Osaka, Japan; 3MR Applications and Workflow Asia Pacific, GE Healthcare Japan, Tokyo, Japan; 4Division of Ultrahigh Field MRI, Institute of Molecular and Medical Medicine, Iwate Medical University, Morioka, Iwate, Japan

1264. MRI Based Semi-Automatic Volumetric Measurements of the Fetal Brain  
Daphna Link1, 2, Michael Braginsky2, Leo Joskowicz2, Liat Ben Sira1, Gustavo Malinger3, Ariel Many4, Dafna Ben Bashat5, 6  
1Functional Brain Center, The Wohl Institute for Advanced Imaging, Tel Aviv Sourasky Medical Center, Tel Aviv, Israel; 2Sackler Faculty of Medicine, Tel Aviv University, Tel Aviv, Israel; 3School of Engineering and Computer Science, The Hebrew University of Jerusalem, Jerusalem, Israel; 4Division of Pediatric Radiology, Tel Aviv Sourasky Medical Center, Tel Aviv, Israel; 5Obstetrics and Gynecology US Unit, Tel Aviv Sourasky Medical Center, Tel Aviv, Israel; 6Department of Obstetrics and Gynecology, Lis Maternity Hospital, Tel Aviv Sourasky Medical Center, Tel Aviv, Israel; 7Sackler Faculty of Medicine and Sagol School of Neuroscience, Tel Aviv University, Tel Aviv, Israel

1265. Mapping the Preterm Newborn Brain: A Diffusion Tensor Study of the Cerebellum’s Early Neural Connections  
Lillian Gabra Fam1, 2, Jeanie LY Cheong1, 3, Alexander Leemans4, Christopher L. Adamson1, Richard Beare1, Marc L. Seal1, 5, Peter J. Anderson1, 6, Lex W. Doyle1, 7, Alicia J. Spittle1, 8, Deanne K. Thompson1, 9  
1Murdoch Childrens Research Institute, Melbourne, Victoria, Australia; 2Department of Paediatrics, University of Melbourne, Melbourne, Victoria, Australia; 3Royal Women’s Hospital, Melbourne, Victoria, Australia; 4Image Sciences Institute, University Medical Center Utrecht, Netherlands; 5Department of Paediatrics, University of Melbourne, Melbourne, Victoria, Australia; 6Royal Women’s Hospital, Melbourne, Victoria, Australia; 7Florey Institute of Neuroscience and Mental Health, Melbourne, Victoria, Australia

1266. Diffusion MRI Identifies Enhanced Connection of Neural Pathways in Toddlers with Autism Spectrum Disorder  
J. Mitra1, E. Conti2, 3, K-K. Shen1, J. Fripp1, O. Salvado1, S. Calderoni2, A. Guzzetta2, 3, S. Rose1  
1Department of Biology and Anatomy, National Defense Medical Center, Taipei, Taiwan, Taiwan; 2Graduate Institute of Biomedical Electronics and Bioinformatics, National Taiwan University, Taipei, Taiwan, Taiwan; 3Department of Radiology, Tri-Service General Hospital, Taipei, Taiwan, Taiwan; 4Imaging Research Center, Taipei Medical University, Taipei, Taiwan, Taiwan; 5Department of Medical Imaging, Taipei Medical University, Taipei, Taiwan, Taiwan

1267. White Matter Development in Preterm Infants at Term Equivalent Age: Assessment Using TBSS  
Hye Jin Jeong1, So-Yeon Shin1, Dong Woo Son1, Mira Chung2, Sukyoung Park1, Zang-Hee Cho1  
1Neuroscience Research Institute, Namdong-gu, Incheon, Korea; 2Ewha Womans University, Division of Neonatology, Seoul, Korea; 3Gachon University, Division of Neonatology, Incheon, Korea; 4Gachon University, Department of Early Childhood Education, Gyeonggi Province, Korea

Chao-Ying Wang1, Shih-Wei Chiang2, 3, Ping-Huei Tsai1, 3, Hua-Shan Liu1, 3, Hsiao-Wen Chung2, Hung-Wen Kao1, Chun-Jung Juan1, Cheng-Yu Chen1  
1Department of Biology and Anatomy, National Defense Medical Center, Taipei, Taiwan, Taiwan; 2Graduate Institute of Biomedical Electronics and Bioinformatics, National Taiwan University, Taipei, Taiwan, Taiwan; 3Department of Radiology, Tri-Service General Hospital, Taipei, Taiwan, Taiwan; 4Imaging Research Center, Taipei Medical University, Taipei, Taiwan, Taiwan; 5Department of Medical Imaging, Taipei Medical University, Taipei, Taiwan, Taiwan
1269. The Reduction of Flow Artifacts in T1W Spiral Spin-Echo Imaging: A Preliminary Study in Children
Zhiqiang Li1, Houchun H. Hu1, Dinghui Wang1, Jeffrey H. Miller2, John P. Karis3, James G. Pipe1
1Imaging Research, Barrow Neurological Institute, Phoenix, AZ, United States; 2Radiology, Phoenix Children's Hospital, Phoenix, AZ, United States; 3Neuroradiology, Barrow Neurological Institute, Phoenix, AZ, United States

1270. Arterial Spin Labeling Perfusion Imaging Performed in Acute Perinatal Stroke Reveals Hyperperfusion in Association with Cerebral Ischemic Injury
Christopher G. Watson1, 2, Mathieu Dehaes3, Borjan A. Gagoski3, P. Ellen Grant, 34, Michael J. Rivkin1, 4
1Neurology, Boston Children's Hospital, Boston, MA, United States; 2Graduate Program for Neuroscience, Boston University, Boston, MA, United States; 3Newborn Medicine, Boston Children's Hospital, MA, United States; 4Radiology, Boston Children's Hospital, Boston, MA, United States

1271. fMRI Measures of the Dorsal Visual Cortex Correlates with Behavioral Performance and Cortical Thickness
Tanya Poppe1, Myra Leung1, Anna Tottman2, Jane Alsweiler3, Frank Bloomfield2, Jane Harding2, Ben Thompson1, 4
1Department of Optometry and Vision Science, University of Auckland, Auckland, New Zealand; 2Liggins Institute, University of Auckland, Auckland, New Zealand; 3Department of Paediatrics: Child and Youth Health, University of Auckland, Auckland, New Zealand; 4Department of Optometry and Vision Science, University of Waterloo, Waterloo, Ontario, Canada

1272. Longitudinal Cortical Maturation in Typically Developing Infants and Children
Justin M. Remer1, Douglas C. Dean III1, 2, Sara D'Arpino1, Elise Croteau-Chonka2, Holly Dirks1, Sean C.L. Deoni1, 4
1Advanced Baby Imaging Lab, School of Engineering, Brown University, Providence, RI, United States; 2Waisman Lab for Brain Imaging and Behavior, University of Wisconsin, Madison, WI, United States; 3Department of Pediatric Radiology, Children's Hospital Colorado, Aurora, CO, United States

1273. Clustering Analysis of Human Infant Brain Maturation Based on Multi-Parametric MR Images
Jessica Lebenberg1, Cyril Poupon2, Bertrand Thirion3, François Leroy1, Jean-François Mangin4, Ghislaine Dehaene-Lambertz1, Jessica Dubois1
1Cognitive Neuroimaging Unit U992, INSERM-CEA, Gif-Sur-Yvette, Essonne, France; 2UNIRS, CEA, Gif-Sur-Yvette, Essonne, France; 3Parietal, INRIA, Gif-Sur-Yvette, Essonne, France; 4UNATI, CEA, Gif-Sur-Yvette, Essonne, France

1274. Mapping the Myelin G-Ratio During Neurodevelopment
Douglas Dean1, 2, Elise Croteau-Chonka2, Holly Dirks2, Andrew L. Alexander3, Sean Deoni1, 4
1Waisman Center, University of Wisconsin-Madison, Madison, WI, United States; 2Engineering, Brown University, Providence, RI, United States; 3Children’s Hospital Colorado, Denver, CO, United States

1275. Neural Correlates of the Longitudinal Development of Phonological Processing in Early Childhood
Andrea S. Miele1, 2, Holly Dirks3, Dannielle John Whiley6, Terry Harrison-Goldman1, 4, Viren D'Sa1, Sean Deoni7, 4
1Psychiatry and Human Behavior, Alpert Medical School of Brown University, Providence, RI, United States; 2Advanced Baby Imaging Laboratory, Brown University, Providence, RI, United States; 3Pediatrics, Neurodevelopmental Center, MHRI, Pawtucket, RI, United States; 4Pediatric Radiology, Children's Hospital Colorado, CO, United States

1276. 18q- Brain Development with Age and the Effect of Deletion Size
Xi Tan1, Jannine Cody2, Jack L. Lancaster1
1Research Imaging Institute, University of Texas Health Science Center at San Antonio, San Antonio, TX, United States; 2Department of Pediatrics, University of Texas Health Science Center at San Antonio, San Antonio, TX, United States
1277. A Metabolic Study of Normal Mouse Brain Maturation Using Hyperpolarized 13C
Yiran Chen1, Robert Bok1, Subramanian Sukumar1, Hosung Kim1, Xin Mu1, Ann Sheldon1, A James Barkovich1, Donna M. Ferriero1, Duan Xu1
1University of California San Francisco, San Francisco, CA, United States

1278. Developmental Changes in Neurochemical Profiles of the Mouse Midbrain and Hippocampus
Ivan Tkac1, Kathleen Czerniak2, Lanka Dasanayaka2, Biplab Dasgupta1, Raghavendra Rao2
1Center for Magnetic Resonance Research, University of Minnesota, Minneapolis, MN, United States; 2Department of Pediatrics, University of Minnesota, Minneapolis, MN, United States; 3Division of Hematology/Oncology, Cincinnati Children's Hospital, Cincinnati, OH, United States

1279. Metabolite Distributions in Human Aging Brain - A Study with Short-TE Whole Brain MR Spectroscopic Imaging
Xiao-Qi Ding1, Helen Maghsudi1, Andrew A. Maudsley2, Mohammad Sabati2, Sulaiman Sheriff2, Martin Schütze1, Paul Bronzil1, Heinrich Lanfermann1
1Institute of Diagnostic and Interventional Neuroradiology, Hannover Medical School, Hannover, Lower Saxony, Germany; 2Department of Radiology, University of Miami School of Medicine, Miami, FL, United States

1280. Novel Probabilistic Neonatal Cortical Brain Atlas
Bonnie Alexander1, Andrew Murray1, Jian Chen1, 2, Wai Yen Loh1, 3, Claire Kelly1, Richard Beare1, Lillian Gabra Pam1, 4, Peter Anderson1, 2, Lex Doyle1, 2, Alicia Spittle1, 2, Jeanie Cheong1, 3, Marc Seal4, 4, Deanne Thompson1, 4
1Murdoch Childrens Research Institute, Melbourne, Victoria, Australia; 2Dept of Medicine, Monash University, Melbourne, Australia; 3Florey Institute of Neuroscience and Mental Health, Melbourne, Australia; 4Dept of Paediatrics, The University of Melbourne, Melbourne, Australia; 5Royal Women's Hospital, Melbourne, Australia

1281. Characterisation of Sensori-Motor CBF and BOLD Functional Responses During Early Development with Dual-Echo PCASL and fMRI
Thomas Alderliesten1, 2, Esben Thade Petersen1, Manon JNL Benders1, 2, Petra MA Lemmers2, Alessandro Allievi1, Julia Wurtel1, Serena J. Counsell2, Etiene Burdet1, A. David Edwards1, 4, Jo V. Hajnal1, 5, Tomoki Arichi1, 4
1Centre for the Developing Brain, King's College London, London, United Kingdom; 2Department of Neonatology, University Medical Center Utrecht, Utrecht, Netherlands; 3Department of Radiology, University Medical Center Utrecht, Utrecht, Netherlands; 4Department of Bioengineering, Imperial College London, London, United Kingdom; 5Division of Imaging Sciences and Biomedical Engineering, King's College London, London, United Kingdom

1282. Functional Network Interactions During Typical Development in Infancy and Early Childhood
Jonathan O'Muircheartaigh1, 5, Douglas C. Dean1, Lindsay Walker1, Nicole Waskiewicz1, Holly Dirks4, Sean Deoni4, 5
1Department of Neuroimaging, King's College London, London, United Kingdom; 2Centre for the Developing Brain, King's College London, London, United Kingdom; 3Waismann Center, University of Wisconsin-Madison, WI, United States; 4School of Engineering, Brown University, RI, United States; 5Department of Pediatric Radiology, Children's Hospital Colorado, Denver, CO, United States

1283. Modulation of Resting-State Brain Networks in Newborns by Heel Prick
Lara Lordier1, Frédéric Grouiller1, Dimitri Van de Ville2, 3, Ana Sancho Rossignol4, Maria Isabel Cordero4, François Lazeyras1, François Ansermet1, Petra S. Hüppi1
1Division of Development and Growth, Department of Pediatrics, University of Geneva, Geneva, Switzerland; 2Department of Radiology and Medical Informatics, Geneva University Hospital, Geneva, Switzerland; 3Institute of Bioengineering, Ecole Polytechnique Fédérale de Lausanne, Lausanne, Switzerland; 4Division of Child and Adolescent Psychiatry, Department of Pediatrics, University of Geneva, Geneva, Switzerland

1284. Differences in Brain Activation Associated with Infant Diet: An fMRI Study
Xiawei Ou1, 2, R.T. Pivik3, 4, Aline Andres1, 2, Mario Clevés1, 2, Thomas Badger1, 3
1Arkansas Children's Nutrition Center, Little Rock, AR, United States; 2Radiology and Pediatrics, University of Arkansas for Medical Sciences, Little Rock, AR, United States; 3University of Arkansas for Medical Sciences, Little Rock, AR, United States
Traditional Poster

Autism & Neuro Development

Exhibition Hall  Monday 16:30-18:30

1285. Reduced Cerebral Blood Flow in Boys with Duchenne Muscular Dystrophy


1Department of Radiology, C.J. Gorter Center for High Field MRI, Leiden University Medical Center, Leiden, Zuid Holland, Netherlands; 2Department of Radiology, West China Hospital of Sichuan University, Chengdu, Sichuan, China; 3Department of Psychiatry, National Taiwan University Hospital, Taipei, Taiwan; 4Department of Clinical Genetics, Leiden University Medical Center, Leiden, Zuid Holland, Netherlands; 5Department of Clinical Genetics, Leiden University Medical Center, Leiden, Zuid Holland, Netherlands; 6Department of Neurology, Leiden University Medical Center, Leiden, Zuid Holland, Netherlands; 7Department of Neurology, Leiden University Medical Center, Leiden, Zuid Holland, Netherlands; 8Department of Neurology, Leiden University Medical Center, Leiden, Zuid Holland, Netherlands; 9Department of Neurology, Leiden University Medical Center, Leiden, Zuid Holland, Netherlands; 10Department of Neurology, Leiden University Medical Center, Leiden, Zuid Holland, Netherlands; 11Department of Neurology, Leiden University Medical Center, Leiden, Zuid Holland, Netherlands; 12Department of Neurology, Leiden University Medical Center, Leiden, Zuid Holland, Netherlands; 13Department of Neurology, Leiden University Medical Center, Leiden, Zuid Holland, Netherlands.

1286. Reciprocal Alterations of White Matter Microstructure in Carriers of Deletions Versus Duplications at the 16p11.2 Chromosomal Locus Are Associated with Cognitive and Behavioral Impairment

Yi-Shin Chang1, Julia P. Owen1, Tony Thieu1, Nicholas Pujman1, Polina Bukshpun1, Mari Wakahi1, Eysa Marco1, Jeffrey Berman2, John E. Spiro3, Wendy Chung4, Randy Buckner5, Timothy Roberts6, Srikanth Nagarajan1, Elliott Sherr2, Pratik Mukherjee3.

1University of California in San Francisco, San Francisco, CA, United States; 2Children's Hospital of Philadelphia, Philadelphia, PA, United States; 3Simons Foundation, New York, United States; 4Columbia University, New York, United States; 5Harvard University, Boston, MA, United States.

1287. Altered Tract Integrity of the Social Communication Network and Its Functional Correlations in High-Functioning Autism: A Diffusion Spectrum Imaging (DSI) Study


1Center for Optoelectronic Medicine, National Taiwan University College of Medicine, Taipei, Taiwan; 2National Taiwan University College of Medicine, Department of Psychiatry, Taipei, Taiwan; 3Department of Psychiatry, National Taiwan University Hospital, Taipei, Taiwan; 4Molecular Imaging Center, National Taiwan University, Taipei, Taiwan.

1288. Subcortical Rather Than Cortical Changes Mediate the Clinical Profile on ADHD Boys at an Earlier Stage

Qi Liu1, Litzhou Chen2, Ying Chen3, Xiyu Hu4, Fei Li5, Lanting Guo6, Qiyong Gong7, Xiaoqi Huang8.

1Huaxi MR Research Center (HMRRC), Department of Radiology, West China Hospital of Sichuan University, Chengdu, Sichuan, China; 2Deptmeny of Psychiatry, West China Hospital of Sichuan University, P.R.China, Chengdu, Sichuan, China; 3National Taiwan University College of Medicine, Department of Psychiatry, Taipei, Taiwan; 4Molecular Imaging Center, National Taiwan University, Taipei, Taiwan; 5Department of Psychiatry, National Taiwan University Hospital, Taipei, Taiwan; 6Department of Clinical Genetics, Leiden University Medical Center, Leiden, Zuid Holland, Netherlands; 7Department of Clinical Genetics, Leiden University Medical Center, Leiden, Zuid Holland, Netherlands; 8Department of Clinical Genetics, Leiden University Medical Center, Leiden, Zuid Holland, Netherlands.

1289. Age Related Changes of the Interrelationships of White Matter in Autism Spectrum Disorder

Douglas Dean1, Brittany Travers1, Erin Bigler2, Molly Prigge3, Alyson Froehlich4, Nicholas Lange5, Janet Lainhart1, Andrew Alexander6.

1Waisman Center, University of Wisconsin-Madison, Madison, WI, United States; 2Brigham Young University, Provo, UT, United States; 3University of Utah, Salt Lake City, UT, United States; 4Harvard School of Medicine and McLean Hospital, Belmont, MA, United States.


Letizia Casiraghi1, 2, Fulvia Palesi2, 3, Gloria Castellazzi2, Andrea De Rinaldis2, Carol Di Perrì3, Claudia AM Wheeler-Kingshott4, Egidio D’Angelo2, 5.

1Department of Brain and Behavioral Sciences, University of Pavia, Pavia, PV, Italy; 2Brain Connectivity Center, C. Mondino National Neurological Institute, Pavia, PV, Italy; 3Department of Electrical, Computer and Biomedical Engineering, University of Pavia, Pavia, PV, Italy; 4Department of Electrical, Computer and Biomedical Engineering, University of Pavia, Pavia, PV, Italy; 5Department of Brain and Behavioural Sciences, University of Pavia, Pavia, PV, Italy; 6NMR Research Unit, Department of Neuroinflammation, Queen Square MS Centre, UCL Institute of Neurology, London, England, United Kingdom.
1291. Altered Functional Connectivity of Emotional Network in Children with Attention-Deficit/Hyperactivity Disorder

Lizhou Chen1, Ning He1, Qi Liu1, Xinyu Hu1, Lanting Guo1, Xiaqiu Huang1, Qiyong Gong1
1Huaxi MR Research Center (HMRRC), West China Hospital of Sichuan University, Chengdu, Sichuan, China; 2Department of Psychiatry, West China Hospital of Sichuan University, Chengdu, Sichuan, China

1292. Multi-Parametric Magnetic Resonance to Investigate Aggression: A Study at 11.7T on the BALB/cJ Mouse Model

Houshang Amiri1, 2, Amanda Jager2, Sjaak J. A. van Asten1, Arend Heerschap1, Jeffrey Glennon2
1Department of Radiology, Radboud University Medical Center, Nijmegen, Gelderland, Netherlands; 2Department of Cognitive Neuroscience, Radboud University Medical Center, Nijmegen, Gelderland, Netherlands

1293. Altered Functional and Structural Connectivities Within Default Mode Network in Adolescents with Autism Spectrum Disorder

Hsiang-Yun Sherry Chien1, Susan Shur-Fen Gau2, Yu-Jen Chen1, Yu-Chun Lo1, Hsiang-Yuan Lin2, Yang-Chin Hsu1, Wen-Yih Isaac Tseng1
1Center for Optoelectronic Medicine, National Taiwan University College of Medicine, Taipei, Taiwan, Taiwan; 2Department of Psychiatry, National Taiwan University College of Medicine, Taipei, Taiwan, Taiwan; 3Molecular Imaging Center, National Taiwan University, Taipei, Taiwan, Taiwan

1294. Investigating Brain Connectomic Alterations in Autism Using Reproducibility of Independent Components Derived from Resting State fMRI

Mohammed Syed2, Zhi Yang2, Gopikrishna Deshpande1, 4
1Department of Computer Science and Software Engineering, Auburn University, Auburn, AL, United States; 2Key Laboratory of Behavioral Sciences, Institute of Psychology, Chinese Academy of Sciences, Beijing, China; 3Department of Electrical and Computer Engineering, Auburn University, Auburn, AL, United States; 4Department of Psychology, Auburn University, Auburn, AL, United States

1295. A T2 MR Study of Brain Development in a Valproic Acid Model of Autism

Loredana Sorina Truica1, Sarah Raza1, J. Keiko McCreary1, Ian Q. Whishaw1, Robbin Gibb1
1Neuroscience, University of Lethbridge, Lethbridge, Alberta, Canada

1296. Diffusion Tensor Imaging Metrics May Be Less Sensitive Than Volumetry/morphology in Measuring Differences in Mouse Models Related to Autism.

Jacob Ellegood1, Jan Scholz1, Mark Henkelman1, 2, Jason P. Lerch1, 2
1Mouse Imaging Centre, Hospital for Sick Children, Toronto, Ontario, Canada; 2Medical Biophysics, University of Toronto, Toronto, Ontario, Canada

1297. Diffusion Tensor Imaging to Assess Gray and White Matter Microstructural Brain Abnormalities in a Feline Model of Alpha-Mannosidosis

Manoj Kumar1, Jeff T. Duda2, Sea-Young Yoon2, Jessica Bagel3, Patricia O’Donnell4, Charles Vite5, Stephen Pickup1, James C. Gee1, John H. Wolfe6, Harish Poptani1
1Radiology, University of Pennsylvania, Philadelphia, PA, United States; 2Research Institute of the Children's Hospital of Philadelphia, Philadelphia, PA, United States; 3School of Veterinary Medicine, University of Pennsylvania, Philadelphia, PA, United States; 4Research Institute of the Children's Hospital of Philadelphia, Philadelphia, PA, United States

1298. Increased Frontal Irregularity of Resting State fMRI in Children with Autism Spectrum Disorders

Robert X. Smith1, Devora Beck-Pancer2, Rosemary McCarron2, Kay Jann1, Leanna Hernandez2, Mirella Dapretto2, Danny JJ Wang1
1Neurology, UCLA, Los Angeles, CA, United States; 2Psychiatry and Biobehavioral Sciences, UCLA, Los Angeles, CA, United States
1299. The Healthy Human Cerebellum Engaging in Complex Patterns: An fMRI Study
Adnan A.S. Alahmadi1,2, Matteo Pardini1,2, Rebecca S. Samson1, Karl J. Friston4, Ahmed T. Toosy1,5, Egidio D’Angelo1,5, Claudia A.M. Wheeler-Kingshott1
1NMR Research Unit, Department of Neuroinflammation, Queen Square MS Centre, UCL Institute of Neurology, London, England, United Kingdom; 2Department of Diagnostic Radiology, Faculty of Applied Medical Science, KAU, Jeddah, Saudi Arabia; 3Department of Neurosciences, Ophthalmology and Genetics, University of Genoa, Genoa, Italy; 4Wellcome Centre for Imaging Neuroscience, UCL, Institute of Neurology, London, United Kingdom; 5NMR Research Unit, Department of Brain Repair and Rehabilitation, Queen Square MS Centre, UCL Institute of Neurology, London, United Kingdom; 6C. Mondino National, Neurological Institute, Pavia, Italy; 7Department of Brain and Behavioural Sciences, University of Pavia, Pavia, Italy

1300. fMRI Demonstrates Response Selectivity to the Behaviorally Relevant Sounds in the Midbrain
Jevin W. Zhang1,2, Patrick P. Gao1,2, Shu-Juan Fan1,2, Dan H. Sanes3, Ed X. Wu1
1Laboratory of Biomedical Imaging and Signal Processing, The University of Hong Kong, Hong Kong, Hong Kong SAR, China; 2Department of Electrical and Electronic Engineering, The University of Hong Kong, Hong Kong, Hong Kong SAR, China; 3Center for Neural Science, New York University, New York, NY, United States

1301. Hierarchical Intra-Network Organization of the Visual Network from Resting-State fMRI Data
Yanlu Wang1, Tie-Qiang Li1
1Clinical Sciences, Intervention and Technology, Karolinska Institute, Stockholm, Stockholms Län, Sweden; 2Medical Physics, Karolinska University Hospital, Huddinge, Stockholms Län, Sweden

1302. Causal Brain Correlates of Autonomic Nervous System Outflow
Andrea Duggento1, Marta Bianciardi2, Lawrence L. Wald3, Luca Passamonti1, Riccardo Barbieri1,5, Maria Guerrisi1, Nicola Toschi1,2
1Medical Physics Section, Department of Biomedicine and Prevention, University of Rome "Tor Vergata", Rome, Italy; 2Department of Radiology, A.A. Martins Center for Biomedical Imaging, MGH and Harvard Medical School, Boston, MA, United States; 3Institute of Bioimaging and Molecular Physiology, National Research Council, Catanzaro, Italy; 4Department of Anesthesia and Critical Care, Massachusetts General Hospital, Boston, MA, United States; 5Department of Brain and Cognitive Science, Massachusetts Institute of Technology, Cambridge, MA, United States

1303. Sensitivity of Bold and Perfusion Contrasts Derived from Dual-Echo ASL in Localising Active and Imagery Movements
Silvia Francesca Storti1, Ilaria Boscolo Galazzo2, Francesca Pizzini2, Stefania Montemezzi2, Paolo Manganotti3, Gloria Menegaz1
1Department of Computer Science, University of Verona, Verona, Italy; 2Department of Neuroradiology, AOUI of Verona, Verona, Italy; 3Department of Neurological and Movement Sciences, University of Verona, Verona, Italy

1304. Cortical Modulation of Binaural Interaction on the Midbrain
Shu-Juan Fan1,2, Jevin W. Zhang1,2, Patrick P. Gao1,2, Dan H. Sanes1, Ed X. Wu1,2
1Laboratory of Biomedical Imaging and Signal Processing, The University of Hong Kong, Hong Kong, Hong Kong SAR, China; 2Department of Electrical and Electronic Engineering, The University of Hong Kong, Hong Kong, Hong Kong SAR, China; 3Center for Neural Science, New York University, New York, NY, United States

1305. Contrast and Duration Dependence of the Negative BOLD Response to Visual Stimulation in Visual and Auditory Cortical Regions at 7T
João Jorge1,2, Patrícia Figueiredo2, Rolf Gruetter1,3, Wietse van der Zwaag4
1Laboratory for Functional and Metabolic Imaging, Ecole Polytechnique Fédérale de Lausanne, Lausanne, Switzerland; 2Department of Bioengineering, Instituto Superior Técnico, Lisbon, Portugal; 3Department of Radiology, University of Lausanne and University of Geneva, Lausanne, Switzerland; 4Biomedical Imaging Research Center, Ecole Polytechnique Fédérale de Lausanne, Lausanne, Switzerland
<table>
<thead>
<tr>
<th>Session</th>
<th>Title</th>
<th>Authors</th>
</tr>
</thead>
<tbody>
<tr>
<td>1306</td>
<td>Accelerated 2D J-Resolved MRS Through Non-Uniform Sampling and Iterative Soft Thresholding</td>
<td>Andrew Prescot(^1), Xianfeng Shi(^1), Perry Renshaw(^2,3)</td>
</tr>
<tr>
<td></td>
<td></td>
<td>1Department of Radiology, University of Utah, Salt Lake City, UT, United States; 2Department of Psychiatry, University of Utah, Salt Lake City, UT, United States; 3VISN 19 MIRECC, Salt Lake City, UT, United States</td>
</tr>
<tr>
<td>1307</td>
<td>Developmental Changes of Neurochemical Profile in Rat Retrosplenial Cortex Measured by In Vivo 1H-MRS</td>
<td>Hyeon-Man Baek(^1), Youngjae Jeon(^1), Jooyun Kim(^1), Mirim Bang(^1), Gyunggoo Cho(^1), Chaejoon Cheong(^1)</td>
</tr>
<tr>
<td></td>
<td></td>
<td>1Depts. Radiology and Clinical Research, University Bern, Bern, Switzerland; 2Institute for Biomedical Engineering, UZH and ETH Zurich, Zurich, Switzerland; 3Max Planck Institut for Biological Cybernetics, Tuebingen, Germany</td>
</tr>
<tr>
<td>1308</td>
<td>Usefulness of LCModel Analysis with an Experimental Basis Set in Brain 1H-MRS at 3T</td>
<td>Chizuko Inui-Yamamoto(^1), 2, Tsuyoshi Shimura(^3), Izumi Ohzawa(^2), Yoshichika Yoshioka(^2)</td>
</tr>
<tr>
<td></td>
<td></td>
<td>1State Key Laboratory of Magnetic Resonance and Atomic and Molecular Physics, Wuhan Institute of Physics and Mathematics, Chinese Academy of Sciences, Wuhan, Hubei, China; 2Laboratory of Biofunctional Imaging, WPI IFReC, Osaka University, Suita, Osaka, Japan; 3Graduate School of Frontier Biosciences, Osaka University, Suita, Osaka, Japan</td>
</tr>
<tr>
<td>1309</td>
<td>The Intraoral Stimulus Increases the Regional Brain Temperature in the Insular Cortex of Rats: A Proton MR Spectroscopy Study</td>
<td>Chizuko Inui-Yamamoto(^1), 2, Tsuyoshi Shimura(^3), Izumi Ohzawa(^2), Yoshichika Yoshioka(^2)</td>
</tr>
<tr>
<td></td>
<td></td>
<td>1Laboratory of Biofunctional Imaging, WPI IFReC, Osaka University, Suita, Osaka, Japan; 2Graduate School of Frontier Biosciences, Osaka University, Suita, Osaka, Japan; 3Graduate School of Human Sciences, Osaka University, Suita, Osaka, Japan</td>
</tr>
<tr>
<td>1310</td>
<td>Choline – a Differential Marker of Glutamatergic Neurotransmission?</td>
<td>Anke Henning(^1), 2, Simone Grimm(^4), Erich Seifritz(^2), Milan Scheidegger(^2,3)</td>
</tr>
<tr>
<td></td>
<td></td>
<td>1Max Planck Institut for Biological Cybernetics, Tuebingen, Baden-Wuertemberg, Germany; 2Institute for Biomedical Engineering, UZH and ETH Zurich, Zurich, Switzerland; 3Department of Psychiatry, Psychotherapy, and Psychosomatics, University Hospital of Psychiatry Zurich, Zurich, Switzerland; 4Clinic for Psychiatry and Psychotherapy, Charite Berlin, Berlin, Germany</td>
</tr>
<tr>
<td>1311</td>
<td>Bilateral Sensorimotor GABA Correlation Is Not Driven by Voxel Segmentation</td>
<td>Nicolaas AJ Puts(^1), 2, Stephanie Heba(^1), Ashley D. Harris(^1), 2, David J. McGonigle(^4), 5, C. John Evans(^3), Hubert Dinse(^6), Martin Tegenthoff(^7), Tobias Schmidt-Wilcke(^8), Richard A. Edden(^1,2)</td>
</tr>
<tr>
<td></td>
<td></td>
<td>1Russell H. Morgan Dept. of Radiology and Radiological Science, Johns Hopkins University, Baltimore, MD, United States; 2F.M. Kirby Center for Functional Brain Imaging, Kennedy Krieger Institute, Baltimore, MD, United States; 3Dept. of Neurology, BG- klinikum Bergmannsheil, Ruhr - University, Bochum, Germany; 4School of Biosciences, Cardiff University, Cardiff, Wales, United Kingdom; 5CUBRIC/School of Psychology, Cardiff University, Cardiff, Wales, United Kingdom; 6Neural Plasticity lab, Institute for Neuroinformatics, Ruhr - University Bochum, Bochum, Germany</td>
</tr>
<tr>
<td>1312</td>
<td>Preserved Whole Brain N-Acetylaspartate During Mild Hypercapnia Challenge</td>
<td>Sanjeev Chawlai(^1), Yulin Ge(^1), Hanzhong Lu(^1), Olga Marshall(^1), Ke Zhang(^1), Brian J. Soher(^1), Oded Gonen(^1)</td>
</tr>
<tr>
<td></td>
<td></td>
<td>1Radiology, New York University Langone Medical Center, New York, NY, United States; 2Advanced Imaging Research Center, University of Texas Southwestern Medical Center, Dallas, TX, United States; 3Radiology, Duke University Medical Center, Durham, NC, United States</td>
</tr>
<tr>
<td>1313</td>
<td>T2 Estimation of Downfield Metabolites in Human Brain at 7T</td>
<td>Nicole D. Fichtner(^1), 2, Anke Henning, 23, Niklaus Zoelch(^2), Chris Boesch(^1), Roland Kreis(^1)</td>
</tr>
<tr>
<td></td>
<td></td>
<td>1Depts. Radiology and Clinical Research, University Bern, Bern, Switzerland; 2Institute for Biomedical Engineering, UZH and ETH Zurich, Zurich, Switzerland; 3Max Planck Institute for Biological Cybernetics, Tuebingen, Germany</td>
</tr>
</tbody>
</table>
Jeffrey A. Stanley1, Ashley Burgess1, Dalal Khatib1, Karthik Ramaseshan1, Noa Ofen1, David R. Rosenberg1, Vaibhav A. Diwadkar1
1Psychiatry and Behavioral Neurosciences, Wayne State University, Detroit, MI, United States

1315. Age-Related Microstructural Changes Quantified Using Myelin Water Imaging and Advanced Diffusion MRI
Thibo Billiet1, Mathieu Vandenbulcke1, Burkhard Mädler2, Ronald Peeters, Thijs Dhollander2, Hui Zhang2, Sabine Deprez2, Bea RH Van den Bergh2, Stefan Sunaert2, Louise Emsell2
1Translational MRI, KU Leuven, Leuven, Belgium; 2Radiology, University Hospitals, Leuven, Belgium; 3Old Age Psychiatry, KU Leuven, Belgium; 4Philips Healthcare, Hamburg, Germany; 5Neurosurgery, University of Bonn, Bonn, Germany; 6Florey Institute of Neuroscience and Mental Health, Melbourne, Victoria, Australia; 7Elektrotechniek - ESAT, KU Leuven, Leuven, Belgium; 8Computer Science & Centre for Medical Image Computing, University College London, London, United Kingdom; 9Psychology, Tilburg University, Tilburg, Netherlands; 10Health Psychology, KU Leuven, Leuven, Belgium

1316. NODDI Measures Appear to Be Sensitive to Both Age and Gender
Chandana Kodilewe1, Andrew Alexander2, Yu-Chien Wu4
1Dartmouth Brain Imaging Center, Dartmouth College, Hanover, NH, United States; 2Waisman Brain Imaging Lab, University of Wisconsin, Madison, WI, United States; 3Center for Neuroimaging, Indiana University, Indianapolis, IN, United States

1317. Age Related Differences in Myelin Content Assessed Using Myelin Water Fraction Imaging
Muzamil Arshad1, Jeffrey A. Stanley1, Naftali Raz5
1Psychiatry and Behavioral Neurosciences, Wayne State University School of Medicine, Detroit, MI, United States; 2MD/PhD Program, Wayne State University School of Medicine, Detroit, MI, United States; 3Psychiatry and Behavioral Neurosciences, Wayne State University School of Medicine, MI, United States; 4Psychology, Wayne State University, MI, United States; 5Institute of Gerontology, MI, United States

1318. Adapting a White Matter Lesion Segmentation Algorithm for Large Cohort Studies
Leonie Lampe1, Alexander Schaefer1, Christopher J. Steele1, Katrin Arélin1, Dominik Fritzsch4, Matthias L. Schroeter1, Arno Villringer1, Pierre-Louis Bazin1
1Department of Neurology, Max Planck Institute for Human Cognitive and Brain Sciences, Leipzig, Germany; 2Leipzig Research Centre for Civilization Diseases & Clinic of Cognitive Neurology, University of Leipzig, Germany; 3Clinical Imaging Research Centre & Singapore Institute for Neurotechnology, National University of Singapore, Singapore; 4Department of Neuroradiology, University Hospital Leipzig, Germany

1319. Group Analysis of Threshold-Free Cluster Enhancement Score with Application to Normal Ageing White Matter Study by Diffusion Spectrum Imaging
PIN-YU CHEN1,2, Yu-Ling Chang1, Yu-Jen Chen1, Yu-Chun Lo1, Yung-Chin Hsu1, Wen-Yih I. Tseng4,6
1Center For Optoelectronic Medicine, National Taiwan University College of Medicine, Taipei, Taiwan, Taiwan; 2Department of Life Science, National Taiwan University, Taipei, Taiwan, Taiwan; 3Department of Psychology, National Taiwan University, Taipei, Taiwan; 4Molecular Imaging Center, National Taiwan University, Taiwan, Taiwan

1320. Characterization of White Matter Change and the Adjacent White Matter with Diffusion Tensor MRI
Shuzhong Chen1, Vincent Mok2, Yi-Xiang Wang1, Ka Sing Wong1, Winnie CW Chu1
1Department of Imaging and Interventional Radiology, The Chinese University of Hong Kong, Shatin, N.T., Hong Kong; 2Department of Medicine and Therapeutics, The Chinese University of Hong Kong, Shatin, N.T., Hong Kong

Jill Britt De Vis1, Jaco J. Zwanenburg1, Jolanda M. Spijkerman1, Geert J. Biessels1, Jeroen Hendrikse1, Esben T. Petersen1
1Psychiatry and Behavioral Neurosciences, Wayne State University, Detroit, MI, United States
1322. Neural and Cognitive Substrates of Omega-3 Fatty Acid Supplementation: A Voxel-Based Morphometry Study in Aged Mice
Marco Pagani1, 2, Debora Cutuli3, 4, Adam Liska1, Paola Caporalii, 4, Daniela Laricchiutai, 4, Francesca Foti1, 4, Cristina Neri1, Laura Petrosinii, Alessandro Gozzii
1CNCS, Istituto Italiano di Tecnologia - IIT, Rovereto, TN, Italy; 2CIMeC - Center for Mind and Brain Sciences, UNITN - Università di Trento, Rovereto, TN, Italy; 3University “Sapienza”, Rome, Italy; 4Santa Lucia Foundation, Rome, Italy

1323. Altered Antioxidant Profile in the Healthy Elderly Occipital and Posterior Cingulate Cortices Measured Via 7 T 1H MRS
Malgorzata Marjanska1, J. Riley McCartney2, Laura S. Hemmy2, Dinesh K. Deelchand3, Melissa Terpstra1
1Institute of Biomedical Engineering, Xi'an Jiaotong University, Xi'an, Shaanxi, China

1324. Consistency of 1H-MRS in the Putamen of Healthy Adult Controls Over Six Years.
Bretta Russell-Schulz1, Terri L. Petkau1, Blair R. Leavitt1, 23, Alex L. MacKay1, 24
1Radiology, University of British Columbia, Vancouver, BC, Canada; 2Centre for Molecular Medicine and Therapeutics, Child & Family Research Institute, Vancouver, BC, Canada; 3Medical Genetics, University of British Columbia, Vancouver, BC, Canada; 4Physics and Astronomy, University of British Columbia, Vancouver, BC, Canada

1325. Serum BDNF Correlates with Connectivity in the (Pre)motor Hub in the Aging Human Brain: A Resting State fMRI Study
Karsten Mueller1, Harald E. Möller1, Katrin Arelin1, 2, Jürgen Kratzsch3, Tobias Luck4, Steffi Riedel-Heller4, Arno Villringer1, 2, Matthias L. Schroeter1, 2
1Max Planck Institute for Human Cognitive and Brain Sciences, Leipzig, Germany; 2Clinic for Cognitive Neurology, University of Leipzig, Germany; 3Institute of Laboratory Medicine, Clinical Chemistry and Molecular Diagnostics, University of Leipzig, Germany; 4Institute of Social Medicine, Occupational Health and Public Health, University of Leipzig, Germany

1326. The Sensitivity of Olfactory fMRI in Quantifying Olfactory Performance During Normal Aging
Brittany Martinez1, Jianli Wang1, Prasanna Karunanayaka1, Megha Vasavada1, Paul J. Eslinger1, Qing X. Yang1, 2
1Radiology, Penn State College of Medicine, Hershey, PA, United States; 2Neurology, UCLA, Los Angeles, CA, United States

1327. The Effect of Age on Wide-View Retinotopic Mapping of Central and Periphery Visual Areas
Wei Zhou1, 2, Eric R. Muir1, 3, Jinqi Li1, Crystal Franklin1, Timothy Q. Duong1, 2
1Research Imaging Institute, University of Texas Health Science Center, San Antonio, TX, United States; 2Radiology, University of Texas Health Science Center, San Antonio, TX, United States; 3Ophthalmology, University of Texas Health Science Center, San Antonio, TX, United States

1328. The Effect of Behavioral Performance During Multistep Cognitive Processing on the Extraction of Age-Related Changes from Resting State Network Activation
Toshiharu Nakai1, Ayuko Tanaka1, Mitsunobu Kunimi1, Sachiko Kiyama1, Annabel SH Chen2
1Neuroimaging & Neuroinformatics, National Center for Geriatrics and Gerontology, Obu, Aichi, Japan; 2Division of Psychology, School of Humanities and Social Sciences, Nanyang Technological University, Singapore, Singapore

1329. Age-Related Changes in Default Mode Sub-Networks
Xueli Wang1, Jin Xu1, Xiufeng Zhang1, Xiaolong Peng1, Pan Lin1
1Institute of Biomedical Engineering, Xi'an Jiaotong University, Xi'an, Shaanxi, China
Traditional Poster

1330. Brain Expansion Capacity: Measuring Brain Volume Adaptation to Water Loading in the Human Brain
Jack Knight-Scott
1Radiology, Children's Healthcare of Atlanta, Atlanta, GA, United States

1331. Age-Related Increased R2 and R2* Correlates with Increased Brain Iron in a Normal Ageing Mouse Model
Thomas Walker1, Christos Michailides2, Harry Parker3, William Crum4, Tina Geraki5, Po-Wah So1
1Department of Neuroimaging, Institute Of Psychiatry, King's College London, London, United Kingdom; 2FMRIB, University of Oxford, Oxford, United Kingdom; 3Department of Psychiatry, Western Sydney University, Sydney, New South Wales, Australia; 4Department of Neurology, Medical University of Graz, Graz, Styria, Austria; 5Department of Radiology and Biomedical Imaging, University of California at San Francisco, San Francisco, California, United States

1332. Age Associated Iron Deposition in Basal Ganglia Increases with Physical Fitness
Adam G. Thomas1, 2, Andrea Dennis3, Nancy B. Rawlings2, Charlotte J. Stagg2, Helen Dawes3, Heidi Johansen-Berg2, Peter A. Bandettini1
1NIMH, Bethesda, MD, United States; 2FMRIB, University of Oxford, Oxford, United Kingdom; 3Movement Sciences Group, Oxford Brookes University, Oxford, United Kingdom

1333. Determinants of Iron Accumulation in the Normal Ageing Brain
Lukas Pirpamer1, Edith Hofer1, Paul Freudenberger1, Stephan Seiler3, Christian Langkammer1, Franz Fazeckas1, Stefan Ropele1, Reinhold Schmidt1
1Department of Neurology, Medical University of Graz, Graz, Styria, Austria; 2Molecular Biology and Biochemistry, Medical University of Graz, Graz, Styria, Austria; 3MGH/HST Martinos Center for Biomedical Imaging, Harvard Medical School, Boston, MA, United States

1334. Iron Content of Functional Networks in the Aged Human Cortex
Valerie C. Anderson1, Manoj K. Sammi1, Yosef A. Berlow1, Jeffrey A. Kaye2, Joseph F. Quinn2, William D. Rooney1
1Advanced Imaging Research Center, Oregon Health & Science University, Portland, OR, United States; 2Department of Neurology, Oregon Health & Science University, Portland, OR, United States

Traditional Poster

Brain Resting State & Default Mode Network
Exhibition Hall Monday 16:30-18:30

1335. Separation of VLF Fluctuations from Periodic Cardiorespiratory Noise with Critically Sampled Magnetic Resonance Encephalography.
Vesa Kiviniemi1, Xindi Wang2, Vesa Korhonen1, Tuja Keinänen1, Yu-Feng Zang2, Pierre LeVan3, Shella Keilholz6
1Diagnostic Radiology, MRC, Oulu University Hospital, Oulu, Finland; 2Beijing Normal University, Beijing, China; 3Clinical Neurophysiology, MRC, Oulu University Hospital, Oulu, Finland; 4Hangzhou Normal University, Hangzhou, China; 5University of Freiburg, Freiburg, Germany; 6Emory University, Atlanta, GA, United States

1336. Short- And Long-Term Effects of Hormonal Contraceptives Use on the Default Mode Network
Timo De Bondt1, 2, Dirk Smeets3, Pim Pullens1, 2, Wim Van Hecke3, Yves Jacquemyn4, 5, Paul M. Parizel1, 2
1Radiology, Antwerp University Hospital, Antwerp, Belgium; 2Radiology, University of Antwerp, Antwerp, Belgium; 3icoMetrix, Leuven, Belgium; 4Gynaecology and Obstetrics, Antwerp University Hospital, Antwerp, Belgium; 5Gynaecology and Obstetrics, University of Antwerp, Antwerp, Belgium

1337. Task-Induced Deactivation Does Not Disrupt Functional Coupling of the Default Mode Network During the Movement
Oleksii Omelchenko1, Zinayida Rachkova2
1Human and Animal Physiology, Taras Shevchenko National University of Kyiv, Kyiv, Ukraine; 2Radiology, Medical Clinic BORIS, Kyiv, Ukraine

224
1338. Coupling Between the Salience Network and Default-Mode Network Predicts Task-Induced Deactivation Through Regional Glutamate and GABA Concentrations
Hong Gu1, Yuzheng Hu1, Xi Chen1, Yihong Yang1
1National Institute on Drug Abuse, NIH, Baltimore, MD, United States

1339. Investigating Task-Based Activation and Functional Connectivity in the White Matter Using fMRI at 3 Tesla
Don Marcel Rigo1,2, Erin Mazerolle3, J. Jean Chen1,4
1Rotman Research Institute, Baycrest, Toronto, Ontario, Canada; 2Engineering Science, University of Toronto, Ontario, Canada; 3University of Calgary, Ontario, Canada; 4Medical Biophysics, University of Toronto, Ontario, Canada

1340. BrainVR: The Virtual Reality Brain Connectivity Navigator
Ricardo Ribeiro1, Inês Neiva1, Hugo Alexandre Ferreira1
1Institute of Biophysics and Biomedical Engineering, Faculty of Sciences of the University of Lisbon, Lisboa, Portugal

1341. High Frequency Coherence in Pediatric Primary Motor Cortices
Karolina J. Urban1,2, Karen M. Barlow1,2, Laronna Sewell2, Bradley G. Goodyear1,4, Jeff F. Dunn1,5
1Hotchkiss Brain Institute, University of Calgary, Calgary, Alberta, Canada; 2Neurosciences, University of Calgary, Calgary, Alberta, Canada; 3Pediatrics and Clinical Neurosciences, University of Calgary, Calgary, Alberta, Canada; 4Alberta Children’s Hospital Research Institute, University of Calgary, Calgary, Alberta, Canada; 5Radiology, University of Calgary, Calgary, Alberta, Canada

1342. fMRI Maps Genomic Influence on Acute Alterations of Caudate Putamen Functional Networks with Consomic Rat Strategy
Zhixin Li1, Chenxuan Li2, Christopher P. Pawela3,4
1Plastic Surgery, Medical College of Wisconsin, Milwaukee, WI, United States; 2Plastic Surgery, Medical College of Wisconsin, WI, United States; 3Biophysics, Medical College of Wisconsin, WI, United States

1343. Inter-Vender and Inter-Session Reliability of Resting State Functional Magnetic Resonance Imaging (RsfMRI): Implications for Multicenter Studies
Won-Jin Moon1, Hyeong Su An1, Jae-Kyun Ryu1, Ju Yeon Park1, Won Sung Yun1, Jin Woo Choi1, Geon-Ho Jahng1, Jang-Yeon Park1
1Department of Radiology, Konkuk University School of Medicine, Seoul, Korea; 2Department of Radiology, Konkuk University School of Medicine, Seoul, Korea; 3Department of Biomedical Engineering, Konkuk University, Seoul, Korea

1344. Task-Induced Deactivation in Medial Structures of the Default Mode Network Varied According to Task Types
Kayako Matsu1, Katsuki Suzuki1, Keisuke Wakisawa1, Kiyokazu Takebayashi1, Yasuo Takehara1, Norio Mori1
1Department of Psychiatry, Hamamatsu University School of Medicine, Hamamatsu, Shizuoka, Japan; 2Research Center for Child Mental Development, Hamamatsu University School of Medicine, Hamamatsu, Shizuoka, Japan; 3Department of Radiology, Hamamatsu University School of Medicine, Hamamatsu, Shizuoka, Japan

1345. Physiological Characterization of a Robust Survival Rodent fMRI Method
Hanbing Lu1, Julia K. Brynildsen2, Li-Ming Hsu1, Thomas Ross1, Elliot A. Stein1, Yihong Yang1
1Neuroimaging Research Branch, National Institute on Drug Abuse, NIH, Baltimore, MD, United States

Traditional Poster
Mood Disorders & Psychosis
Exhibition Hall  Monday 16:30-18:30

1346. Does the Interpretation of Task-Based BOLD Activation in Adolescent Bipolar Disorder Require TRUST?
Arron W.S. Metcalfe1, Benjamin I. Goldstein2, David E. Crane1, Antonette Scavone1, Hanzhang Lu1, Bradley J. MacIntosh3
1Brain Sciences, Sunnybrook Research Institute, Toronto, Ontario, Canada; 2Psychiatry & Pharmacology, University of Toronto, Ontario, Canada; 3Psychiatry, Sunnybrook Health Sciences Centre, Toronto, Ontario, Canada; 4University of Texas Southwestern

225
1347. ECT-Induced Structural Changes in the Human Brain; a Case Series
Leif Oltedal1, 2, Ute Kessler1, 3, Nathan S. White1, Hauke Bartsch1, Bjørne Hansen2, Lars Erseland2, Renate Grüner2,
Joshua Kuperman3, Dominic Holland4, Kenneth Hugdahl5, Ketil J. Ødegaard1, 3, Anders M. Dale6, 7
1Department of Clinical Medicine, University of Bergen, Bergen, Norway; 2Department of Radiology, Haukeland University Hospital, Bergen, Norway; 3Department of Psychiatry, University of Marburg, Marburg, Germany; 4Radiology, University of Iowa, Iowa City, IA, United States; 5Psychiatry, University of Toronto, Toronto, Canada; 6Psychiatric University Hospital Zurich, Zurich, Switzerland; 7Institute of Biomedical Engineering, ETH and University Zurich, Zurich, Switzerland

1348. Multiparametric MRI Assessment of Chronic Social Defeat-Induced Changes in Mouse Brain Function, Metabolism, and Structure
Joanes Grandjean1, Damiano Azzinnari2, Aline Seuwen1, Eric Seifritz2, Christopher Pryce2, Markus Rudin3, 4
1Institute for Biomedical Engineering, ETH and University Zurich, Zurich, Switzerland; 2Psychiatric University Hospital Zurich, Zurich, Switzerland; 3Institute of Pharmacology and Toxicology, University Zurich, Zurich, Switzerland

Zan Wang1, Yonggui Yuan2, Hao Shu1, Feng Bai1, Jiayong You3, Zhijun Zhang4
1Psychology and Brain Sciences, Indiana University, Bloomington, IN, United States; 2Xi’an Jiaotong University, Xi’an, Shanxi, China

1350. Trait and State-Dependent Abnormalities of Bipolar Disorder Detected by Quantitative T1rho Mapping
Casey P. Johnson1, Lois A. Warren2, Gary E. Christensen1, Jess G. Fiedorowicz1, Vincent A. Magnotta1, John A. Wemmie1, 2
1Radiology, University of Iowa, Iowa City, IA, United States; 2Psychiatry, University of Iowa, Iowa City, IA, United States

1351. A Pilot fMRI Study of the Effect of Negative Stressful Factors on the Onset of Female Depression
bian haiman1, ji shengzhang1, zhuo junqun2, li gongying3, ren junjie4
1the Fourth Central Hospital of Tianjin, Tianjin, China; 2Tianjin Anning Hospital, Tianjin, China; 3Department of psychiatry, Jining Medical University, shandong, China

1352. Neurostructural Correlates of NCAN, a Genome-Wide Significant Risk Gene for Psychiatric Disorders
Harald Kugel1, Udo Dannowski1, 2, Dominik Grotegerd1, Ronny Redlich1, Janina Suchy1, Nils Opel2, Thomas Suslow2, 3, Carsten Konrad1, Patricia Ohrmann1, Jochen Bauer2, Tilo Kircher1, Axel Krug1, Andreas Jansen1, Bernhard T. Baune1, 2, Walter Heindel3, Katharina Domschke4, Volker Arolt5, Christa Hohoff6, Marcella Rietschel1, 2, 3, 7, Stephanie H. Witt1, 2
1Department of Clinical Radiology, University of Münster, Muenster, NRW, Germany; 2Department of Psychiatry, University of Münster, Muenster, NRW, Germany; 3Department of Psychiatry, University of Marburg, Marburg, HE, Germany; 4Department of Psychosomatic Medicine and Psychotherapy, University of Leipzig, Leipzig, SN, Germany; 5Department of Psychiatry, University of Adelaide School of Medicine, Adelaide, SA, Australia; 6Department of Psychiatry, University of Würzburg, Würzburg, BY, Germany; 7Department of Genetic Epidemiology in Psychiatry, Central Institute of Mental Health, Mannheim, BW, Germany

1353. Decreased Posterior Default Mode Network for Depression Patients
Hu Cheng1, Rui Yang2, Hongbo Zhang2, Xiaoping Wu1, Junle Yang2, Mingyue Ma2, Yanjun Gao2, Hongsheng Liu2, Shengbin Li2
1Psychological and Brain Sciences, Indiana University, Bloomington, IN, United States; 2Xi’an Jiaotong University, Xi’an, Shanxi, China
1354. Cognitive Control for Processing and Inhibition of Facial Emotional Expressions
SENTHIL S. KUMARAN1, BHOOOMIKA R. KAR2, SUNITA GUDWANI1, ANKEETA SHARMA1
1DEPARTMENT OF NMR AND MRI FACILITY, ALL INDIA INSTITUTE OF MEDICAL SCIENCES, New Delhi, Delhi, India; 2Centre of Behavioural and Cognitive Sciences, UNIVERSITY OF ALLAHABAD, Allahabad, Uttar Pradesh, India

1355. Reproducibility of Metabolite Measurements in Patients with Schizophrenia at 7T
Subechhya Pradhan1, Joseph S. Gillen1, 2, S. Andrea Wijtenburg3, Ashley D. Harris1, Laura M. Rowland1, Peter B. Barker1, 2
1Russell H. Morgan Department of Radiology and Radiological Science, Johns Hopkins University School of Medicine, Baltimore, MD, United States; 2Kennedy Krieger Institute, Baltimore, MD, United States; 3Department of Psychiatry, Maryland Psychiatric Research Center, University of Maryland School of Medicine, Baltimore, MD, United States

1356. Condition Specific Frequency Patterns in Rs-fMRI Measurement of a Neurodevelopmental Rat Model of Schizophrenia
Ekkehard Küstermann1, Vani Thimmashetty2, Jannis Gundelach3, Lena Wischhof3
1In-vivo-MR” AG, FB2, Universität Bremen, Bremen, Germany; 2In-vivo-MR” AG, FB2, Universität Bremen, Bremen, Germany; 3Department of Neuropharmacology, Brain Research Institute, University of Bremen, Bremen, Germany

Traditional Poster
Anxiety & PTSD

1357. Global Brain Network Alterations in Post-Traumatic Stress Disorder and Post-Concussion Syndrome
D Rangaprakash1, Gopikrishna Deshpande1, 2, D Narayana Dutt1, Thomas A. Daniel2, Adam Goodman2, Jeffrey S. Katz1, 2, Nouha Salibi1, 4, Thomas S. Denney Jr1, 2, MAJ Michael N. Dretsch6, 6
1AU MRI Research Center, Department of Electrical and Computer Engineering, Auburn University, Auburn, AL, United States; 2Department of Psychology, Auburn University, Auburn, AL, United States; 3Department of Medical Electronics, Dayananda Sagar College of Engineering, Bangalore, Karnataka, India; 4MR R&D, Siemens Healthcare, Malvern, PA, United States; 5National Intrepid Center of Excellence, Walter Reed National Military Medical Center, Bethesda, MD, United States; 6U.S. Army Aeromedical Research Laboratory, Fort Rucker, AL, United States

1358. Inter-Hemispheric Functional and Anatomical Connectivity Abnormalities in Traffic Accident-Induced PTSD: A Study Combining fMRI and DTI
Yawen Sun1, Yan Zhou1, Wang Zhen1, Zhenyu Zhou1, Yong Zhang1, Jieqing Wan1, Jianrong Xu1
1Department of Radiology, Ren Ji Hospital, School of Medicine, Shanghai Jiao Tong University, Shanghai, China; 2Shanghai Mental Health Center, Shanghai Jiao Tong University School of Medicine, Shanghai, China; 3GE Healthcare, Shanghai, China; 4Department of Neurosurgery, Ren Ji Hospital, School of Medicine, Shanghai Jiao Tong University, Shanghai, China

1359. Assessment of Stress-Induced Neurochemical Alterations in a Rat Model of Chronic Stress Using In Vivo 1H MRS at 11.7 Tesla
Fawzi Boumezbeur1, Riccardo Magalhães2, Ashley Novais2, Sébastien Mériaux2, Michel Bottlaender1, Arnaud Cachia1, Thérèse Jay1, Nuno Sousa2
1NeuroSpin, DSV/IBM, Commissariat à l’Energie Atomique, GIF-sur-Yvette, France; 2ICVS/3B’s-PT, School of Health Sciences, University of Minho, Braga, Portugal; 3Inserm U894, Center for Psychiatry and Neurosciences, University Paris-Descartes, Paris, France

1360. Amygdala Functional Connectivity After Real-Time fMRI Neurofeedback Emotional Training in Combat-Related PTSD
Raquel Phillips1, Vadim Zotev1, Kymberly Young1, Chung Ki Wong1, Brent Wurfel1, Matthew Meyer1, 2, Frank Krueger1, 2, Matthew Feldner1, 3, Jerzy Bodurka2, 3
1Laureate Institute for Brain Research, Tulsa, OK, United States; 2Laureate Psychiatric Clinic and Hospital, Tulsa, OK, United States; 3Dept. of Psychology, George Mason University, Fairfax, VA, United States; 4Dept. of Psychological Science, University of Arkansas, Fayetteville, AR, United States; 5College of Engineering, University of Oklahoma, Tulsa, OK, United States
1361. Decoding of Phobic Content with Multivoxel Pattern Analysis in Patients with Spider Phobia
Simon Schwab¹, Leila M. Soravia¹, Yosuke Morishima¹, ², Masahito Nakatani¹, ³, Thomas Dierks¹, Thomas E. Nichols⁴, Andrea Federspiel⁵
¹Dept. of Psychiatric Neurophysiology, University Hospital of Psychiatry, University of Bern, Bern, Switzerland; ²Japan Science and Technology Agency, PRESTO, Japan; ³Department of Psychiatry, The University of Tokushima, Tokushima, Japan; ⁴Department of Statistics & WMG, University of Warwick, Coventry, United Kingdom

1362. Neural Mechanism on Hypofunction of Working Memory Maintenance with Anxiety-Provoking Distracter in Patients with Obsessive Compulsive Disorder and Generalized Anxiety Disorder
Gwang-Won Kim¹, Jong-Chul Yang¹, Gwang-Woo Jeong¹, ²
¹Research Institute of Medical Imaging, Chonnam National University Medical School, Gwang-ju, Korea; ²Psychiatry, Chonbuk National University Hospital, Jeong-ju, Korea; ³Department of Radiology, Chonnam National University Medical School, Gwang-ju, Korea

1363. Alterations of Cerebral White Matter Volume and Metabolite Concentration in Patients with Generalized Anxiety Disorder: A Voxel-Based Morphometry and 1H-MRS
Chung-Man Moon¹, Gwang-Woo Jeong¹, ²
¹Radiology, Research Institute for Medical Imaging, Gwangju, Korea; ²Radiology, Chonnam National University Hospital, Chonnam National University Medical School, Gwangju, Korea

1364. Diagnostic Prediction for Social Anxiety Disorder Via Multivariate Pattern Analysis of the Regional Homogeneity
Wenjing Zhang¹, Xun Yang¹, Su Lui¹, Yajing Meng², Li Yao¹, Yuan Xiao¹, Wei Zhang², Qiyong Gong¹
¹Huaxi MR Research Center (HMRRC), Department of Radiology, West China Hospital of Sichuan University, Chengdu, Sichuan, China; ²Department of Psychiatry, West China Hospital of Sichuan University, Chengdu, Sichuan, China

1365. Morphologic and Cellular Metabolic Abnormalities in DLPFC in Patients with Obsessive-Compulsive Disorder: A Voxel-Based Morphometry and 1H-MRS Study
Shin-Eui Park¹, Gwang-Woo Jeong¹, ²
¹Interdisciplinary Program of Biomedical Engineering, Chonnam National University, Gwangju, Jeollanamdo, Korea; ²Department of Radiology, Chonnam National University Hospital, Chonnam National University Medical School, Gwangju, Korea

1366. Real-Time fMRI Neurofeedback with Simultaneous EEG in Combat-Related PTSD: Identification of EEG Measures of PTSD Severity and Treatment Response
Vadim Zotev¹, Raquel Phillips¹, Masaya Misaki¹, Chung Ki Wong¹, Brent Wurtele¹, Matthew Meyer¹, ², Frank Krueger¹, ³, Matthew Feldner¹, ⁴, Jerzy Bodurka¹, ⁵
¹Laureate Institute for Brain Research, Tulsa, OK, United States; ²Laureate Psychiatric Clinic and Hospital, Tulsa, OK, United States; ³Neuroscience Dept., George Mason University, Fairfax, VA, United States; ⁴Dept. of Psychological Science, University of Arkansas, Fayetteville, AR, United States; ⁵College of Engineering, University of Oklahoma, Tulsa, OK, United States

1367. Metabolic and Microstructural Alterations Associated with Individual Differences in Trait Anxiety: Preliminary Evidence from Magnetic Resonance Spectroscopy and DTI Based Tractography Study
Subash Khushu¹, Shilpi Modi¹, Poonam Rand¹, Richa Trivedi¹
¹NMR Research Centre, Institute of Nuclear Medicine and Allied Sciences, Delhi, India

1368. Biophysical Modeling of High Field Diffusion MRI Demonstrates Micro-Structural Aberration in Chronic Mild Stress (CMS) Rat Brain
Ahmad Raza Khan¹, Andrey Chuhutin¹, Brian Hansen¹, Ove Wiborg¹, Christopher D. Kroenke¹, Sune Norhøj Jespersen²
¹Center of Functionally Integrative Neuroscience, Aarhus University, Aarhus, Denmark; ²Center of Functionally Integrative Neuroscience, Aarhus University, Aarhus, Denmark; ³Centre for Psychiatric Research, Aarhus University Hospital, Risskov, Denmark; ⁴Advanced Imaging Research Center, Oregon Health & Science University, Beaverton, OR, United States
Eun Kyoung Lee1, Eun Ja Lee1

This study aimed to investigate the utility of machine learning approach with DTI structural connectome for lateralization of temporal lobe epilepsy (TLE). The study demonstrated excellent discrimination between left and right TLE, with 92.7% accuracy in leave-one-out cross validation.

1Department of Radiology, The University of Tokyo, Bunkyo, Tokyo, Japan; 2Department of Radiological Technology, The University of Tokyo, Bunkyo, Tokyo, Japan

Purpose of this study was to investigate whether sclerotic and non-sclerotic hippocampal subfields can be discriminated using multiparametric MR imaging. The study concluded that AD is most promising for differentiation of sclerotic and non-sclerotic subfields.

Institute of Radiology, University Hospital Erlangen, Erlangen, Germany; 2Institute of Neuropathology, University Hospital Erlangen, Erlangen, Germany

Unilateral mesial temporal lobe epilepsy (MTLE) with HS was regarded as a network disorder. In the present study, we analyzed the epileptic network using a combination of structural MRI and functional MRI. We assumed that left and right MTLE with HS should exhibit different epileptic networks.

Yao-Chia Shih1, 2, Yu-Jen Chen2, Yung-Chin Hsu2, Yu-Chun Lo2, Hong-Huei Liu3, Wen-Yih Issac Tseng2, 4

Structural MRI contributes a lot in the lateralization of temporal lobe epilepsy (TLE) with mesial temporal sclerosis (MTS). This study employed functional and anatomic analysis of MRI scans to detect focal and network abnormalities in idiopathic generalized epilepsy (IGE). The study concluded that ASL and DWI can help for lateralization in TLE and ASL is better.

1MRI, Shandong Medical Imaging Research Institution, Jinan, Shandong, China; 2Medicine, Shandong University, Jinan, Shandong, China; 3Neurosurgery, Shandong Provincial Hospital, Shandong, China; 4Medical Imaging Processing Center, Shandong Medical Imaging Research Institution, Shandong, China

This study employs functional and anatomic analysis of MRI scans to detect focal and network abnormalities in idiopathic generalized epilepsy (IGE). The study concluded that MRI can detect abnormalities in IGE and highlight the power of MRI to better characterize neurological disease.

1Radiology, New York University School of Medicine, New York, NY, United States; 2Comprehensive Epilepsy Center, Neurology, New York University School of Medicine, New York, NY, United States

Nonketotic hyperglycemia (NKH) have been reported to induce seizures, and may cause transient signal changes on MRI. The study focused on revealing the difference between these radiologic abnormalities in NKH and the diagnostic value of CE-FLAIR imaging.

1Radiology, Dongguk University Ilsan Hospital, Goyang-si, Gyeonggi-do, Korea

Our structural brain network will change topologically with time. The study focuses on revealing the difference between neurodevelopment structural trajectories with less network efficiency and less optimal small world configuration.

1University of California, Irvine, Irvine, CA, United States; 2University of Wisconsin School of Medicine and Public Health, WI, United States

Exhibition Hall Monday 16:30-18:30

1369. Disrupted Modular Organization of Structural Cortical Network Topology in New-Onset Pediatric Epilepsy

Jie Zheng1, Rashi Rajaguru1, Jeffery Riley1, Gultekin Gulse1, Bruce Hermann2, Jack Lin1

1University of California, Irvine, Irvine, CA, United States; 2University of Wisconsin School of Medicine and Public Health, WI, United States


Eun Kyoung Lee1, Eun Ja Lee1

1Radiology, Dongguk University Ilsan Hospital, Goyang-si, Gyeonggi-do, Korea

1371. Multimodal Quantitative Imaging Detects Functional But Not Structural Abnormalities in Idiopathic Generalized Epilepsy

Megan L. McGill1, Orrin Devinsky2, Xiuyuan Wang1, Brian T. Quinn7, Heath Pardoe1, Chad Carlson7, Tracy Butler7, Ruben Kuzniecky2, Thomas Theisen2

1Radiology, New York University School of Medicine, New York, NY, United States; 2Comprehensive Epilepsy Center, Neurology, New York University School of Medicine, New York, NY, United States

1372. Improve Laterizing Sensitivity in Temporal Lobe Epilepsy by Combining Structural MRI with Regional Cerebral Blood Flow and Apparent Diffusion Coefficient

Xiaoqin GUO1, 3, Shangchen Xu3, Guangbin WANG3, Yi ZHANG4, Lingfeng GUO4, Bin ZHAO1

1MRI, Shandong Medical Imaging Research Institution, Jinan, Shandong, China; 2Medicine, Shandong University, Jinan, Shandong, China; 3Neurosurgery, Shandong Provincial Hospital, Shandong, China; 4Medical Imaging Processing Center, Shandong Medical Imaging Research Institution, Shandong, China

1373. Different Epileptic Brain Networks in Unilateral Mesial Temporal Lobe Epilepsy with Hippocampal Sclerosis Identified by the Whole Brain Tract-Based Automatic and Surface-Based Analyses

Yao-Chia Shih1, 2, Yu-Jen Chen1, Yung-Chin Hsu1, Yu-Chun Lo1, Hong-Huei Liu1, Wen-Yih Issac Tseng2, 4

1Graduate Institute of Biomedical Engineering, National Taiwan University, Taipei, Taiwan; 2Center for Otopneural Medicine, National Taiwan University College of Medicine, Taipei, Taiwan; 3Department of Neurology, National Taiwan University Hospital, College of Medicine, National Taiwan University, Taipei, Taiwan; 4Molecular Imaging Center, National Taiwan University Taipei, Taiwan

1374. MR-Microscopy of Human Hippocampi: Multiparametric Characterization of Hippocampal Sclerosis

Clarissa Gillmann1, Roland Coras2, Michael Uder1, Ingmar Blümcke2, Tobias Bäuerle1

1Institute of Radiology, University Hospital Erlangen, Erlangen, Germany; 2Institute of Neuropathology, University Hospital Erlangen, Erlangen, Germany

1375. Machine Learning Approach for Lateralization of Temporal Lobe Epilepsy Utilizing DTI Structural Connectome

Kouhei Kamiya1, Yuichi Suzuki2, Shiori Amemiya1, Naoto Kuni1, Kensaue Kawat2, Harushi Mor1, Akira Kunimatsu1, Nobuhito Saito3, Shigeki Aoki5, Kuni Ohtomo1

1Department of Radiology, The University of Tokyo, Bunkyo, Tokyo, Japan; 2Department of Radiological Technology, The University of Tokyo Hospital, Bunkyo, Tokyo, Japan; 3Department of Neurosurgery, The University of Tokyo, Bunkyo, Tokyo, Japan; 4Department of Neurosurgery, NTT Medical Center Tokyo, Shinagawa, Tokyo, Japan; 5Department of Radiology, Junteido University School of Medicine, Bunkyo, Tokyo, Japan
1376. **Graph-Theoretical Analysis of DTI Reveals Disruption in Global and Regional Structural Networks in Children with Localization-Related Epilepsy**

*Mojdeh Zamyadi¹, Carter Snead², Sam Doesburg¹, Mary Lou Smith¹, Elysa Widjaja³*

¹Neurosciences and Mental Health, The Hospital for Sick Children, Toronto, Ontario, Canada; ²Neurosciences and Mental Health, The Hospital for Sick Children, Toronto, Ontario, Canada; ³Diagnostic Imaging, The Hospital for Sick Children, Toronto, Ontario, Canada

We made systematic comparison of the findings of resting state fMRI with other localization techniques, including VEEG, PET, and MRS. This comparative analysis revealed that fMRI, with its high spatial resolution and easy implementation, could be a powerful and efficient tool for further clinical application.

1377. **A Longitudinal Study of MR Correlates During Epileptogenesis in a Mouse Model of Temporal Lobe Epilepsy**

*Niels Leonard Schwaderlapp¹, Philipp Janz², Jochen Leupold¹, Ute Häussler², Thomas Lange¹, Dominik v. Elverfeldt¹, Carola Haus¹, Jürgen Hennig¹, Laura-Adela Harsan¹, Pierre LeVan¹*

¹Medical Physics, University Medical Center Freiburg, Freiburg, BW, Germany; ²Exp. Epilepsy Research, University Medical Center Freiburg, Freiburg, BW, Germany

Nocturnal frontal lobe epilepsy (NFLE) is a heterogeneous disorder characterized by sleep-related motor events of unprovoked nature. In this study, we evaluated fMRI resting state functional connectivity in NFLE patients compared to controls. NFLE patients showed greater functional connectivity between precuneus, superior parietal lobe, primary and supplementary motor area, suggesting an alteration of the arousal regulatory system, with a particular excitability of the cortex during non-REM sleep.

1378. **MR Spectroscopic Studies of Early Post Status Epilepticus in Rats**

*Yijen Lin Wu¹, ☢️, Patrice Pearce⁴, Amedeo Rapuano⁴, T. Kevin Hitchens⁴, Nihal deSанerolle¹, Jullie W. Pan¹, ⁵*

¹Neurology, University of Pittsburgh, Pittsburgh, PA, United States; ²Developmental Biology, University of Pittsburgh, Pittsburgh, PA, United States; ³Neurosurgery, Yale University, New Haven, CT, United States; ⁴Pittsburgh NMR Center for Biomedical Research, Carnegie Mellon University, Pittsburgh, PA, United States; ⁵Radiology, University of Pittsburgh, Pittsburgh, PA, United States

The study investigated the metabolic and electrophysiologic changes associated with epileptogenesis in a rat model of interictal spiking using ¹H MRS at 7 Tesla. We used a chronic tetanus toxin rat model of interictal spiking as a platform to investigate longitudinal metabolite and electrophysiologic changes associated with epileptogenesis.

1379. **The Use of Magnetic Resonance Spectroscopy in the Evaluation of Epilepsy in Pediatric Patients**

*Marisa Blitstein¹, Sandra Rincon¹, Paul Caruso¹, Ronald Thibert², Ramon Gilberto Gonzalez¹, ✪, Eva-Maria Ratai, ³*

¹Department of Radiology, Neuroradiology Division, Massachusetts General Hospital, Harvard Medical School, Boston, MA, United States; ²Neurology / Pediatric Neurology, Massachusetts General Hospital, Harvard Medical School, Boston, MA, United States; ³A. A. Martins Center for Biomedical Imaging, MA, United States; ⁴Department of Radiology, Neuroradiology Division, Massachusetts General Hospital, Harvard Medical School, Boston, MA, United States

The study aimed to investigate the structural whole brain networks using graph theoretical measures in children with localization-related epilepsy. No associations were found between global network properties, IQ and clinical parameters.

1380. **Investigating Longitudinal Metabolite and Electrophysiologic Changes Associated with Epileptogenesis In Vivo in a Rat Model of Intercital Spiking Using ¹H MRS at 7 Tesla**

*Helen Wu¹, ☢️, Danielle Senador¹, Matthew Galloway¹, Jeffrey Loeb², Jeffrey Stanley⁴*

¹Wayne State University School of Medicine, Detroit, MI, United States; ²MD/PhD Program, Wayne State University School of Medicine, Detroit, MI, United States; ³Wayne State University School of Medicine, MI, United States; ⁴Psychiatry and Behavioral Neurosciences, Wayne State University School of Medicine, MI, United States; ⁵Neurology and Rehabilitation Medicine, University of Illinois at Chicago, IL, United States

The study investigated longitudinal metabolite and electrophysiologic changes associated with epileptogenesis in a rat model of interictal spiking using ¹H MRS at 7 Tesla. We used a chronic tetanus toxin rat model of interictal spiking as a platform to investigate longitudinal metabolite and electrophysiologic changes associated with epileptogenesis.

1381. **Functional Connectivity in Nocturnal Frontal Lobe Epilepsy: An fMRI Resting State Study**

*Stefania Evangelisti¹, Laura Ludovica Gramegna¹, Claudia Testa¹, David Neil Manners¹, Stefano Zanigni¹, Claudio Bianchini¹, Francesca Bisulli, ☢️, Laura Licchetta, Ilaria Naldi, Lorenzo Ferri, Paolo Tinuper, ☢️, Caterina Tonon¹, Raffaele Lodi¹*

¹Functional MR Unit, Policlinico S. Orsola-Malpighi, Department of Biomedical and NeuroMotor Sciences, University of Bologna, Bologna, Italy; ²IRCCS Institute of Neurological Sciences of Bologna, Bologna, Italy

The study investigated functional connectivity in nocturnal frontal lobe epilepsy using an fMRI resting state study. We used a chronic tetanus toxin rat model of interictal spiking as a platform to investigate longitudinal metabolite and electrophysiologic changes associated with epileptogenesis.

1382. **The Value of Resting State-fMRI for Detecting Epileptogenic Zone in Patients with Focal Epilepsy**

*Jianzhong Yin¹, ☢️, Bofeng Zhao¹, Zhijuan Chen¹, Weidong Yang¹, Yu Qing⁴, Li Cai⁵, Panli Zuo⁶, Hongyan Ni¹, ², Wen Shen¹, ²*

¹Radiology Department, Tianjin First Central Hospital, Tianjin, China; ²Tianjin Medical Imaging Institution, Tianjin, China; ³Department of Neurosurgery, Tianjin Medical University General Hospital, Tianjin, China; ⁴Department of Neurology, Tianjin Medical University General Hospital, Tianjin, China; ⁵Clinical PET-CT Center, Tianjin Medical University General Hospital, Tianjin, China; ⁶MR Collaboration, Siemens Healthcare China, Beijing, China

The study investigated the value of resting state-fMRI for detecting epileptogenic zone in patients with focal epilepsy. We used a chronic tetanus toxin rat model of interictal spiking as a platform to investigate longitudinal metabolite and electrophysiologic changes associated with epileptogenesis.
1383. **Moments of the T2 Spectrum as a Marker of Resolving Edema in New MS Lesions**  
*Sneha Pandya¹, Elizabeth Monohan², Michael Dayan¹, Susan A. Gauthier¹, Ashish Raj¹*  
¹Radiology, Weill Cornell Medical College, New York, NY, United States; ²Neurology, Weill Cornell Medical College, New York, NY, United States

Myelin water fraction (MWF) can be measured using multi-echo MR T2 relaxometry. MWF was shown to correspond closely with the severity of edema in MS lesions. The first and second moments of the T2 spectrum can be used to assess the rate of edema resolution. The new method allows for longitudinal studies of myelin water fraction and can improve our understanding of MS lesion evolution.

1384. **Different MRI Measures Predict Clinical Deterioration and Cognitive Impairment in MS: A 5 Year Longitudinal Study**  
*Elisabetta Pagani¹, Maria A. Rocca¹, Paolo Preziola², Sarolta Mesaros⁴, Massimiliano Copetti³, Melissa Petrolini¹, Jelena Drulovic³, Massimo Filippi²*  
¹Neuroimaging Research Unit, Institute of Experimental Neurology, Division of Neuroscience, San Raffaele Scientific Institute, Vita-Salute San Raffaele University, Milan, MI, Italy; ²Department of Neurology, San Raffaele Scientific Institute, Vita-Salute San Raffaele University, Milan, Italy; ³Neurology Clinic, Clinical Centre of Serbia, University of Belgrade, Belgrade, Yugoslavia; ⁴Biostatistics Unit, IRCCS-Ospedale Casa Sollievo della Sofferenza, San Giovanni Rotondo, Italy

The identification of imaging biomarkers for monitoring disease progression in multiple sclerosis is an unmet need. In this study, different MRI measures were examined for their ability to predict clinical deterioration and cognitive impairment. The results suggest that multimodal imaging can provide valuable insights into disease progression and may aid in the development of personalized treatment strategies.

1385. **Optimizing Gray-Matter White-Matter Contrast on Three-Dimensional Double Inversion Recovery MRI Using Patient-Specific Inversion Times**  
*Refaat E. Gabr¹, Xiaojun Sun¹, Amol S. Pednekar², Ponnada A. Narayana¹*  
¹Department of Diagnostic and Interventional Imaging, The University of Texas Health Science Center at Houston, Houston, TX, United States; ²Philips Healthcare, Cleveland, OK, United States

Optimization of double inversion recovery protocols is usually performed based on the expected relaxation times in a specific tissue class. This study demonstrated that using patient-specific inversion times produces large gains in tissue contrast without scan time penalty. This finding may have significant implications for clinical MRI protocols, improving diagnostic accuracy.

1386. **Comparative Study of Quantitative MRI Markers of Disease Progression in Primary Progressive Multiple Sclerosis**  
*Govind Nair¹, Danish Ghazali¹, Blake Snyder¹, Joan Ohayon¹, Daniel S. Reich¹, Irene Cortese¹, Bibiana Bielekova¹*  
¹NINDS, National Institutes of Health, Bethesda, MD, United States

Quantitative MRI (qMRI) markers of disease progression such as tissue volume, DTI, and quantitative T1 (qT1) from the caudate. A majority of the qMRI from brain did not show any changes, probably reflecting the pathophysiology of PPMS.

1387. **Highly Reproducible Whole Brain Myelin Water Mapping with FAST-T2 in 4 Minutes Using Geometric Echo Time Sampling**  
*Thanh D. Nguyen¹, Kofi Deh¹, Sneha Pandya¹, Elizabeth Monohan¹, Ashish Raj¹, Yi Wang¹, Susan A. Gauthier¹*  
¹Weill Cornell Medical College, New York, NY, United States

The objective was to develop fast and reproducible whole brain myelin water mapping for longitudinal study of multiple sclerosis. Highly reproducible myelin water fraction measurements between repeated scans (negligible bias with ±2% limits of agreement on a per voxel basis).

1388. **Statistical Brain Network Analysis in Female Relapsing Remitting Multiple Sclerosis Patients Using Diffusion Tensor Imaging**  
*AmirHussein Abdolalizadeh¹,², Arash Nazeri³, Tina Roostaei³, Mohammad Ali Sahraian³, Shokufeh Sadaghiani², Bahram Mohajer³, Mohammad Hadi Aarabi¹*  
¹Interdisciplinary Neuroscience Research Program (INRP), Tehran, Iran; ²Multiple Sclerosis Research Center (MSRC), Tehran, Iran

Multiple Sclerosis (MS) is an autoimmune disease causing neuronal injury. Diffusion Weighted Imaging have been used to study brain changes in MS. This study utilized statistical brain network analysis to investigate white matter microstructural integrity in female patients with relapsing remitting MS.
1391. Central Sulcus and Pericentral Cortical Changes in Multiple Sclerosis
Louise Pape1, Artem Mikheev1, Jeffrey Huang1, Joseph Herbert1, Henry Rusinek4, Yulin Ge1
1Radiology/Center for Biomedical Imaging, NYU Langone Medical Center, New York, NY, United States

1392. Resting State Fluctuation Amplitude Indicates Impaired Cerebrovascular Reactivity in Multiple Sclerosis
Mark J. Lowe1, Katherine A. Koenig1, Xiaopeng Zhou1, Wanyong Shin1, Robert Berme1, Lael Stone1, Micheal D. Phillips1
1Imaging Institute, Cleveland Clinic, Cleveland, OH, United States; 2Neurologic Institute, Cleveland Clinic, Cleveland, OH, United States

1393. Hippocampi and Epilepsy in MS Patients: A Diffusion Weighted Imaging Study with NODDI.
Alberto De Luca1, 2, Marco Castellaro1, Stefania Montemezzi1, Massimiliano Calabrese1, Alessandra Bertoldo1
1Department of Information Engineering, University of Padova, Padova, PD, Italy; 2Department of Neuroimaging, Scientific Institute, IRCCS "Eugenio Medea", Bosisio Parini, LC, Italy; 3Radiology Unit, Azienda Ospedaliera di Verona, Verona, Italy; 4Neurology Section, Department Of Neurological and Movement Sciences, University Hospital of Verona, Verona, Italy

1394. Volumetric Cervical Spinal Cord Atrophy Differs Between Younger and Older Onset Relapsing-Remitting Multiple Sclerosis (RRMS) and Correlates with Disability
Courtney A. Bishop1, 2, Emma McCarthy3, Richard Nicholas3, Lesley Honeyfield4, Paolo A. Muraro4, 5, Adam D. Waldman1, 6, Rexford D. Newbould1, 6
1Imanova Centre for Imaging Sciences, London, United Kingdom; 2Division of Brain Sciences, Imperial College London, London, United Kingdom; 3University of Warwick, Coventry, United Kingdom; 4Department of Imaging, Imperial College Healthcare NHS Trust, United Kingdom; 5Department of Clinical Neurosciences, Imperial College Healthcare NHS Trust, United Kingdom; 6Division of Experimental Medicine, Imperial College London, United Kingdom

1395. Relationship of Resting State Functional Connectivity and Visual Acuity in MS Patients with Optic Neuritis
Blessy Mathew1, Mark J. Lowe1, Rob Berme1
1Cleveland Clinic, Cleveland, OH, United States

1396. Longitudinal Analysis of Advanced and Conventional Magnetic Resonance Imaging Measures of Disease Impact in Multiple Sclerosis
Guillaume Bonnier1, 2, Bénédicte Mortamet1, 2, Jean-Philippe Thiran2, Gunnar Krueger1, 2, Tobias Kober1, 2, Cristina Granziera1
1Siemens ACIT – CHUV Radiology, Siemens Healthcare IM BM PI & Department of Radiology CHUV, Lausanne, Vaud, Switzerland; 2LTSS, École Polytechnique Fédérale de Lausanne, Lausanne, Vaud, Switzerland

1397. A Novel Double Inversion Recovery MRI Pulse Sequence: Improved Lesion Characterization for Demyelinating WM and Cortical Lesions in Multiple Sclerosis?
Jan-Mendelt Tillema1, John Port2, Pascal Atanga3, Yunhong Shu2, 3, Claudia Lucchini2, Istvan Pirko1
1Neurology, Mayo Clinic, Rochester, MN, United States; 2Radiology, Mayo Clinic, Rochester, MN, United States; 3Biomedical Engineering and Medical Physics, Mayo Clinic, Rochester, MN, United States

1398. Application of Vector QSM for Imaging Multiple Sclerosis Lesions
Lijie Tu1, 2, Cynthia W intimately, Susan Gauthier1, David Pitt2, Yi Wang1, Tian Liu5
1Radiology, Weill Cornell Medical College, New York, NY, United States; 2Applied & Engineering Physics, Cornell University, Ithaca, NY, United States; 3Tufts University, MA, United States; 4Neurology, Yale University, New Haven, CT, United States; 5Medimagemetric, LLC, New York, NY, United States
1399. Are Outer Cortical MTR Changes Caused Predominantly by MR-Visible Cortical Lesions or Abnormalities in the Normal-Appearing Grey Matter?
1NMR Research Unit, Department of Neuroinflammation, Queen Square MS Centre, UCL Institute of Neurology, London, England, United Kingdom; 2Centre for Medical Image Computing, UCL Department of Computer Sciences, London, England, United Kingdom; 3Dementia Research Centre, Department of Neurodegenerative Diseases, UCL Institute of Neurology, London, England, United Kingdom; 4NIHR University College London Hospitals Biomedical Research Centre, London, United Kingdom

1400. Detection of Demyelination and Remyelination in Multiple Sclerosis by Analysis of T2* Relaxation at 7T
Xiaozhen Li, Peter van Gelderen, Pascal Saït, Jacco de Zwart, Daniel Reich, Jeff Duyk.
1Advanced MRI Section, LFMI, NINDS, National Institutes of Health, Bethesda, MD, United States; 2Dept. NVS, Karolinska Institutet, Huddinge, Stockholm, Sweden; 3Translational Neuroradiology Unit, DNN, NINDS, National Institutes of Health, Bethesda, MD, United States

1401. Brain Temperature Is Elevated in Relapsing-Remitting Relative to Progressive Multiple Sclerosis
1Columbia University Medical Center, New York, United States; 2New York State Psychiatric Institute, New York, United States; 3Columbia University Medical Center, NY, United States; 4Kessler Foundation, NJ, United States

1402. Mapping the G-Ratio Within MS Lesions
Mara Cercignani, Giovanni Giulietti, Barbara Spano, Marco Bozzali.
1CISC, Brighton and Sussex Medical School, Brighton, East Sussex, United Kingdom; 2Neuroimaging Laboratory, Santa Lucia Foundation, Rome, Italy

1403. Detecting Iron Deposition in Multiple Sclerosis Using Susceptibility Contrast Imaging
Bing Yao, Sarah Wood, Zhiguo Jiang, Glenn Wylie, John DeLuca.
1Rocco Ortenzio Neuroimaging Center, Kessler Foundation, West Orange, NJ, United States; 2Department of Physical Medicine & Rehabilitation, Rutgers University, Newark, NJ, United States; 3Psychology Department, Montclair State University, Montclair, NJ, United States; 4Human Performance Engineering Lab, Kessler Foundation, West Orange, NJ, United States

1404. Neurite Orientation Dispersion and Density Imaging (NODDI) in Multiple Sclerosis
1Center for Neuroimaging, Indiana University, Indianapolis, IN, United States; 2Dartmouth College, NH, United States; 3Dartmouth Medical School, Lebanon, NH, United States

1405. Quantitative Susceptibility Mapping (QSM) Indicates Disturbed Brain Iron Homeostasis in Neuromyelitis Optica
Thomas Martin Doring, Vanessa Granado, Gustavo Tukamoto, Fernanda Rueda, Andreas Deistung, Juergen Reichenbach, Emerson Gasparetto, Ferdinand Schweser.
1Radiodiagnostic Imaging, DASA, Rio de janeiro, Brazil; 2Radiología, CDPI, Rio de Janeiro, Brazil; 3Medical Physics, Uni Jena, Thuringen, Germany; 4Medical Physics Group, Uni Jena, Thuringen, Germany; 5DASA, Rio de Janeiro, Brazil; 6CTRc and Buffalo Neuroimaging Analysis Center, University of NY, Buffalo NY, United States

1406. Comparison of Segmentation Techniques to Measure Tissue-Specific Atrophy in Multiple Sclerosis
1Columbia University Medical Center, NY, United States; 2Kessler Foundation, NJ, United States

233
**1407. An 8 Month Longitudinal Study of T1 Measures in MS Patients Using 3D MPnRAGE**

*Steven R. Kecskemethy*, Andrew L. Alexander, Aaron S. Field

1Waisman Center, University of Wisconsin, Madison, WI, United States; 2Medical Physics, University of Wisconsin, Madison, WI, United States; 3Radiology, University of Wisconsin, Madison, WI, United States

**1408. Fully-Automated Single-Image T2 White Matter Hyperintensity Mapping and Quantification with FSL**

*Nathan C. Wetter*, Elizabeth A. Hubbard, Robert W. Motl, Bradley P. Sutton

1Bioengineering, University of Illinois at Urbana-Champaign, Urbana, IL, United States; 2Beckman Institute for Advanced Science and Technology, University of Illinois at Urbana-Champaign, IL, United States; 3Kinesiology and Community Health, University of Illinois at Urbana-Champaign, IL, United States

---

**Traditional Poster**

**Traumatic Brain Injury**

**Exhibition Hall**

**Monday 16:30-18:30**

**1409. Experimental TBI Results in Pathophysiology Resembling Motor Neuron Disease**

*David K. Wright*, Chris Van Der Poel, Li Yang, Stuart McDonald, Roger Ordidge, Terence J. O'Brien, Leigh A. Johnston, Sandy R. Shultz

1Department of Anatomy and Neuroscience, The University of Melbourne, Melbourne, Victoria, Australia; 2The Florey Institute of Neuroscience and Mental Health, Melbourne, Victoria, Australia; 3Department of Human Biosciences, La Trobe University, Victoria, Australia; 4Department of Medicine, The University of Melbourne, Victoria, Australia; 5NeuroEngineering Laboratory, School of Engineering, The University of Melbourne, Victoria, Australia

**1410. High Spatial Resolution MRI Unveils the Mystery of Moderate Traumatic Brain Injury**

*Quang Shen*, Lora Talley Waits, Shiliang Huang, Michael O'Boyle, Justin Alexander Long, Timothy Q. Duong

1Research Imaging Institute, The University of Texas Health Science Center at San Antonio, San Antonio, TX, United States

**1411. Multimodal Imaging of Functional Alterations of the Thalamus Following Mild Traumatic Brain Injury**

*Chandler Sours*, Elijah George, Steven Roys, Jiachen Zhuo, Rao P. Gullapalli

1Diagnostic Radiology and Nuclear Medicine, University of Maryland School of Medicine, Baltimore, MD, United States; 2Magnetic Resonance Research Center, Baltimore, MD, United States

**1412. A Comparative Study of Diffuse and Focal Traumatic Brain Injury Using Multi-Echo Susceptibility Weighted Imaging in Rodent Model**

Sanjay Verma, Bhanu Prakash KN, Sankar Seramani, Enzi Mary Kan, Kian Chye Ng, Mui Hong Tan, Jia Lu, Sendhil Velan

1Laboratory of Molecular Imaging, Singapore Bioimaging Consortium, Singapore, Singapore; 2Laboratory of Molecular Imaging, Singapore Bioimaging Consortium, Singapore, Singapore; 3Defence Medical and Environmental Research Institute, DSO National Laboratories, Singapore

**1413. Longitudinal Analysis of Structural and Functional Connectivity of the Thalamus and Anterior Cingulate Cortex in Mild Traumatic Brain Injury**

*Armin Iraji*, Natalie Wiseman, Robert Welch, Brian O'Neil, Andrew Kulek, Syed Imran Ayaz, E Mark Haacke, Zhifeng Kou

1Wayne State University, Detroit, MI, United States

**1414. Axonal Alterations at Acute Stage of a Non-Impact, Blast-Induced Rat Brain Injury Model By In Vivo diffusion Tensor Imaging**


1Department of Diagnostic Radiology and Nuclear Medicine, University of Maryland, Baltimore, MD, United States; 2Core for Translational Research in Imaging @ Maryland, University of Maryland, Baltimore, MD, United States; 3Department of Mechanical Engineering, University of Maryland, Baltimore, MD, United States; 4Center of Energetics Concepts Development, University of
1415. DTI Predicts Functional Deficit in Professional Boxers.  
Wanyong Shin¹, Blessy Mathew¹, Katherine Koenig¹, Banks Sarah², Mark J. Lowe¹, Michael Phillips³, Michael Modic⁴, Charles Bernick⁵  
¹Imaging Institute, Cleveland Clinic Foundation, Cleveland, OH, United States; ²Lou Ruvo Center for Brain Health, Cleveland Clinic Foundation, Las Vegas, Nervada, United States; ³Neurological Institute, Cleveland Clinic Foundation, Cleveland, OH, United States

1416. Evidence for Abnormal Venous Drainage in a Closed Head Model of Pediatric Mild Traumatic Brain Injury Using 9.4T MRI  
Elizabeth Imhof, Michael Esser, ¹, Carolyne Judd-MacMillan, ¹, Richelle Mychasiuk, ¹, Jeffrey F. Dunn, ¹  
¹University of Calgary, Calgary, Alberta, Canada; ²Alberta Children’s Hospital Research Institute, Calgary, Alberta, Canada

1417. Parametric Response Map (PRM) Is a Promising Tool for the Monitoring of Post Traumatic Cerebral Edema  
Jules Grèze, ², Pierre Bouzar, ², Jean-François Payen, ², Emmanuel Barbier, Benjamin Lemasson  
¹CHU Grenoble, Grenoble, France; ²équipe 5, Grenoble Institute of Neuroscience, Grenoble, France

1418. Comparison of DTI Group Analysis Using Non-Linear and Linear Registration Techniques  
Blessy Mathew¹, Wanyong Shin¹, Mingyi Li¹, Mark J. Lowe¹, Sarah Banks¹, Michael Phillips¹, Michael T. Modic¹, Charles Bernick²  
¹Cleveland Clinic, Cleveland, OH, United States; ²Cleveland Clinic, Las Vegas, NV, United States

1419. Fractal Analysis of the Brain Blood Oxygenation Level Dependent (BOLD) Signal in the Left Putamen of Mild Traumatic Brain Injury (MTBI) Patients  
Olga Dona¹, Michael Noseworthy²  
¹Biomedical Engineering, McMaster University, Hamilton, Ontario, Canada; ²Electrical and Computer Engineering, McMaster University, Hamilton, Ontario, Canada

1420. Connectome-Scale Assessment of Structural and Functional Connectivity in Mild Traumatic Brain Injury at the Acute Stage  
Armin Iraji¹, Hanbo Chen¹, Natalie Wiseman¹, Tuo Zhang², Robert Welch¹, Brian O’Neil¹, Andrew Kulek¹, Syed Imran Ayaz¹, Xiao Wang¹, Conor Zuk¹, E. Mark Haacke³, Tianming Liu², Zhifeng Kou¹  
¹Wayne State University, Detroit, MI, United States; ²University of Georgia, GA, United States

1421. Default-Mode Network Functional Connectivity Progression in the Days Following a Single Sports Concussion  
Victoria L. Morgan¹, Andrew J. Gregory², Allen K. Sills³  
¹Institute of Imaging Science, Vanderbilt University, Nashville, TN, United States; ²Ortho-Sports Medicine, Vanderbilt University, Nashville, TN, United States; ³Neurosurgery, Vanderbilt University, Nashville, TN, United States

Priya Santhanam¹, Peter Cartwright¹, Thomas G. Perkins¹, Terrence R. Oakes¹, John Graner¹, Gerard P. Riedy¹, Lindell K. Weaver², William W. Orrison³  
¹National Intrepid Center of Excellence (NICOE), Bethesda, MD, United States; ²Imgen, LLC, Las Vegas, NV, United States; ³Philips Healthcare, Cleveland, OH, United States; ⁴Perkins Consultative Resources LLC, Fort Collins, CO, United States; ⁵Uniformed Services University of the Health Sciences, Bethesda, MD, United States; ⁶Department of Hyperbaric Medicine, Intermountain LDS Hospital and Intermountain Medical Center, Salt Lake City, UT, United States; ⁷School of Medicine, University of Utah, Salt Lake City, UT, United States; ⁸Department of Health Physics, University of Nevada Las Vegas, Las Vegas, NV, United States
1423. Resting-State Functional Magnetic Resonance Imaging Connectivity and Behavioral Outcomes in Traumatic Brain Injury  
Shiliang Huang1, Qiang Shen1, Lora Talley Watts1, Justin Alexander Long1, Wei Li2, Timothy Q. Duong2  
1Research Imaging Institute, The University of Texas Health Science Center at San Antonio, San Antonio, TX, United States

1424. Anomalous Cognitive and Re-Experiencing Networks in Recent Onset Post-Traumatic Stress Disorder  
Shun Qi1, Panli Zuo2, Jangang Gao1, Ying Liu, Mathias Nittka2, Hong Yin  
1 Xijing Hospital, Fourth Military Medical University, xian, shaanxi, China; 2Siemens Healthcare, MR Collaborations NE Asia, shaanxi, China; 3Siemens Healthcare, Germany, Germany

1425. Towards Precision Neuroimaging: Standardization of DTI of a Multicenter Traumatic Brain Injury Study  
Eva M. Palacios1, Alastair J. Martin1, Frank Ezekiel2, Esther L. Yulk3, Geoffrey T. Manley4, Pratik Mukherjee5  
1Radiology and Biomedical Imaging, University of California San Francisco, San Francisco, CA, United States; 2Radiology and Biomedical Imaging, University of California San Francisco, San Francisco, CA, United States; 3Neurological Surgery, San Francisco General Hospital, San Francisco, CA, United States

1426. High School Football Athletes with a History of Concussion Have Relatively Vulnerable and Faster Aging Resting State Brain Network Than Those Without  
Kausar Abbas1, Trey E. Shenk1, Thmoas M. Talavage12  
1Electrical and Computer Engineering Department, Purdue University, West Lafayette, IN, United States; 2Weldon School of Biomedical Engineering, Purdue University, West Lafayette, IN, United States

1427. Quantitative Susceptibility Mapping Using Three Dimensional Segmented Echo-Planar Imaging  
Wen-Tung Wang3, Dzung Pham1, John A. Butman12  
1National Institutes of Health, Bethesda, MD, United States; 2Center for Neuroscience and Regenerative Medicine, MD, United States

1428. Single-Subject Diffusion Tensor Imaging Changes After Concussion  
Kathryn Yvonne Manning1, Arthur Brown2, Robert Bartha2, Gregory A. Dekahan, Christy Barreira, Tim Doherty1, Lisa Fischer4, Sandra Shaw5, Douglas Fraser6, Ravi S. Menon7  
1Medical Biophysics, University of Western Ontario, London, Ontario, Canada; 2Centre for Functional and Metabolic Mapping, Robarts Research Institute, London, Ontario, Canada; 3Physical Medicine and Rehabilitation, University of Western Ontario, London, Ontario, Canada; 4Primary Care Sport Medicine, Fowler Kennedy Sport Medicine, London, Ontario, Canada; 5Paediatrics Critical Care Medicine, London Health Sciences Centre, London, Ontario, Canada

1429. Metabolic Alterations at the Interface of Brain Matters in MTBI Patients: 1H MRSI Study.  
Eva Heckova1, Michal Buittansky1, Stefan Sivak2, Dusan Dobrota3  
1 Jessenius Faculty of Medicine in Martin, Comenius University, Bratislava, Slovakia; 2Radiodiagnostic Clinic, Martin University Hospital, Martin, Slovakia; 3Clinic of Neurology, Martin University Hospital, Martin, Slovakia

1430. Diffusion Tensor Imaging Changes in Rugby Players Without Diagnosed Concussion  
Kathryn Yvonne Manning1, Gregory A. Dekahan2, Christy Barreira2, Sandra Shaw3, Robert Bartha4, Lisa Fischer5, Arthur Brown6, Ravi S. Menon7  
1Medical Biophysics, University of Western Ontario, London, Ontario, Canada; 2Robarts Research Institute, London, Ontario, Canada; 3Primary Care Sport Medicine, Fowler Kennedy Sport Medicine Clinic, London, Ontario, Canada; 4Centre for Functional and Metabolic Mapping, Robarts Research Institute, London, Ontario, Canada

1431. Suppression of Streak Artifacts in Quantitative Susceptibility Mapping  
Wen-Tung Wang3, Dzung Pham1, John A. Butman12  
1National Institutes of Health, Bethesda, MD, United States; 2Center for Neuroscience and Regenerative Medicine, Bethesda, MD, United States
1432. **Recovery of Consciousness in Brain Injury: Insights from the Structural and Functional Connectome**

*Amy Kuceyeski¹, Sudhin Shah², Jonathan Dyke³, Stephen Bicket², Farrars Abdelnour⁴, Nicholas Schiff, Henning Voss, Ashish Raj*

¹Radiology and Brain and Mind Research Institute, Weill Cornell Medical College, New York, NY, United States; ²Neurology, Weill Cornell Medical College, NY, United States; ³Radiology, Weill Cornell Medical College, NY, United States; ⁴Neurology, Albert Einstein College of Medicine, NY, United States

1433. **Prediction of Recovery from Mild TBI Using Genetic Programming Analysis of DTI Data**

*Richard Watts¹, Margaret J. Eppstein¹, Alex Thomas¹, Joshua P. Nickerson¹, Hugh Garavan¹, Trevor Andrews¹, ³, Christopher G. Filippi¹, Kael Freeman¹*

¹Department of Radiology, University of Vermont College of Medicine, Burlington, VT, United States; ³Department of Computer Science, University of Vermont, Burlington, VT, United States; ²Department of Surgery, University of Vermont College of Medicine, Burlington, VT, United States; ³Department of Psychiatry, University of Vermont College of Medicine, Burlington, VT, United States; ⁴Philips Healthcare, Cleveland, OH, United States; ⁵University of Vermont College of Medicine, Department of Neurology, Burlington, VT, United States

**Traditional Poster**

**Cerebrovascular Reactivity & Compliance**

*Exhibition Hall Monday 16:30-18:30*

1434. **Non-Invasive Measurement of Cerebral Arterial Compliance During Post Exercise Ischemia**

*Esther Warnert¹, Emma Hart², Kevin Murphy¹, Adie Babic³, Judith Hall¹, Richard Wise¹*

¹CUBRIC, School of Psychology, Cardiff University, Cardiff, United Kingdom; ²University College London, London, United Kingdom; ³University of Medical and Dental Sciences, Birmingham, United Kingdom

1435. **Test-Retest Reproducibility of BOLD-CVR Measures in Children Using a Computer-Controlled CO₂ Challenge**

*Jackie Leung¹, Junseok Kim¹, Andrea Kassner¹, ³*

¹The Hospital for Sick Children, Toronto, Ontario, Canada; ²Institute of Medical Science, University of Toronto, Toronto, Ontario, Canada; ³Medical Imaging, University of Toronto, Toronto, Ontario, Canada

1436. **Characterization of Vascular Response in White Matter to Hypercapnia and Hyperoxia**

*Binu P. Thomas¹, Virendra Mishra¹, Shin-Lei Peng¹, Hao Huang¹, Hanzhang Lu¹*

¹Advanced Imaging Research Center, University of Texas Southwestern Medical Center, Dallas, TX, United States

1437. **Comparing Cerebrovascular Reactivity Measured Using BOLD and Cerebral Blood Flow at Various Vascular Tension Levels**

*Sheliza Halani¹, Jonathan B. Kwinta¹, Ali M. Golestani², Yasha B. Khatamian², J. Jean Chen¹, ³*

¹Rotman Research Institute, Baycrest, Toronto, Ontario, Canada; ²Rotman Research Institute, Baycrest, Ontario, Canada; ³Medical Biophysics, University of Toronto, Ontario, Canada

1438. **Investigating the Effect of Cardiorespiratory Fitness on Cerebrovascular Reactivity Using Breath-Hold fMRI**

*Hannah Furby¹, Molly G. Bright¹, Esther AH Warnert¹, Chris J. Marley², Damian M. Bailey², Richard G. Wise²*

¹CUBRIC, School of Psychology, Cardiff University, Cardiff, United Kingdom; ²Neurovascular Research Laboratory, University of South Wales, Pontypridd, United Kingdom

1439. **T2, Diffusion, and Perfusion Abnormalities Are Associated with Impaired Cerebrovascular Reactivity in the Normal-Appearing White Matter of Elderly Subjects with Leukoaraiosis.**

*Kevin Sam¹, ³, Boris Peltenburg², Adrian P. Crawley², Julien Poublanc², Olivia Sobczyk³, Diem Pham³, David E. Crane³, Christopher J.M. Scott³, Alicia A. McNeety³, Daniel M. Mandell³, Joseph A. Fisher³, Sandra E. Black³, David J. Mikulis³*

¹Department of Physiology, University of Toronto, Toronto, Ontario, Canada; ³Department of Medical Imaging, Toronto Western Hospital, Toronto, Ontario, Canada; ³Brain Sciences Research Program, Sunnybrook Research Institute, Toronto, Ontario, Canada
1440. Evaluation of Respiratory Fluctuation in Cerebral Venous Blood Oxygenation for Diagnosis of Arteriolar Function
Keigo Nishi1, Minghui Tang1, Toru Yamamoto2
1Graduate school of health Sciences, Hokkaido university, Sapporo, Hokkaido, Japan; 2Faculty of Health Sciences, Hokkaido university, Sapporo, Hokkaido, Japan

1441. Validating a Power Relationship Between Cerebral Blood Volume and Cerebral Blood Flow
Jie Huang
1Department of Radiology, Michigan State University, East Lansing, MI, United States

1442. Mapping Human Cerebral Vascular/Metabolic Activity Coupling at High-Resolution
William D. Rooney1, 2, Xin Li3, Dennis N. Bourdette4, Charles S. Springer, Jr.1, 2
1Advanced Imaging Research Center, Oregon Health & Science University, Portland, OR, United States; 2Knight Cardiovascular Institute, Oregon Health & Science University, Portland, OR, United States; 3Department of Neurology, Oregon Health & Science University, Portland, OR, United States

1443. The Effects of Hypo-Baric Pressure on Cerebral Blood Flow
Damon Philip Cardenas1, Eric R. Muir1, Timothy Q. Duong1
1University of Texas Health Science Center at San Antonio, San Antonio, TX, United States

1444. Preliminary Study of Hypoxic Exposure Effect on Cerebral Blood Perfusion of Pilots Using 3D ASL
Jie Liu1, Wanshi Zhang2, Long Qian1, Mingxi Liu1, Xianrong Xu2, Limin Meng2
1The Fourth Military Medical University, Xi'an, Shanxi, China; 2Air Force General Hospital, Beijing, China; 3GE Healthcare China, Beijing, China

1445. Quantification of Perfusion and Xenon-Transport Across the Blood-Brain Barrier in Humans with Hyperpolarized 129Xe Brain MR at 1.5T
Madhwesha Rao1, Neil Stewart1, Graham Norquay1, Jim Wild1
1University of Sheffield, Sheffield, South Yorkshire, United Kingdom

1446. The Impact of Fluctuated TCBF Induced by Cardiac Pulsation on the Global CMRO2 Measurement
Chou-Ming Cheng1, 2, Hsiao-Wen Chung2, Jen-Chuen Hsieh1, Shing-Jong Lin1, Tzu-Chen Yeh1, 2
1Department of Medical Research, Taipei Veterans General Hospital, Taipei, Taiwan, Taiwan; 2Graduate Institute of Biomedical Electronics and Bioinformatics, National Taiwan University, Taiwan, Taiwan; 3Institute of Brain Science, National Yang-Ming University, Taiwan, Taiwan; 4Department of Radiology, Taipei Veterans General Hospital, Taiwan, Taiwan; 5Institute of Brain Science, National Yang-Ming University, Taiwan, Taiwan

1447. Comparative Analyses of Magnetic Field Correlation Imaging, Quantitative Susceptibility Mapping and Transverse Relaxation Rate R2* Indices of Brain Iron in Healthy Adults
Vitria Adisetiyo1, Jens H. Jensen1, Chu-Yu Lee1, Donna R. Roberts1, Maria V. Spampinato1, Joseph A. Hopenhayn1, 2
1Radiology and Radiological Science, Center for Biomedical Imaging, Medical University of South Carolina, Charleston, SC, United States; 2Neuroscience, Medical University of South Carolina, Charleston, SC, United States

1448. Time Course and Distribution of Feraheme in the Normal Human Brain at 7T
Michael Zeineh1, Samantha Holdsworth1, Michael Moseley2, Brian Rutt1
1Radiology, Stanford University, Stanford, CA, United States
1449. The Relative Contributions of the Transition Metals Iron and Manganese to T1 and T2 in White and Gray Matter
Kimberly L. Desmond1, 2, Alia Al-Elbraheem1, Rafal Janik2, 3, Wendy Oakden2, 4, Jacek M. Kwiecien1, Wojciech Dabrowski6, Kalotina Geraki7, Greg J. Stanisz2, 4, Michael Farquharson1, Nicholas A. Bock1
1Medical Physics and Radiation Sciences, McMaster University, Hamilton, Ontario, Canada; 2Imaging Research, Sunnybrook Research Institute, Toronto, Ontario, Canada; 3Medical Biophysics, University of Toronto, Ontario, Canada; 4Medical Biophysics, University of Toronto, Ontario, Canada; 5Pathology & Molecular Medicine, McMaster University, Hamilton, Ontario, Canada; 6Anesthesiology and Intensive Therapy, Lublin Medical University, Lublin, Poland; 7Diamond Light Source, Harwell Science and Innovation Campus, Didcot, Oxfordshire, United Kingdom

1450. Assessing Reproducibility and Changes in Oxygenation with R2’ During Clinical Hypercapnic and Hypoxic Gas Challenges
Wendy W. Ni1, 2, Thomas Christen2, Greg Zaharchuk2
1Department of Electrical Engineering, Stanford University, Stanford, CA, United States; 2Department of Radiology, Stanford University, Stanford, CA, United States

Traditional Poster
Lung/Mediastinum
Exhibition Hall Tuesday 10:00-12:00

1451. Quantitative T1 Mapping and Oxygen Enhanced MRI in Patients with Interstitial Lung Disease
Kerry Hart1, 2, Helen Marshall1, Neil Stewart1, Martin Deppe1, Steve Bianchi1, Rob Ireland2, Moira Whyte3, David Kiely5, Jim Wild6
1Academic Unit of Radiology, University of Sheffield, Sheffield, United Kingdom; 2Academic Unit of Clinical Oncology, University of Sheffield, Sheffield, United Kingdom; 3Pulmonary Vascular Disease Unit, Royal Hallamshire Hospital, Sheffield, United Kingdom; 4Academic Unit of Respiratory Medicine, University of Sheffield, Sheffield, United Kingdom

1452. Robust 3D MRI of the Mouse Lung Using ZTE Imaging with Background Correction
Markus Weiger1, Mingming Wu1, 12, Moritz Christoph Wurnig5, David Kenkel1, Wolfgang Jungraithmayr6, Andreas Boss7, Klaus Paul Pruessmann1
1Institute for Biomedical Engineering, University and ETH Zurich, Zurich, Switzerland; 2Institute of Biomedical Engineering, Karlsruhe Institute of Technology, Karlsruhe, Germany; 3Institute for Diagnostic and Interventional Radiology, University Hospital Zurich, Zurich, Switzerland; 4Department of Thoracic Surgery, University Hospital Zurich, Zurich, Switzerland

1453. Longitudinal MRI of Progressive Pulmonary Fibrosis in a Transgenic, TGF-Alpha-Induced Mouse Model
Zackary I. Cleveland3, R. Scott Dunn1, Cynthia R. Davidsom2, Jinhong Guo1, 7, Jason C. Woods1, 8, William D. Hardie8
1Center for Pulmonary Imaging Research, Cincinnati Children’s Hospital Medical Center, Cincinnati, OH, United States; 2Imaging Research Center, Department of Radiology, Cincinnati Children’s Hospital Medical Center, OH, United States; 3Division of Pulmonary Medicine, Cincinnati Children’s Hospital Medical Center, OH, United States; 4) Department of Physics, , Washington University, St. Louis, MO, United States; 4) Department of Physics, Washington University, St. Louis, MO, United States

1454. Pulmonary MRI of Infants in the Neonatal Intensive Care Unit: Initial Experience with 3D Radial UTE
Andrew D. Hahn1, Nara S. Higano2, 3, Laura L. Walkup1, Xuefeng Cao1, 4, Robert P. Thomer1, 5, Jean A. Tkach6, Charles L. Dumoulin6, 8, Kevin M. Johnson1, Scott K. Nagle1, 8, Jason C. Woods1, 8, Sean B. Fain1, 8
1Department of Medical Physics, University of Wisconsin - Madison, Madison, WI, United States; 2Center for Pulmonary Imaging Research, Cincinnati Children’s Hospital Medical Center, Cincinnati, OH, United States; 3Department of Physics, Washington University in St Louis, St. Louis, MO, United States; 4)Department of Physics, University of Cincinnati, Cincinnati, OH, United States; 5)Department of Radiology, Cincinnati Children’s Hospital Medical Center, Cincinnati, OH, United States; 6)Imaging Research Center - Department of Radiology, Cincinnati Children’s Hospital Medical Center, Cincinnati, OH, United States; 7Department of Pediatrics, University of Cincinnati, Cincinnati, OH, United States; 8)Department of Radiology, University of Wisconsin - Madison, Madison, WI, United States

1455. A Double Echo Ultra Short Echo Time Acquisition for Respiratory Motion Suppressed High Resolution Imaging of the Lung
Jean Delacoste1, 2, Jerome Chaptinel1, 2, Catherine Beigelman1, Davide Piccini4, Alain Sauty1, 6, Matthias Stuber1, 2

239
1Department of Radiology, University Hospital (CHUV) and University of Lausanne (UNIL), Lausanne, Switzerland; 2Center for Biomedical Imaging (CIBM), Lausanne, Switzerland; 3Department of Radiology, Center for Biomedical Imaging (CIBM) and University Hospital (CHUV), Lausanne, Switzerland; 4Advanced Clinical Imaging Technology, Siemens Healthcare IM BM PI, Lausanne, Switzerland; 5Adult CF multisites unit, Hospital of Morges, Morges, Switzerland; 6Service of Pneumology, Department of Medicine, University Hospital (CHUV), Lausanne, Switzerland

1456. Ultra-Fast Steady-State Free Precession Pulse Sequence for Pulmonary Fourier Decomposition MRI
Grzegorz Bauman1, Orso Pusterla1, Oliver Bieri1
1Division of Radiological Physics, Department of Radiology, University of Basel Hospital, Basel, Basel-Stadt, Switzerland

1457. 19F/1H MR Molecular Imaging Following Anti-Angiogenic Therapy in a Translatable Preclinical Asthma Model
Anne Schmieder1, Jochen Keupp2, Huizing Zhang1, Todd Williams3, John Stacy Allen1, Xiaoxia Yang1, Erik Storrs1, Krishna Paranandi1, Elizabeth Wagner4, Gregory Lanza3
1Washington University Medical School, St Louis, MO, United States; 2Philips Research Europe, Hamburg, Germany; 3Washington University Medical School, St Louis, MO, United States; 4Johns Hopkins School of Medicine, Baltimore, MD, United States

1458. Utility of T1-PETRA Sequence in the Evaluation of Neonatal Airways
Noriko Aida1, Kumiko Nozawa1, Yuta Fujii1, Mikako Enokizono1, Masahiko Sato2, Koki Kusagiri2, Yasutake Muramoto2, Yuichi Suzuki2, Jun Shibasaki3, Katsukai Toyoshima1, Katsutoshi Murata1, David Grodzki1
1Radiology, Kanagawa Children's Medical Center, Yokohama, Kanagawa, Japan; 2Radiological technology, Kanagawa Children's Medical Center, Yokohama, Kanagawa, Japan; 3Neonatology, Kanagawa Children's Medical Center, Yokohama, Kanagawa, Japan; 4Research & Collaboration, Imaging &Therapy System, Siemens Japan, Tokyo, Japan; 5Magnetic Resonance, Siemens Healthcare, Erlangen, Bavaria, Germany

1459. Detection of Chronic Allograft Dysfunction Using Ventilation-Weighted Fourier Decomposition Lung MRI
Andreas Voskrebenzie1, 2, Lena Becker2, Marcel Guther1, 2, Christian Schönfeld2, 3, Julius Renne1, 3, Jan Hinrichs1, 2, Till Kaireit1, 2, Tobias Welte1, 2, Frank Wacker1, 2, Jens Gottlieb1, 2, Jens Vogel-Clausen1, 2
1Institute of Diagnostic and Interventional Radiology, Medical School Hanover, Hanover, Germany; 2German Centre for Lung Research, Hanover, Germany; 3Department of Pneumology, Medical School Hanover, Hanover, Germany

1460. Self-Gating of Respiratory Motion for Pulmonary Ultra Short Echo Time MRI of Infants in the NICU
Andrew D. Hahn1, Xuefeng Cao2, 3, Nara S. Higano4, 5, Jean A. Tkach1, Robert P. Thelen6, Scott K. Nagle6, 7, Gregory Lee6, Kevin M. Johnson7, Sean B. Fain1, 2, Jason C. Woods2, 4
1Department of Medical Physics, University of Wisconsin - Madison, Madison, WI, United States; 2Center for Pulmonary Imaging Research, Cincinnati Children’s Hospital Medical Center, Cincinnati, OH, United States; 3Department of Physics, University of Cincinnati, Cincinnati, OH, United States; 4Department of Physics, Washington University in St Louis, St. Louis, MO, United States; 5Department of Radiology, Cincinnati Children’s Hospital Medical Center, Cincinnati, OH, United States; 6Department of Radiology, University of Wisconsin - Madison, Madison, WI, United States

1461. A 19F - 1H Linear Dual Tuned RF Birdcage Coil for Rat Lung Imaging at 3T
Gowtham Gajawada1, 2, Tao Li1, Marcus J. Couch1, 2, Matthew S. Fox1, 2, Mitchell Albert1, 2
1Thunder Bay Regional Research Institute, Thunder Bay, Ontario, Canada; 2Lakehead University, Thunder Bay, Ontario, Canada; 3Robarts Research Institute, London, Ontario, Canada; 4Department of Medical Biophysics, Western University, London, Ontario, Canada

1462. Lung Imaging at Ultra-High Magnetic Fields in Rodents
Marta Tibiletti1, Detlef Stiller1, Volker Rasche1, Andrea Bianchi2
1Core Facility Small Animal MRI, Ulm University, Ulm, Baden-Württemberg, Germany; 2Target Discovery Research, In-vivo imaging laboratory, Boehringer Ingelheim Pharma GmbH & Co. KG, Baden-Württemberg, Germany

1463. Perfluorohexane Liquid MRI of Mouse Lungs in a Dual-Tuned 1H/19F Coil
Alexandr A. Khrapitchev1, James R. Larkin1, Stavros Melemenidis1, Konstantinos Papoutsis2, Peter Thelwall2, Nicola R. Sibson1
<table>
<thead>
<tr>
<th>Paper ID</th>
<th>Title</th>
<th>Authors</th>
</tr>
</thead>
<tbody>
<tr>
<td>1464</td>
<td>T2' Relaxometry of the Human Lung at 1.5 and 3 Tesla</td>
<td>Jascha Zapp, Sebastian Domsch, Lothar R. Schad</td>
</tr>
<tr>
<td></td>
<td></td>
<td>1Computer Assisted Clinical Medicine, Heidelberg University, Mannheim, Germany</td>
</tr>
<tr>
<td>1465</td>
<td>In Vivo Assessment of Non-Small Cell Lung Cancer: Detection of Early Response to Concurrent Chemoradiotherapy by Using T1 Based Dynamic Contrast Enhanced MRI</td>
<td>Xiuli Tao, Han Ouyang, Li Liu, Feng Ye, Ying Song, Zihua Su, Xiao Xu, Ning Wu</td>
</tr>
<tr>
<td></td>
<td></td>
<td>1Department of Diagnostic Radiology, Cancer Hospital Chinese Academy of Medical Sciences, Beijinh, Beijing, China; 2GE Healthcare, China</td>
</tr>
<tr>
<td>1466</td>
<td>Dynamic 3D MRI of the Whole Lung Using Constrained Reconstruction with Learned Dictionaries</td>
<td>Sampada Bhave, Sajan Goud Lingala, John Newell, Alejandro Comellas, Mathews Jacob</td>
</tr>
<tr>
<td></td>
<td></td>
<td>1University of Iowa, Iowa City, IA, United States; 2Electrical Engineering, University of Southern California, Los Angeles, CA, United States</td>
</tr>
<tr>
<td>1467</td>
<td>Respiratory Self-Gating Using 3D Half-Echo Stack-Of-Stars TrueFISP (TrueSTAR)</td>
<td>Grzegorz Bauman, Oliver Bieri</td>
</tr>
<tr>
<td></td>
<td></td>
<td>1Division of Radiological Physics, Department of Radiology, University of Basel Hospital, Basel, Basel-Stadt, Switzerland</td>
</tr>
<tr>
<td>1468</td>
<td>Ultrasound Echo Time Magnetic Resonance Imaging of the Lung Using a High-Relaxivity T1 Blood-Pool Contrast Agent</td>
<td>Joris Tchouala Nofiele, Weiran Cheng, Inga E. Haedicke, Tameshwar Ganesh, Xiao-an Zhang, Hai-Ling Margaret Cheng</td>
</tr>
<tr>
<td></td>
<td></td>
<td>1Hospital for Sick Children, Toronto, Ontario, Canada; 2Chemistry, University of Toronto, Toronto, Ontario, Canada; 3Institute of Biomaterials &amp; Biomedical Engineering, University of Toronto, Toronto, Ontario, Canada</td>
</tr>
<tr>
<td>1469</td>
<td>3D Ultrasound TE (UTE) MRI Repeatability Within the Thorax and Its Application to Pulmonary Fibrosis.</td>
<td>Alexander Weller, Sharon L. Giles, Veronica A. Morgan, David Collins, David M. Higgins, Nandita M. de-Souza</td>
</tr>
<tr>
<td></td>
<td></td>
<td>1CRUK Cancer Imaging Centre, Institute of Cancer Research, Sutton, Surrey, United Kingdom; 2MRI Department, Royal Marsden Hospital, Sutton, Surrey, United Kingdom; 3Clinical Science, Philips Healthcare, Guildford, Surrey, United Kingdom</td>
</tr>
<tr>
<td>1470</td>
<td>Regional Measurements of Pulmonary Strain Index Using a Low Field Portable Device</td>
<td>Mikayel Dabaghyan, Iga Muradyan, Alan Hrovat, James P. Butler, Angelos Kyriazis, Mirko I. Hrovat, Samuel Patz</td>
</tr>
<tr>
<td></td>
<td></td>
<td>1Mirtech, Inc., Boston, MA, United States; 2Brigham &amp; Women's Hospital, Boston, MA, United States; 3Harvard Medical School, Boston, MA, United States</td>
</tr>
<tr>
<td>1471</td>
<td>Can Baseline T1-DCE-MRI Perfusion and Permeability Parameters Predict Concurrent Chemoradiotherapy Response in Patients of NSCLC?</td>
<td>Xiuli Tao, Han Ouyang, Li Liu, Feng Ye, Ying Song, Zihua Su, Ning Wu</td>
</tr>
<tr>
<td></td>
<td></td>
<td>1Department of Diagnostic Radiology, Cancer Hospital Chinese Academy of Medical Sciences, Beijinh, Beijing, China; 2GE Healthcare, Beijing, China</td>
</tr>
<tr>
<td>1472</td>
<td>Imaging Chronic Rejection in Mouse Lung Allografts with 1H MRI</td>
<td>Jinbang Guo, Xingan Wang, Anne K. Perl, Zackary I. Cleveland, Randy Giaquinto, Andrew E. Gelman, Jason C. Woods</td>
</tr>
<tr>
<td></td>
<td></td>
<td>1Department of Diagnostic Radiology, Cancer Hospital Chinese Academy of Medical Sciences, Beijinh, Beijing, China; 2GE Healthcare, Beijing, China</td>
</tr>
</tbody>
</table>
1473. Volumetric Non-Contrast Pulmonary Perfusion Using Pseudo-Continuous Arterial Spin Labeling
Joshua S. Greer1, 2, Xinzeng Wang2, Ivan Pedrosa3, Ananth J. Madhuranthakam4, 5
1Bioengineering, UT Dallas, Dallas, TX, United States; 2Radiology, UT Southwestern, Dallas, TX, United States; 3Advanced Imaging Research Center, UT Southwestern, Dallas, TX, United States

1474. Free Breathing 3D Lung Imaging Using Self-Gating with an Efficient Sampling Scheme
Cord Bastian Meyer2, Stefan Weick2, Michael Völker2, Frederik Mantel2, Felix Breuer1, 14, Peter Michael Jakob3, 4
1Experimental Physics 5, University of Würzburg, Würzburg, Bavaria, Germany; 2Department of Radiation Oncology, University Hospital Würzburg, Würzburg, Bavaria, Germany; 3Research Center Magnetic Resonance Bavaria e. V. (MRB), Würzburg, Bavaria, Germany

1475. Multi-Stage Three-Dimensional UTE Lung Imaging by Image-Based Self-Gating
Marta Tibiletti1, Jan Paul1, Andrea Bianchi2, Stefan Wundrak2, Wolfgang Rottbauer2, Detlef Stiller3, Volker Rasche1, 12
1Core Facility Small Animal MRI, Ulm University, Ulm, Baden-Württemberg, Germany; 2Internal Medicine II, University Hospital Ulm, Ulm, Baden-Württemberg, Germany; 3Target Discovery Research, In-vivo imaging laboratory, Boehringer Ingelheim Pharma GmbH & Co. KG, Baden-Württemberg, Germany

1476. Breath-Hold UTE Lung Imaging Using a Stack-Of-Spirals Acquisition
John P. Mugler, III, Samuel W. Fielden2, Craig H. Meyer1, Talissa A. Altes1, G. Wilson Miller1, Alto Stemmer3, Josef Pfeuffer3, Berthold Kiefer3
1Radiology & Medical Imaging, University of Virginia, Charlottesville, VA, United States; 2Biomedical Engineering, University of Virginia, Charlottesville, VA, United States; 3Siemens Healthcare, Erlangen, Germany

1477. Pulmonary Imaging of Acute Lung Injury in Mice with ZTE
Iga Muradyan1, Rajeev Elie Abdulnour1, Andrea Bianchi2, Stefan Wundrak2, Wolfgang Rottbauer2, Detlef Stiller3, Volker Rasche1, 12
1Core Facility Small Animal MRI, Ulm University, Ulm, Baden-Württemberg, Germany; 2Internal Medicine II, University Hospital Ulm, Ulm, Baden-Württemberg, Germany; 3Target Discovery Research, In-vivo imaging laboratory, Boehringer Ingelheim Pharma GmbH & Co. KG, Baden-Württemberg, Germany

1478. Static Lung Volumes Assessed on MRI with Spirometry Control in Comparison to Body-Plethysmography
Yanping Sun1, Christian M. Lo Casco1, Firas S. Ahmed2, Meghaq A. Parikh1, Yongqiang Tan1, Binsheng Zhao2, Robert C. Basner1, Paul Enright1, Martin R. Prince4, R Graham Barr2
1Center for Pulmonary Imaging Research, Cincinnati Children's Hospital Medical Center, Cincinnati, OH, United States; 2Department of Physics, Washington University in St. Louis, St. Louis, MO, United States; 3Department of Surgery, Washington University in St. Louis, St. Louis, MO, United States; 4Division of Pulmonary Biology, Cincinnati Children's Hospital Medical Center, Cincinnati, OH, United States; 5Imaging Research Center, Cincinnati Children's Hospital Medical Center, Cincinnati, OH, United States

1479. Ultra-Short Echo Time MRI Measurements of Emphysema Using Principal Component Analysis
Khadija Sheikh1, 2, Dante Capaldi2, 2, Sarah Svenningsen2, 2, David G. McCormack1, Grace Parraaga1, 2
1Imaging Research Laboratories, Robarts Research Institute, London, Ontario, Canada; 2Department of Medical Biophysics, The University of Western Ontario, London, Ontario, Canada; 3Division of Respirology, Department of Medicine, The University of Western Ontario, London, Ontario, Canada
1480. **Pulmonary Nodule/Mass Assessment by Computed Diffusion-Weighted Imaging with High B-Value: How to Improve the Detection and Differentiation Capability with Acquired Diffusion-Weighted Imaging**  
Hisanobu Koyama1, Yoshiharu Ohno3, Shinichiro Seki1, Takeshi Yoshikawa1, Sumiaki Matsumoto1, Katsusuke Kyotani1, Masao Yui1, Hiitoshi Yamagata1, Kazuro Sugimura1  
1Radiology, Kobe University Graduate School of Medicine, Kobe, Hyogo, Japan; 3Kobe University Hospital, Kobe, Hyogo, Japan; 2Toshiba Medical Systems Corporation, Otawara, Tochigi, Japan

1481. **How Volume Affects the Pulmonary MRI Signal: Investigations with 3D Ultra-Fast Balanced Steady-State Free Precession**  
Orso Pusterla1, Oliver Bieri1, Gregor Sommer2, Grzegorz Bauman3  
1Radiological Physics, Department of Radiology, University of Basel Hospital, Basel, Switzerland; 2Clinic of Radiology and Nuclear Medicine, Department of Radiology, University of Basel Hospital, Basel, Switzerland

1482. **First Clinical Lung MRI Using an Active Breathing Coordinator**  
Evangelia Kaza1, David J. Collins1, Richard Symonds-Tayler1, Fiona McDonald2, Helen A. McNair2, Erica Scurr2, Dow-Mu Koh2, Martin O. Leach1  
1CR-UK Cancer Imaging Centre, Institute of Cancer Research London and Royal Marsden Hospital, London, United Kingdom; 2The Royal Marsden NHS Foundation Trust, London, United Kingdom; 3Department of Radiotherapy, Royal Marsden NHS Foundation Trust and Institute of Cancer Research, Sutton, United Kingdom

Gregor Sommer1, Mark Wiese2, Nicolin Haine1, Jens Bremerich1, Oliver Bieri1, Grzegorz Bauman3  
1Clinic of Radiology and Nuclear Medicine, University of Basel Hospital, Basel, Switzerland; 2Clinic of Thoracic Surgery, University of Basel Hospital, Basel, Switzerland; 3Clinic of Radiology and Nuclear Medicine - Radiological Physics, University of Basel Hospital, Basel, Switzerland

1484. **Proton Perfusion Maps from Time Series of the Pulmonary Vasculature**  
Samuel Patz1,2, Iga Muradyan1,2, Ritu R. Gill1,2, Ravi T. Seethamraju1, Aaron B. Waxman1,2, James P. Butler1,2  
1Brigham and Women's Hospital, Boston, MA, United States; 2Harvard Medical School, Boston, MA, United States; 3Siemens Medical Systems, Boston, MA, United States

---

**Traditional Poster**

**Hyperpolarized Gas Imaging**

**Exhibition Hall**  
**Tuesday 10:00-12:00**

1485. **Integrated Spectroscopic Imaging (CSI) and Chemical Shift Saturation Recovery (CSSR) of Hyperpolarized 129Xe in the Human Lungs**  
Neil James Stewart1, Jim Michael Wild2  
1Academic Unit of Radiology, University of Sheffield, Sheffield, South Yorkshire, United Kingdom

1486. **Hyperpolarized 129Xe Dissolved-Phase MR Spectroscopy in Mice Changes with Lung Cancer Progression**  
Rohan S. Virgincar1, Simone Degan1, Matthew S. Freeman1, Mu He1, Bastiaan Driehuys1  
1Biomedical Engineering, Duke University, Durham, NC, United States; 2Center for Molecular and Biomolecular Imaging, Duke University, Durham, NC, United States; 3Radiology, Duke University Medical Center, Durham, NC, United States; 4Medical Physics Graduate Program, Duke University, Durham, NC, United States; 5Electrical and Computer Engineering, Duke University, Durham, NC, United States

1487. **Optimized Gridding Reconstruction for 3D Radial MRI of Hyperpolarized 129Xe**  
Scott H. Robertson1, Rohan S. Virgincar1, Mu He1, S. Sivaram Kaushik1, Matthew S. Freeman1, Bastiaan Driehuys1  
1Medical Physics Graduate Program, Duke University, Durham, NC, United States; 2Department of Biomedical Engineering, Duke University, Durham, NC, United States; 3Department of Electrical and Computer Engineering, Duke University, Durham, NC, United States; 4Radiology, Duke University Medical Center, Durham, NC, United States
1488. Gas Uptake Measures on Hyperpolarized Xenon-129 MRI Are Inversely Proportional to Lung Inflation Level
Kun Qing1, Nicholas J. Tustison1, Talissa A. Altes1, Kai Ruppert1,2, Jaime F. Mata1, G. Wilson Miller1, Steven Guan1, Iulian C. Ruset1,3, F. William Hersman1,4, John P. Mugler, III1
1University of Virginia, Charlottesville, VA, United States; 2Cincinnati Children's Hospital, OH, United States; 3Xemed LLC, NH, United States; 4University of New Hampshire, NH, United States

1489. In Vivo Dynamic Measurement of Pulmonary Blood Oxygenation and Cardiac Output Using Hyperpolarised 129Xe
Graham Norquay1, Neil Stewart1, Jim Wild2
1University of Sheffield, Sheffield, South Yorkshire, United Kingdom

1490. Optimal Glass Forming Solvent and Photo-Induced Radicals Yield 129Xe Hyperpolarization Via Sublimation-DNP to Biomedical Imaging Standards
Andrea Capozzi1, Christophe Roussel2, Arnaud Comment3, Jean-Noel Hyacinthe3
1Institute of Physics of Biological Systems, EPFL, Lausanne, Vaud, Switzerland; 2Section of Chemistry and Chemical Engineering, Institute of Chemical Sciences and Engineering, EPFL, Lausanne, Vaud, Switzerland; 3University of Applied Sciences and Arts Western Switzerland, Geneva, Switzerland

1491. 129Xe Dynamic Spectroscopy and Modelling: A Repeatability and Method Comparison Study
Neil James Stewart1, Helen Marshall1, Jim Michael Wild1
1Academic Unit of Radiology, University of Sheffield, Sheffield, South Yorkshire, United Kingdom

1492. Mapping 129Xenon ADC of Radiation-Induced Lung Injury at Low Magnetic Field Strength Using a Sectoral Approach
Krzysztof Wawrzyn1,2, Alexei Ouriadov1, Elaine Hegarty1, Susannah Hickling3, Giles Santyr1,4
1Imaging Research Laboratories, Robarts Research Institute, London, Ontario, Canada; 2Department of Medical Biophysics, Western University, London, Ontario, Canada; 3Department of Medical Physics, McGill University, Montreal, Quebec, Canada; 4The Peter Gilgan Centre for Research and Learning, The Hospital for Sick Children, Toronto, Ontario, Canada

1493. Effect of RF Pulse Repetition Time on Gas Transfer for Dissolved Hyperpolarized 129Xe MRI
Brandon Zanette1,2, Matthew S. Fox3, Ozbek Doganay4, Elaine Hegarty1,5, Giles E. Santyr1,2
1Department of Medical Biophysics, University of Toronto, Toronto, Ontario, Canada; 2Peter Gilgan Centre for Research and Learning, The Hospital for Sick Children, Toronto, Ontario, Canada; 3Robarts Research Institute, London, Ontario, Canada; 4Department of Medical Biophysics, University of Western Ontario, London, Ontario, Canada

1494. Regional Mapping of Gas Uptake by Lung Tissue and Blood in Subjects with COPD Using Hyperpolarized Xenon-129 MRI
Kun Qing1, Talissa A. Altes1, Y. Michael Shim1, Nicholas J. Tustison1, Kai Ruppert1,2, Chengbo Wang1,3, Jaime F. Mata1, G. Wilson Miller1, Steven Guan1, Iulian C. Ruset1,3, F. William Hersman1,4, John P. Mugler, III1
1University of Virginia, Charlottesville, VA, United States; 2Cincinnati Children's Hospital, OH, United States; 3Xemed LLC, NH, United States; 4University of New Hampshire, NH, United States

1495. Investigation of an Animal Model of Pulmonary Fibrosis - Ex Vivo Lung MRI Using a Perfluorocarbon Compound as a Contrast Agent for Hyperpolarized 129Xe
Clementine Lesbats1, Anthony Habgood2, David ML Lilburn3, Joseph S. Six4, Gisli Jenkins5, Galina E. Pavlovskaya1, Thomas Meersmann1
1Sir Peter Mansfield Imaging Centre, University of Nottingham, Nottingham, United Kingdom; 2School of Medicine, University of Nottingham, Nottingham, United Kingdom; 3Clinical Research Imaging Centre, University of Edinburgh, Edinburgh, United Kingdom; 4Carestream Health Inc., White City, OR, United States

1496. T2* and Frequency Shift Maps of Healthy and CF Subjects
1497. Hyperpolarized $^{129}$Xe Imaging of the Lung Using Spiral IDEAL
Ozkan Doganay$^1$, Trevor Wade$^2$, Elaine Hegarty$^3$, Krzysztof Wawrzyn$^3$, Rolf F. Schulte$^1$, Charles McKenzie$^2$, Giles Santyr$^2$
$^1$Western University, London, Ontario, Canada; $^2$Robarts Research Institute, London, Ontario, Canada; $^3$GE Global Research, Munich, Germany; $^4$Peter Gilgan Centre for Research and Learning, Toronto, Ontario, Canada

1498. Validation of $^{129}$Xe MRI as a Measure of Airspace Enlargement in Human Lungs
Robert Paul Thomen$^1$, $^2$, James D. Quirk$^3$, David Roach$^1$, Tiffany Egan-Rojas$^1$, Kai Rupper$^1$, Julian Ruser$^1$, Talissa Altes$^1$, Dmitriy Yablonskiy$^1$, Jason C. Woods$^1$, $^2$
$^1$Center for Pulmonary Imaging, Cincinnati Children's Hospital Medical Center, Cincinnati, OH, United States; $^2$Physics, Washington University in St Louis, St Louis, MO, United States; $^3$School of Medicine, Washington University in St Louis, St Louis, MO, United States; $^4$XeMed, LLC, Durham, NH, United States; $^5$Radiology, University of Virginia Hospital Medical Center, VA, United States

1499. Evaluation of Radiation-Induced Lung Injury by Hyperpolarized Xenon
Zhiming Zhang$^1$, Haidong Li$^1$, Xianping Sun$^1$, Xiuchao Zhao$^1$, Chaohui Ye$^1$, Xin Zhou$^1$
$^1$National Center for Magnetic Resonance in Wuhan, Wuhan Institute of Physics and Mathematics, Chinese Academy of Sciences, Wuhan, Hubei, China

1500. Multi Nuclear 3D Multiple Breath Washout Imaging with $^3$He and $^{129}$Xe Using a Dual Tuned Coil
Felix C. Horn$^1$, Madhewsa Rao$^1$, Neil J. Stewart$^1$, Helen Marshall$^2$, Juan Parra-Robles$^3$, Jim M. Wild$^1$
$^1$Academic Radiology, University of Sheffield, Sheffield, United Kingdom

1501. Comparing Pulmonary MRI Using Inert Fluorinated Gases and Hyperpolarized $^3$He: Is $^{19}$F MRI Good Enough?
Marcus J. Couch$^1$, $^2$, Iain K. Ball$^3$, Tao Li$^1$, Matthew S. Fox$^1$, $^3$, Birubbi Biman$^1$, $^6$, Mitchell S. Albert$^1$, $^2$
$^1$Lakehead University, Thunder Bay, Ontario, Canada; $^2$Thunder Bay Regional Research Institute, Thunder Bay, Ontario, Canada; $^3$Robarts Research Institute, London, Ontario, Canada; $^4$Department of Medical Biophysics, Western University, London, Ontario, Canada; $^5$Thunder Bay Regional Health Sciences Centre, Thunder Bay, Ontario, Canada; $^6$Northern Ontario School of Medicine, Thunder Bay, Ontario, Canada

1502. Feasibility of Hyperpolarized Helium-3 MRI-Guided Bronchoscopic Assessment of Emergent Ventilation Defect Regions in Asthma
David G. Mummy$^1$, Robert P. Thomen$^2$, Stanley J. Kruger$^2$, Alfonso Rodriguez$^2$, Robert V. Cadman$^3$, Nizar N. Jarjour$^4$, Michael C. Denlinger$^1$, Ronald L. Sorkness$^5$, Loren C. Schiebler$^5$, Jason C. Woods$^2$, Sean B. Fain$^1$, $^6$
$^1$Biomedical Engineering, University of Wisconsin - Madison, Madison, WI, United States; $^2$Physics, Washington University in St. Louis, St. Louis, MO, United States; $^3$Medical Physics, University of Wisconsin - Madison, Madison, WI, United States; $^4$Allergy, Pulmonary & Critical Care Medicine, Department of Medicine, University of Wisconsin - Madison, Madison, WI, United States; $^5$Pharmacy, University of Wisconsin - Madison, Madison, WI, United States; $^6$Radiology, University of Wisconsin - Madison, Madison, WI, United States; $^7$Pediatrics, University of Cincinnati, Cincinnati, OH, United States

1503. Rapid Tracheal Flow Measurements During Forced Inhalation and Exhalation
Kai Rupper$^1$, $^2$, Bora Sula$^1$, Kun Qing$^2$, Vineet Rakesh$^3$, Craig H. Meyer$^1$, John P. Mugler III$^3$, Anders Wallqvist$^1$, Michael J. Morris$^1$, Talissa A. Altes$^5$, Jacques Reifman$^1$
$^1$Cincinnati Children's Hospital, Cincinnati, OH, United States; $^2$University of Virginia, Charlottesville, VA, United States; $^3$Department of Defense Biotechnology High Performance Computing Software Applications Institute, United States Army Medical Research and Materiel Command, Fort Detrick, MD, United States; $^4$Department of Medicine, San Antonio Military Medical Center, Fort Sam Houston, TX, United States
1504. Ventilation-Perfusion Analysis with Co-Registered Hyperpolarized Gas and CE $^1$H Perfusion MRI
Paul J.C. Hughes, Bilal A. Tahir, Felix C. Horn, Helen Marshall, Rob H. Ireland, James M. Wild
1Academic Unit of Radiology, University of Sheffield, Sheffield, South Yorkshire, United Kingdom; 2Academic Unit of Clinical Oncology, University of Sheffield, Sheffield, South Yorkshire, United Kingdom

1505. Approaching the Theoretical Limit for $^{129}$Xe Hyperpolarisation with Continuous-Flow Spin-Exchange Optical Pumping
Graham Norquay, Neil Stewart, Jim Wild
1University of Sheffield, Sheffield, South Yorkshire, United Kingdom

1506. Anatomical Distribution of Fractional Ventilation and Oxygen Uptake Imaged by Multibreath Wash-In Helium-3 MRI in Human Subjects
Hooman Hamedani, Stephen Kadlec, Yi Xin, Hoora Shaghagh, Sarmad Siddiqui, Milton Rossman, Rahim R. Rizzi
1Radiology, University of Pennsylvania, Philadelphia, PA, United States; 2Medicine, University of Pennsylvania, Philadelphia, PA, United States

1507. A Volume Saddle Coil for Hyperpolarized $^{129}$Xe Lung Imaging
Wolfgang Loew, Robert Thomen, Ron Pratt, Zackary Cleveland, Charles Dumoulin, Jason Woods, Randy O. Giaquinto
1Imaging Research Center, Cincinnati Children’s Hospital Medical Center, Cincinnati, OH, United States; 2Center for Pulmonary Imaging Research, Cincinnati Children’s Hospital Medical Center, Cincinnati, OH, United States

Traditional Poster
Hepatobiliary
Exhibition Hall Tuesday 10:00-12:00

1508. Postprandial Hepatic Glycogen Levels Following a Low V High Glycaemic Index Breakfast: A $^{13}$C MRS Study
S Bawden, MC Stephenson, K Hunter, M Taylor, L Marciati, PG Morris, IA Macdonald, GP Aithal, PA Gowland
1NIHR Nottingham Digestive Diseases Biomedical Research Unit, Nottingham University Hospitals NHS Trust and University of Nottingham, Nottingham, United Kingdom; 2Sir Peter Mansfield Imaging Centre, University of Nottingham, Nottingham, United Kingdom; 3Agency for Science, Technology and Research, Singapore; 4Unilever Discover, Bedfordshire, United Kingdom; 5Faculty of Human Nutrition, University of Nottingham, United Kingdom; 6School of Life Sciences, University of Nottingham, United Kingdom

1509. 2D Localized COSY for the Quantification of Omega-3 PUFA Content in Oil Phantoms and In Vivo in Rat Liver
Sharon Janssens, Martina D.B. Sabbadini, Klaas Nicolai, Jeanine J. Prompers
1Biomedical NMR, Eindhoven University of Technology, Eindhoven, Noord-Brabant, Netherlands

1510. A 7 Day Low V High Glycaemic Index Diet Reduces Liver Fat Content
S Bawden, M Stephenson, K Hunter, M Taylor, PG Morris, L Marciati, IA Macdonald, GP Aithal, PA Gowland
1NIHR Nottingham Digestive Diseases Biomedical Research Unit, Nottingham University Hospitals NHS Trust and University of Nottingham, Nottingham, United Kingdom; 2Sir Peter Mansfield Imaging Centre, University of Nottingham, Nottingham, United Kingdom; 3Agency for Science, Technology and Research, Singapore; 4Unilever Discover, Bedfordshire, United Kingdom; 5Faculty of Human Nutrition, University of Nottingham, United Kingdom; 6School of Life Sciences, University of Nottingham, United Kingdom

1511. The Role of IVIM and Chemical Shift Imaging in Detecting Early Hepatic Complications of Diabetes Mellitus Type 2
Sonia Isabel Goncalves, Filipe Caseiro Alves, Miguel Castelo Branco
1Institute for Biomedical Imaging and Life Sciences, Coimbra, Portugal; 2Faculty of Medicine, University of Coimbra, Coimbra, Portugal; 3Radiology, University of Coimbra, Coimbra, Portugal
1512. Oral Lipid Challenge: The Effects of Saturated Fat on Hepatic Gluconeogenesis, ATP Production, and Fat Accumulation in Healthy Humans
Paul Begovatz1, Sabine Kahnl, 2, Peter Nowotny1, Bettina Nowotnyl, 2, Michael Roden1, 2
1Leibniz Center for Diabetes Research at Heinrich Heine University, Institute for Clinical Diabetology, German Diabetes Center, Düsseldorf, Germany; 2University Hospital, Department of Endocrinology and Diabetology, Düsseldorf, Germany

1513. High SNR Improves the Repeatability of Proton Density Fat Fraction Measurements in the Liver
Utaro Motosugi1, 2, Diego Hernandez1, Peter Bannas1, 3, Scott B. Reeder1, 4
1Radiology, University of Wisconsin, Madison, WI, United States; 2Radiology, University of Yamanashi, Yamanashi, Japan; 3Radiology, University Hospital Hamburg-Eppendorf, , Hamburg, Germany; 4Medical Physics, University of Wisconsin, Madison, WI, United States

1514. Evaluation of Novel Multi Echo MRS and MRI Sequences for Iron and Fat Overload Quantification at 3T in One Breath-Hold
Anita Kiani1, Elise Bannier1, Giulio Gamborota1, 2, Hervé Saint-Jalmes2, 3, Yves Gandon1
1Radiology, University Hospital of Rennes, Rennes, France; 2INSERM, UMR 1099, Rennes, France; 3Université de Rennes 1, LTSI, Rennes, France

1515. Effect of Gadolinum on Hepatic Fat Quantification Using Multi-Echo Reconstruction Technique with T2*
Correction and Estimation
MINGMEI GE1, JING ZHAH, ZIHENG ZHANG2, XINHUI WU1
1The Military General Hospital of Beijing PLA,, Beijing, China; 2GE Healthcare China, Beijing, China

1516. Feasibility of MR Elastography of the Liver in Obese Patients at Risk for NAFLD
Curtis N. Wiens1, Alan B. McMillan1, Nathan S. Artz1, 2, Rashmi Agni3, Nikolaus Szeverenyi4, William Haufe4, Catherine Hooker4, Meng Yin5, Guilherme M. Campos6, Claude Sirlin4, Scott B. Reeder1, 7
1Department of Radiology, University of Wisconsin, Madison, WI, United States; 2Department of Radiological Sciences, St. Jude Children's Research Hospital, Memphis, TN, United States; 3Department of Pathology, University of Wisconsin, Madison, WI, United States; 4Department of Radiology, University of California, San Diego, CA, United States; 5Department of Radiology, Mayo Clinic, Rochester, MN, United States; 6Department of Surgery, University of Wisconsin, Madison, WI, United States; 7Department of Medical Physics, University of Wisconsin, Madison, WI, United States

1517. Dual Echo, PDFF and MDIXON Compared to 1H-MRS for Fat Fraction Estimation: Only PDFF Can Accurately Measure Low Fat Fractions.
Jurgen Henk Range1, Ulrich H. Beuers1, Aart J. Nederveen2, Jaap Stoker1
1Radiology, Academic Medical Center, Amsterdam, Noord-Holland, Netherlands; 2Gastroenterology & Hepatology, Academic Medical Center, Amsterdam, Noord-Holland, Netherlands

1518. Effect of Gd-EOB-DTPA on T1-Weighted Dual Echo In-Phase and Opposed-Phase MR Images for Focal Liver Lesion Detection
Jin Wang1, Lin Luo2, Yunhong Shu1, Hong Shan1, Bingjun He1
1The Third Affiliated Hospital of Sun Yat-Sen University, Guangzhou, Guangdong, China; 2The University of Hong Kong-Shenzhen Hospital, Guangdong, China; 3Mayo Clinic, MN, United States; 4The Third Affiliated Hospital of Sun Yat-Sen University, Guangzhou, Guangdong, China

1519. Effect of Conventional Gadolinium Contrast Agents on IDEAL Based Hepatic Fat-Fraction Measurements
Florine SW van der Wolf - de Lijster1, Andrew J. Patterson1, Martin J. Graves2, David J. Lomas3
1Department of Radiology, Addenbrooke's Hospital and University of Cambridge, Cambridge, United Kingdom
1520. **Intravoxel Incoherent Motion Diffusion-Weighted Imaging and Texture Heterogeneity for Staging of Hepatic Fibrosis in Children**

*WEIMIN AN, JING ZHANG, HUI XIE*

1department of radiology, 302 military hospital of china, Beijing, China; 2GE Healthcare China, Beijing, China

1521. **Inter-Observer Agreement of Liver Biopsy and Liver MR Elastography**

*Jun Chen, Meng Yin, Jayant Talwalkar, Kevin Glaser, Thomas Smyrk, Richard Ehman*

1Mayo Clinic, Rochester, MN, United States

1522. **Evaluation of Liver Stiffness in Constrictive Pericarditis**

*Bogdan Dzyubak, Eric R. Fenstad, Jae K. Oh, Eric E. Williamson, James Glockner, Phillip M. Young, Richard L. Ehman, Philip A. Araoz, Sudhakar K. Venkatesh*

1Radiology, Mayo Clinic, Rochester, MN, United States; 2Cardiovascular Diseases, Mayo Clinic, Rochester, MN, United States

1523. **Revisiting the Potential of Alternating Repetition Time Balanced Steady State Free Precession Imaging in the Abdomen at 3T**

*Oliver J. Gurney-Champion, Remy Klaassen, Jaap Stoker, Arjan Bel, Hanneke W.M. van Laarhoven, Aart J. Nederveen, Sonia I. Goncalves*

1Radiology, Academic Medical Center, Amsterdam, Netherlands; 2Radiation Oncology, Academic Medical Center, Amsterdam, Netherlands; 3Department of Medical Oncology, Academic Medical Center, Amsterdam, Netherlands; 4Laboratory for Experimental Oncology and Radiobiology, Academic Medical Center, Amsterdam, Netherlands; 5Department of Medical Oncology, Academic Medical Center, Amsterdam, Netherlands; 6Institute for Biomedical Imaging and Life Sciences, University of Coimbra, Coimbra, Portugal

1524. **Comparison of Navigated DISCO Dynamic Imaging with Rotated Slab Excitation to Current Standard for Post-Contrast Imaging in Pediatric MR Enterography**

*Dean Kolnick, Kang Wang, Andrew Phelps, Pauline Worters, John Mackenzie, Jesse Courtier*

1Department of radiology and biomedical imaging, UCSF, San Francisco, CA, United States; 2GE Healthcare, CA, United States


*Nieuw Seo, Seong Joon Park, Bohyun Kim, Chang Kyung Lee, Jisuk Park, In Seong Kim, Berthold Kiefer*

1Asan Medical Center, Ulsan University College of Medicine, Seoul, Korea; 2Siemens Healthcare, Seoul, Korea; 3Siemens Healthcare, Erlangen, Germany

1526. **Simultaneous Acquisition Sequence for High Accuracy Whole Liver Perfusion Quantification(SAHA)**

*Jia Ning, Bida Zhang, Honsun Li, Dan Zhu, Feng Huang, Shuo Chen, Peter Koken, Jouke Smink, Huijun Chen*

1Center for Biomedical Imaging Research, Biomedical Engineering, School of Medicine, Tsinghua University, Beijing, China; 2Phileas Research China, Beijing, China; 3Innovative Technologies, Research Laboratories, Philips Technologie GmbH, Hamburg, Germany; 4Philips Healthcare, MR Clinical Science, Best, Netherlands

1527. **Distinguishing Early and Progressed HCC Using Texture Analysis Using Gadoxetic Acid-Enhanced Hepatobiliary Phase Image**

*Morisaka Hiroyuki, Utaro Motosugi, Shintaro Ichikawa, Katsuhiko Sano, Tomoaki Ichikawa, Masayuki Nakano, Hiroshi Onishi*

1Department of Radiology, University of Yamanashi, Chuo, Yamanashi, Japan; 2Department of Radiology, University of Wisconsin, Madison, WI, United States; 3Department of Pathology, Shonan Fujisawa Tokushukai Hospital, Kanagawa, Japan

1528. **Hypoenhancing Liver Lesion on Both Portovenous and Delayed Phase Gadobutrol and Gadofosveset-Enhanced MRI as a Sign of Malignancy in the Diagnosis of Colorectal Liver Metastases (CRLM)**

*Helen Cheung, Paul Karanicolas, Chirag Patel, Natalie Coburn, Masoom A. Haider, Calvin Law, Laurent Milot*

1Department of radiology, 302 military hospital of china, Beijing, China; 2GE Healthcare China, Beijing, China
1529. Prospect of Hypovascular Hepatocellular Nodules Showing Hyper-Intensity Only in the Hepatobiliary Phase of Gd-EOB-DPTA Enhanced Magnetic Resonance Imaging in Cirrhosis or Chronic Hepatitis
Atsushi Higaki1, Tsutomu Tamada1, Akira Yamamoto1, Yasufumi Noda1, Kazuya Yasokawa1, Katsuyoshi Ito1
1Radiology, Kawasaki Medical School, Kurashiki city, Okayama, Japan

1530. Phospholipidosis Affects Hepatobiliary Function as Assessed by Gadoxetate DCE-MRI
Stephen Lenhard1, Debra Paul1, Mally Lev1, Lindsey Webster1, Christopher Goulbourne1, Richard Peterson5, Richard Miller4, Beat Jucker2
1Pre-clinical and Translational Imaging, GlaxoSmithKline, King of Prussia, PA, United States; 2LAS, GlaxoSmithKline, King of Prussia, PA, United States; 3DMPK, GlaxoSmithKline, King of Prussia, PA, United States; 4DMPK, GlaxoSmithKline, Research Triangle Park, NC, United States; 5Safety Assessment, GlaxoSmithKline, Research Triangle Park, NC, United States

1531. Efficient Fat Suppression by Slice-Selection Gradient Reversal in Stimulated Echo Diffusion Weighted Liver Imaging
Hui Zhang1, Ed X. Wu2, 3, Hua Guo1
1Center for Biomedical Imaging Research, Department of Biomedical Engineering, School of Medicine, Tsinghua University, Beijing, China; 2Laboratory of Biomedical Imaging and Signal Processing, The University of Hong Kong, Hong Kong SAR, China; 3Department of Electrical and Electronic Engineering, The University of Hong Kong, Hong Kong SAR, China

1532. Correlation of Histological and IVIM-Derived Measures of Vascularity in Hypo- And Hypervascularized Pancreatic Lesions
Miriam Klaus1, Philipp Mayer1, Klaus Maier-Hein2, Frank Bergmann1, Thilo Hackert4, Lars Grenacher1, Bram Stieljes3
1Diagnostic and Interventional Radiology, University hospital Heidelberg, Heidelberg, Baden-Württemberg, Germany; 2DKFZ, Heidelberg, Baden-Württemberg, Germany; 3Pathology, University of Heidelberg, Baden-Württemberg, Germany; 4Surgery, University hospital Heidelberg, Baden-Württemberg, Germany; 5Radiology, University hospital Basel, Basel, Switzerland

1533. Navigated 3D MRCP with Compressed Sensing
Scott A. Reid1, Kevin F. King5, Florine van der Wolf-de Lijster3, Martin J. Graves5, Lloyd Estkowski2, David J. Lomas3
1GE Healthcare, Chalfont St Giles, United Kingdom; 2GE Healthcare, Waukesha, WI, United States; 3Radiology, Addenbrooke’s Hospital & University of Cambridge, Cambridge, Cambridgeshire, United Kingdom

1534. Use of Enhanced T2 Star-Weighted Angiography (ESWAN) to Distinguish Severity of Liver Cirrhosis
CHUNMEI MA1, Ailian Liu1, YE LI1, LIHUA CHEN1, HEQING WANG1
1The first affiliated hospital of Dalian medical university, Dalian, Liaoning, China

1535. T1ρ Relaxation of the Liver; Comparison of the Continuous Wave and Stretched Type Adiabatic Hyperbolic Scant (HS) Pulses for the Assessment of Liver Function
Yukihisa Takayama1, Akihiro Nishide2, Yoshiki Asayama1, Kousei Ishigami1, Yasuhiro Ushijima2, Daisuke Okamoto2, Nobuhiro Fujita3, Koichi Morita4, Hiroshi Honda5
1Department of Radiology Informatics and Network, Kyushu University, Graduate School of Medical Sciences, Fukuoka, Japan; 2Department of Clinical Radiology, Kyushu University, Graduate School of Medical Sciences, Fukuoka, Japan; 3Philips Healthcare APAC, Tokyo, Japan

1536. The Prevalence and Natural History of Pancreatic Cysts in Autosomal Dominant Polycystic Kidney Disease
Jin Ah Kim1, Jon D. Blumenfeld2, 3, Silvina P. Dutruel1, Nanda Deepa Thimmappa Deepa Thimmappa1, Warren O. Bobb2, Stephanie Donahue1, Ashley E. Giambre1, Martin R. Prince1

1Medical Imaging, Sunnybrook Health Sciences Centre, Toronto, ON, Canada; 2Surgery, Sunnybrook Health Sciences Centre, Toronto, Ontario, Canada
Multi-B-Value Diffusion Weighted Imaging Acquired on a 3T MR Scanner: Comparison of the Apparent Diffusion Coefficient in Prostate Cancer Detection and the Contribution of B-Value Images in ADC Map Interpretation.

Thomas de Perrot1, Bénédicte M A Delattre1, Lindsey A. Crowe2, Iris Friedli1, Marc Pusztaszeri3, Jean-Christophe Soha Said Ramadan1, Pablo Caro Dominguez1, 2, Jorge H. Davila1, 2, Melissa Valdez Quintana1, 2, Julie Hurteau-250

1Biological Regulation, Weizmann Institute of Science, Rehovot, Israel; 2Biomedical MR laboratory, Mallinckrodt Institute of Reut Avni1, Joel Garbow2, Michal Neeman1

1Department of Radiology, Children’s Hospital of Eastern Ontario, Ottawa, Ontario, Canada; 2Department of Diagnostic Imaging, 1542.

We examined the influence of b-value on ADC map performance for prostate cancer in a retrospective study. We have ... accepted practice to look for enhanced signal in cancer on the high b-values images in the area of reduced ADC.

Aortic Pulse Wave Velocity Measured Using 4D-Flow MRI in Patients with Portal Hypertension

Matthew R. Smith1, Alejandro Roldan-Alzate1, Oliver Wieben2, 2, Scott B. Reeder1, 2, Christopher J. Francois1

1Radiology, University of Wisconsin, Madison, WI, United States; 2Medical Physics, University of Wisconsin, Madison, WI, United States

1537. Aortic Pulse Wave Velocity Measured Using 4D-Flow MRI in Patients with Portal Hypertension

Matthew R. Smith1, Alejandro Roldan-Alzate1, Oliver Wieben2, 2, Scott B. Reeder1, 2, Christopher J. Francois1

1Radiology, University of Wisconsin, Madison, WI, United States; 2Medical Physics, University of Wisconsin, Madison, WI, United States

1538. Accelerated Non-Contrast-Enhanced MR Portography with Undersampled K-Space Using Compressed Sensing Reconstruction

Hiroyoshi Isoda1, Koji Fujimoto1, Shigeki Arizono;1, Akihiro Furuta1, Takayuki Yamamoto1, Yasutaka Fushimi1, Aki Kido1, Kaori Togashi1, Naotaka Sakashita2

1Kyoto University Graduate School of Medicine, Kyoto, Japan; 2Toshiba Medical Systems Corporation MRI Systems Division, Otawara, Tochigi, Japan

1539. Preliminary Application of Diffusion Kurtosis Imaging in the Diagnosis of Prostate Cancer

Jing Guo-dong1, Wang Li1, Wang Jian1, LU Jian-ping1

1Chang Hai Hospital, Shang Hai, China

1540. High-Resolution Computed DWI with High B-Value: A Preliminary Study for Improving Prostate Cancer Detection at 3T MR System

Yoshiko Ueno1, Satoru Takahashi1, Yoshiharu Ohno2, 3, Katsusuke Kyotani1, Masao Yui1, Yoshimori kassai1, Kazuhiro Kitajima1, Kazuro Sugimura1

1Department of Radiology, Kobe University Graduate School of Medicine, Kobe, Hyogo, Japan; 2Department of Radiology, Kobe University Graduate School of Medicine, Hyogo, Japan; 3Advanced Biomedical Imaging Research, Kobe University Graduate School of Medicine, Hyogo, Japan; 4Division of Radiology, Kobe University Hospital, Hyogo, Japan; 5MRI Systems Development Department, Toshiba Medical Systems Corp, Tochigi, Japan; 6Department of Radiology, Hyogo College of Medicine, Hyogo, Japan

1541. Multi-B-Value Diffusion Weighted Imaging Acquired on a 3T MR Scanner: Comparison of the Apparent Diffusion Coefficient in Prostate Cancer Detection and the Contribution of B-Value Images in ADC Map Interpretation.

Thomas de Perrot1, Bénédicte M A Delattre1, Lindsey A. Crowe2, Iris Friedli1, Marc Pusztaszeri3, Jean-Christophe Tille2, Christophe Iselin4, Jean-Paul Vallée1

1Division of Radiology, Geneva University Hospital, Geneva, Switzerland; 2Division of Radiology, Geneva University Hospital, Geneva, Switzerland; 3Division of Clinical Pathology, Geneva University Hospital, Geneva, Switzerland; 4Division of Urologic Surgery, Geneva University Hospital, Geneva, Switzerland

1542. Characterisation of Placental Diffusion in Twin Pregnancies Using Diffusion-Weighted Magnetic Resonance Imaging

Soha Said Ramadan1, Pablo Caro Dominguez1, 2, Jorge H. Davila1, 3, Melissa Valdez Quintana1, 2, Julie Hurteau-Miller1, 2, David Grynspan3, 4, Felipe Moretti3, 4, Elka Miller1, 2

1Department of Radiology, Children's Hospital of Eastern Ontario, Ottawa, Ontario, Canada; 2Department of Diagnostic Imaging, University of Ottawa, Ottawa, Ontario, Canada; 3Department of Pathology, Children's Hospital of Eastern Ontario, Ottawa, Ontario, Canada; 4Department of Obstetrics, Gynecology and Newborn Care, The Ottawa Hospital, Ottawa, Ontario, Canada

1543. A Novel Non-Invasive MRI Tool for Quantification of Placental Oxygen Transport In Vivo

Reut Avni1, Joel Garbow2, Michal Neeman1

1Biological Regulation, Weizmann Institute of Science, Rehovot, Israel; 2Biomedical MR laboratory, Mallinckrodt Institute of Radiology, Washington University, St. Louis, MO, United States
154. **Intravoxel Incoherent Motion Diffusion-Weighted MR Imaging of the Placenta: Evaluation of Perfusion Changes in the Supine and Left Lateral Decubitus Positions**

Skorn Ponrartana¹, Sherin U. Devaskar², Jonathan M. Chia², Vidya Rajagopalan³, Hollie A. Lai¹, David Miller⁴, Vicente Gilsanz²

¹Radiology, Children's Hospital Los Angeles, Los Angeles, CA, United States; ²Pediatrics, University of California, Los Angeles, Los Angeles, CA, United States; ³Philips Healthcare, Cleveland, OH, United States; ⁴Radiology, Children's Hospital Los Angeles, CA, United States; ⁵Obstetrics and Gynecology, University of Southern California, CA, United States

155. **An Anthropomorphic MR Phantom of the Gravid Abdomen Including the Uterus, Placenta, Fetus and Fetal Brain.**

Pablo Garcia-Polo¹, Borjan Gagoski², Bastien Guerin³, Eric Gale¹, Elfar Adalsteinsson⁴, ⁵, P. Ellen Grant², Lawrence L. Wald¹, ²

¹Martinos Center, MGH, M+Visión Advanced Fellowship, Charlestown, MA, United States; ²Fetal-Neonatal Neuroimaging & Developmental Science Center, Boston Children's Hospital, Harvard Medical School, Boston, MA, United States; ³Department of Radiology, A. A. Martinos Center for Biomedical Imaging, Massachusetts General Hospital, Harvard Medical School, Charlestown, MA, United States; ⁴Department of Electrical Engineering and Computer Science, Massachusetts Institute of Technology, Cambridge, MA, United States; ⁵Harvard-MIT Health Sciences and Technology, Cambridge, MA, United States

156. **Comparison of US and MR Measurement of Fetal Biometrics at 28-32 Weeks with a Real-Time MR Sequence**

Nicholas Hilliard¹, Rebecca Baker¹, Andrew Patterson¹, Martin Graves¹, Christoph Lees², Pat Set³, David J. Lomas⁴

¹Department of Radiology, Cambridge University Hospitals NHS Foundation Trust, Cambridge, Cambridgeshire, United Kingdom; ²Department of MaternoFetal Medicine, Imperial College Healthcare NHS Trust, London, United Kingdom

157. **High Resolution NMR Parameter Mapping of a CS23 Chemically Fixed Human Embryo at 9.4 T**

Katsumi Kose¹, Yosuke Otake¹, Akiyoshi Nagata¹, Tomoyuki Haishi², Shigehito Yamada¹

¹Institute of Applied Physics, University of Tsukuba, Tsukuba, Ibaraki, Japan; ²MR-Technology Inc., Tsukuba, Ibaraki, Japan; ³Kyoto University, Kyoto, Japan

158. **Comparison of Uterine Artery Pulsatility and Resistivity Indices Using Magnetic Resonance Imaging and Doppler Ultrasound**

Rebecca Hawkes¹, Andrew Patterson¹, Andrew Priest², Martin J. Graves², Nicholas Hilliard², Patricia Set³, David Lomas¹

¹Radiology, Addenbrooke's Hospital, Cambridge, Cambridgeshire, United Kingdom; ²Radiology, Addenbrooke's Hospital, Cambridge, United Kingdom

159. **Study of the Correlation Between Fetus Ages and Ossification Center of Atlanto-Axial Vertebrae Using MRI**

Hui Zhao¹, Tianyi Qian¹, Yong Wu¹, Shuwei Liu¹, Lianxiang Xiao¹, Xiangtao Lin¹, ²

¹Shandong Medical Imaging Research Institute, Shandong University, Jinan, Shandong, China; ²MR Collaborations NE Asia, Siemens Healthcare, Beijing, China; ³China Research Center for Sectional and Imaging Anatomy, School of Medicine, Shandong University, Jinan, Shandong, China; ⁴China Research Center for Sectional and Imaging Anatomy, School of Medicine, Shandong University, Jinan, Shandong, China

160. **Decidualized Adenomyosis: MR Imaging Findings Including Diffusion-Weighted Imaging**

Mayumi Takeuchi¹, Kenji Matsuzaki¹, Masafumi Harada¹

¹Department of Radiology, University of Tokushima, Tokushima, Japan

161. **Multiparametric MRI Characterization of Funaki Sub-Types of Uterine Fibroids Considered for MRI-Guided High-Intensity Focused Ultrasound (MR-HIFU) Therapy**

Sajan Andrews¹, Qing Yuan¹, April Bailey¹, Naira Muradyan¹, Robert Staruch¹, ², Rajiv Chopra¹, ³, Ivan Pedrosa¹, ⁴

¹Radiology, UT Southwestern Medical Center, Dallas, TX, United States; ²iCAD Inc, Nashua, NH, United States; ³Philips Research, Briarcliff Manor, NY, United States; ⁴Advanced Imaging Research Center, UT Southwestern Medical Center, Dallas, TX, United States
1552. **Importance of Intravenous Contrast Administration to Improve the Diagnostic Accuracy of Preoperative MRI for Uterine Leiomyosarcoma**  
Gigin Lin¹, Yu-Ting Huang¹, Koon-Kwan Ng¹, Shu-Hang Ng¹  
¹Department of Medical Imaging and Intervention, Chang Gung Memorial Hospital and Institute for Radio, Chang Gung Memorial Hospital and Chang Gung University, Linkou, Taoyuan, Taiwan

1553. **Computed Diffusion-Weighted Imaging for Differentiating Decidualized Endometrioma from Ovarian Cancer**  
Mayumi Takeuchi¹, Kenji Matsuzaki¹, Masafumi Harada¹  
¹Department of Radiology, University of Tokushima, Tokushima, Japan

1554. **Comprehensive Diagnostic Strategy for Cystic Masses in the Female Pelvis with Advanced MR Techniques**  
Mayumi Takeuchi¹, Kenji Matsuzaki¹, Masafumi Harada¹  
¹Department of Radiology, University of Tokushima, Tokushima, Japan

1555. **MR Imaging Features of Ovarian Fibroma, Fibrothecoma and Thecoma**  
Sung Bin Park¹, Jong Beum Lee¹, Hyun Jeong Park¹  
¹Chung-Ang University Hospital, Seoul, Korea

1556. **An Interactive Computer-Aided Diagnosis System for Detecting Metastatic Lymph Node in Female Pelvis Based on Diffusion Weighted Imaging**  
Tiing Yee Siow¹, Yu-Chun Lin¹, Gigin Lin¹  
¹Department of Medical Imaging and Intervention, Chang Gung Memorial Hospital at Linkou, College of Medicine, Chang Gung University, Taoyuan, Taiwan

1557. **Faster and Improved MRI of Rectal Tumors with a Two Sequence Protocol Based on High-Resolution Free-Breathing Post-Contrast 3D SPGR Imaging with Comparison to Standard Care.**  
Andreas M. Loening¹, Pejman Ghanouni¹, Marcus T. Alley¹, Shreyas S. Vasanawala¹  
¹Dept. of Radiology, Stanford University, Stanford, CA, United States

1558. **Quantification of Sequence Parameter Effect on Geometric Distortions Caused by a Titanium Brachytherapy Applicator**  
Steven M. Shea¹, Abbie Diak², Murat Sarucut², Matthew Harkenrider², Joseph M. Yacoub¹  
¹Radiology, Loyola University Chicago, Maywood, IL, United States; ²Radiation Oncology, Loyola University Chicago, Maywood, IL, United States

1559. **Increased Speed and Image Quality for Single Shot Fast Spin Echo Imaging in the Pelvis Via Variable Refocusing Flip Angles and Full-Fourier Acquisition**  
Andreas M. Loening¹, Manojkumar Saranathan¹, Daniel V. Litwiler², Ann Shimakawa², Lloyd Estkowski², Shreyas S. Vasanawala¹  
¹Dept. of Radiology, Stanford University, Stanford, CA, United States; ²GE Healthcare Global MR Applications and Workflow, Rochester, MN/Menlo Park, CA, United States

1560. **The Capabilities and Limitations of Clinical MRI Sequences for Detecting Kidney Stones. a Retrospective Study**  
El-Sayed H. Ibrahim¹, ², Joseph Cernigliaro², Mellena Bridges², Robert Pooley², William Haley²  
¹University of Michigan, Ann Arbor, MI, United States; ²Mayo Clinic, Jacksonville, FL, United States

1561. **Assessment of Renal Blood Flow and Oxygenation in Clear Cell Renal Cell Carcinomas Using MRI**  
Han-Mei Zhang¹, Xiao Lv², Pan-Li Zuo³, Niels Oesingmann⁴, Bin Song¹  
¹GE Healthcare Global MR Applications and Workflow, Rochester, MN/Menlo Park, CA, United States; ²Uniwersytet Medical, Wroclaw, Poland; ³University of Minnesota Medical School, Minneapolis, MN, United States; ⁴University of Texas Southwestern Medical Center, Dallas, TX, United States
1562. Multi-Parametric MRI Evaluation of Chronic Kidney Disease – BOLD & Perfusion MRI
Jon Thacker1, Huan Tan2, Lu-Ping Li, 23, Wei Li, 2, Ying Zhou2, Orly Kohn2, Stuart Sprague, 23, Pottumarthi Prasad, 23
1Northwestern University, Chicago, IL, United States; 2University of Chicago, IL, United States; 3NorthShore University HealthSystem, IL, United States

1563. Non-Invasive Assessment of the Whole Kidney by MOLLI T1 Mapping in Chronic Kidney Disease Patients
Iris Friedli1, Lindsey Alexandra Crowe1, Lena Berchtold2, Solange Moll3, Karine Hadaya4, Pierre-Yves Martin4, Sophie De Seigneux4, Jean-Paul Vallée4
1Division of Radiology, Faculty of Medicine, Geneva University Hospital, University of Geneva, Geneva, Switzerland; 2Division of Internal Medicine, Faculty of Medicine, Geneva University Hospital, University of Geneva, Geneva, Switzerland; 3Division of Pathology, Faculty of Medicine, Geneva University Hospital, University of Geneva, Geneva, Switzerland; 4Division of Nephrology, Faculty of Medicine, Geneva University Hospital, University of Geneva, Geneva, Switzerland

1564. Multiparametric MRI Evaluation of Chronic Kidney Disease – BOLD & Diffusion MRI
Lu-Ping Li1, Wei Li1, Jon Thacker1, Huan Tan2, Ying Zhou2, Orly Kohn2, Stuart Sprague1, Pottumarthi V. Prasad1
1Center for Advanced Imaging, NorthShore University HealthSystem, Evanston, IL, United States; 2Center for Biomedical Research & Informatics, NorthShore University HealthSystem, Evanston, IL, United States; 3Department of Nephrology, University of Chicago, Chicago, IL, United States; 4Department of Nephrology, NorthShore University HealthSystem, Evanston, IL, United States

1565. Comprehensive Assessment of Renal BOLD MRI Using Multiple Moment Analysis: Application to Subjects with CKD
Jon Thacker1, Lu-Ping Li1, Wei Li1, Stuart Sprague2, Pottumarthi V. Prasad1
1Northwestern University, Chicago, IL, United States; 2NorthShore University HealthSystem, IL, United States; 3University of Chicago, IL, United States

Nainesh Parikh1, Justin Ream1, Hoi Cheung Zhang2, Tobias Block1, Hersh Chandarana2, Andrew Rosenkrantz2
1Radiology, NYU School of Medicine, New York, NY, United States; 2Radiology, NYU School of Medicine, New York, NY, United States; 3Radiology, Center for Advanced Imaging Innovation and Research NYU School of Medicine, New York, NY, United States

1567. High Non-Linear Diffusion Fraction Correlates with Histological Fibrosis in Allograft Kidneys
General Leung1, 2, Nan Jiang1, Anthony A. Sheen1, Serge Jothy3, Darren A. Yuen, 2, Anish Kirpalani1, 2
1Medical Imaging, St. Michael's Hospital, Toronto, Ontario, Canada; 2Keenan Research Centre, St Michael's Hospital, University of Toronto, Toronto, Ontario, Canada; 3Faculty of Medicine, University of Toronto, Toronto, Canada; 4Faculty of Pathology, St. Michael's Hospital, Toronto, Ontario, Canada; 5Division of Nephrology, St Michael's Hospital, Toronto, Ontario, Canada

1568. IVIM-DWI and Non-Contrast MRI of Allograft Kidneys in 48 Hours After Transplantation
Yung Chieh Chang1, Yi-Ying Wu1, 2, Jyh-Wei Chai1, Clayton Chi-Chang Chen1
1Department of Radiology, Taichung Veterans General Hospital, Taichung City, Taiwan; 2Department of Medical Imaging and Radiological Sciences, Central Taiwan University of Science and Technology, Taichung City, Taiwan

1569. The Reliability of Magnetic Resonance Elastography (MRE) Using Multislice 2D Spin-Echo Echo-Planar Imaging (SE-EPI) and 3D Inversion Reconstruction for Assessing Renal Stiffness
Gavin Low1, 2, Nicola Eve Owen2, Ilse Joubert1, Andrew J. Patterson1, Kevin J. Glaser4, Martin J. Graves1, Graeme J.M. Alexander3, David J. Lomas1
1Department of Radiology, West China Hospital, Sichuan University, Chengdu, Sichuan, China; 2Department of Urology, West China Hospital, Sichuan University, Chengdu, Sichuan, China; 3Siemens Healthcare, MR Collaborations NE Asia, Beijing, China; 4Siemens HC, New York State, United States
1570. Visualization of Lupus Nephritis Using SPIO

Ting Chen1,2, Yuky Mori1,2, Zhenyua Cheng1,6, Soyoung Lee2, Kai Wang2, Barry Ripley2, Tadamitsu Kishimoto7,8, Chizuko Inui-Yamamoto9,10, Fuminori Sugihara10, Noriko Kitagaki11, Yoshiyuki Tago12, Shinichi Yoshida12, Kohji Ohno9, Yoshichika Yoshioka9,10

1Department of Radiology, Tianjin First Center Hospital, Tianjin, China; 2Siemens Healthcare, MR Collaborations NE Asia, Beijing, China; 1577.

The purpose of this study is to assess whether noncontrast-enhanced SSFP MRI with a spatially selective IR pulse can... using this technique has a potential to evaluate the renal dysfunction with higher sensitivity than conventional imaging.

1571. MRI of Perirenal Pathology

James Glockner1, Christine Lee1

1Radiology, Mayo Clinic, Rochester, MN, United States

1572. Setup for Quick 2D Glomerular Imaging in a Clinical 3 T MRI System

Jorge Chacon-Caldera1,2, Raffi Kalaycian1, Lothar R. Schad1

1Computer Assisted Clinical Medicine, Heidelberg University, Mannheim, BW, Germany

1573. Metabolic Imaging of Renal Triglyceride Content: Validation by Porcine Kidney Biopsies

Paul de Heer1, Jacqueline T. Jonker2, Evelien H. van Rosssenborg2, Marten A. Engelse1, Trea CM Streefland3, Ton J. Rabelink1, Andrew G. Webb1, Patrick CN Rensen4,5, Hildo J. Lamb, Aiko PJ de Vries2

1CJ Gorter Center for High Field MRI, Radiology, Leiden University Medical Center, Leiden, Netherlands; 2Nephrology, Leiden University Medical Center, Leiden, Netherlands; 3Endocrinology, Leiden University Medical Center, Leiden, Netherlands; 4Einthoven Laboratory for Experimental Vascular Medicine, Leiden, Netherlands

1574. Functional Evaluation of Transplanted Kidneys with Reduced Field of View Diffusion-Weighted Imaging at 3 T

Yuan Xie1, Yanjun Li1,2, Wael Shabana1,2, Chris Kennedy1,2

1Radiology, Mayo Clinic, Rochester, MN, United States

1575. Patients with High Blood Pressure Should Avoid Aspirin: Reduced Renal Perfusion in Hypertensive EP4

Knockout Mice

Greg O. Cron1,2, Jean-Francois Thibodeau1,2, Gerd Melkus1,2, Anthony Carter2, Ian G. Cameron1,2, Nicola Schieda1,2, Wael Shabana1,2, Chris Kennedy1,2

1Ottawa Hospital Research Institute, Ottawa, Ontario, Canada; 2University of Ottawa, Ottawa, Ontario, Canada


Yasufumi Noda1, Katsuyoshi Ito1, Tsutomu Yamada1, Akira Yamamoto2, Kazuya Yasokawa1, Atsushi Higaki1

1Department of Radiology, Kawasaki Medical School, Kurashiki, Okayama, Japan

1577. Assessment of Renal Allograft Perfusion and Diffusion Using Renal ASL and IVIM

Tao Ren1, Hua Li Chen1, Li Pan Zhuo2, Thorsten Feiweier2, Niels Oesingmann2, Wen Shen1

1Department of Radiology, Tianjin First Center Hospital, Tianjin, China; 2Siemens Healthcare, MR Collaborations NE Asia, Beijing, China; 3Siemens Healthcare, Erlangen, Germany; 4Siemens HC, NY, United States
1578. **Quantification and Reproducibility of Single Kidney Function Using DCE-MRI in Healthy Subjects**  
Eli Eikefjord, Erling Andersen, Jan Ankar Monssen, Erlend Hodneland, Erik Hanson, Arvid Lundervold, Jarle Rørvik  
1Radiology, Haukeland University Hospital, Bergen, Hordaland, Norway; 2Clinical Medicine, University of Bergen, Bergen, Hordaland, Norway; 3Clinical Engineering, Haukeland University Hospital, Bergen, Hordaland, Norway; 4Biomedicine, University of Bergen, Hordaland, Norway; 5Mathematics, University of Bergen, Hordaland, Norway

1579. **Application and Analysis of Multi-Echo Sequences for Renal MRI Using EPG**  
Sneha Prakash Potdar, Manoj G. Bhosale, Shivaprasad Ashok Chikop, Shaikh Imam, Antharikashanagar Bellappa Sachin Anchan, Sairam Geethanath  
1Medical Imaging Research Centre, Dayananda Sagar Institutions, Bangalore, Karnataka, India; 2BioMedical Instrumentation, Government College of Engineering Pune (COEP), Pune, Maharashtra, India

1580. **Low Field Renal Contrast Optimization with a Portable 0.5T System**  
Florian Lietzmann, Mathias Düüsberg, Lothar R. Schad  
1Computer Assisted Clinical Medicine, Heidelberg University, Mannheim, Baden-Württemberg, Germany

1581. **A Simple Method to Optimize Partial Fourier Acquisition Schemes for Glomerular Imaging**  
Jorge Chacon-Calderá, Lothar R. Schad  
1Computer Assisted Clinical Medicine, Heidelberg University, Mannheim, BW, Germany

1582. **Robust and Noninvasive Measurement of Renal Perfusion Using Multi-Phase Pseudo-Continuous Arterial Spin Labeling**  
William Jeffrey Triffo, Youngkyoo Jung  
1Department of Radiology, Wake Forest School of Medicine, Winston Salem, NC, United States; 2Departments of Radiology and Biomedical Engineering, Wake Forest School of Medicine, Winston Salem, NC, United States

1583. **Accurate Quantification of Blood Perfusion in the Kidney Using Pseudo-Continuous Arterial Spin Labelling: an Optimisation and Reproducibility Study**  
Susie Clarke, James F. Meaney, Andrew J. Fagan  
1National Centre for Advanced Medical Imaging (CAMI), St. James's Hospital / Trinity College Dublin, Dublin 8, Ireland

1584. **Urinary 1H NMR-Based Metabolomics Can Distinguish Sub-Fertility Buffalo Bulls**  
Virendra Kumar, Pawan Kumar, Khushpreet Singh, N R Jagannaathan, Ajeet Kumar  
1Department of NMR, All India Institute of Medical Sciences, New Delhi, Delhi, India; 2Department of Veterinary Gynaecology and Obstetrics, College of Veterinary Science, GADVASU, Ludhiana, Punjab, India

1585. **Imaging Features of Leiomyoma in the Genitourinary Tract: Beyond the Uterus**  
Sung Bin Park  
1Chung-Ang University Hospital, Seoul, Korea

1586. **Tracking of Bladder Motion and Gut Peristalsis Using MRI**  
Veerle Kersemans, Philip D. Allen, John S. Beech, Stuart Gilchrist, Paul Kinchesh, Sean C. Smart  
1Department of Oncology, University of Oxford, Oxford, OXON, United Kingdom
Traditional Poster

Body DWI, Technical Development & Contrast

Exhibition Hall  Tuesday 10:00-12:00

1587. Radioembolization Dosimetry Using Gadoxetate Disodium for Segmentation of the Healthy Liver Parenchyma
Hanke J. Schalkx1, Jip P. Prince1, Gerrit H. van de Maat2, Peter R. Seevinck2, Clemens Bos1, Wouter B. Veldhuis1, Maarten S. van Leeuwen1, Maurice AAJ van den Bosch1, Martijn van Stralen2
1Radiology and Nuclear Medicine, University Medical Center Utrecht, Utrecht, Netherlands; 2Quirem Medical BV, Diepenveen, Netherlands; 1Image Sciences Institute, University Medical Center Utrecht, Utrecht, Netherlands

1588. Variable Refocusing Flip Angle Single-Shot Fast Spin Echo of the Bowel, Initial Experience
Daniel V. Litwiller1, James F. Glockner2, Ersin Bayram3
1Global MR Applications and Workflow, GE Healthcare, Rochester, MN, United States; 2Department of Radiology, Mayo Clinic, Rochester, MN, United States; 3Global MR Applications and Workflow, GE Healthcare, Houston, TX, United States

1589. Whole-Body Continuously Moving Table Fat Water Imaging with Dynamic ABq Shimming
Saikat Sengupta1, 2, David S. Smith1, 2, E. Brian Welch1, 2
1Radiology and Radiological Sciences, Vanderbilt University, Nashville, TN, United States; 2Vanderbilt University Institute of Imaging Science, Nashville, TN, United States

1590. Application of Mathematical Modelling to a DCE-MRI Phantom: Predicting the Shape of Contrast Agent Uptake Curves.
Laura Smith1, Marco Borri1, Araminta EW Ledger1, Craig Cummings1, Maria A. Schmidt1, Martin O. Leach1
1CR-UK Cancer Imaging Centre, Sutton, Surrey, United Kingdom

1591. Assessment of System Linearity and Response to Input Parameters in a Dynamic Contrast-Enhanced (DCE) MRI Phantom
Laura Smith1, Araminta EW Ledger1, Marco Borri1, Craig Cummings1, Maria A. Schmidt1, Martin O. Leach1
1CR-UK Cancer Imaging Centre, The Institute of Cancer Research and Royal Marsden NHS Foundation Trust, Sutton, Surrey, United Kingdom

1592. Homogeneous Free Whole-Body Lava-Flex Using an Adaptive Center Frequency Technique at 3T
Lizhi Xie1, Bing Wu1, Nan Hong1, Yingkui Zhang1, Zhenyu Zhou1
1GE Healthcare China, Beijing, China; 2Peking University People's Hospital, Beijing, China

1593. Brown Adipose Tissue Thermometry in the Paraventricular Specific Knock-Out Mouse Model at 15.2T
Myriam Diaz Martinez1, Henry H. Ong1, Masoud Ghamari-Langroudi1, Aliya Gifford1, 3, Roger Cone2, E Brian Welch1
1Vanderbilt University Institute of Imaging Science, Vanderbilt University Medical Center, Nashville, TN, United States; 2Molecular Physiology and Biophysics, Vanderbilt University Medical Center, Nashville, TN, United States; 3Physical and Chemical Biology Program, Vanderbilt University Medical Center, Nashville, TN, United States

1594. Nonalcoholic Fatty Liver Disease: Correlation of the Liver Parenchyma Fatty Acid with Intravoxel Incoherent Motion MR Imaging-An Experimental Study in Rat Model
Seung-Man Yu1, Hyeon-Man Baek2
1Dep. of Radiological Science, Gimcheon University, Gimcheon, Gyeongsangbuk-do, Korea; 2Center for MR Research, Korea basic Science Institute, Ochang/Chungbuk, Korea

1595. MRI/S Assessment of Cardiac Morphology/Function and Skeletal Muscle Energetics in Mitochondrial DNA Mutated Mice
Hasan Alsaid1, Mary V. Rambo1, Tinamari Skedzielewski1, Ruth R. Osborn2, Alicia M Davis M. Davis2, William Rumsay2, Beat M. Jucker1
1CR-UK Cancer Imaging Centre, Sutton, Surrey, United Kingdom; 2Institute of Cardiovascular and Metabolic Science, University of Oxford, Oxford, United Kingdom
1596. Safeguarding the Family Jewels: Using MRI to Monitor for Testicular Toxicity
Denise Welsh-McCracken1, Yvonne Van Gessel1, Dierdre Scully2, Jacob Hesterman3, Paul J. McCracken1
1Eisai, Andover, MA, United States; 2InviCRO, Boston, MA, United States

1597. High Field Magnetic Resonance Angiogram of the Mouse Eye
Gangchea Lee1, Minjung Kim1, Thomas Neuberger,1,2
1Biomedical Engineering, Pennsylvania State University, University Park, PA, United States; 2Biology, Pennsylvania State University, University Park, PA, United States; 3Huck Institutes of the Life Sciences, Pennsylvania State University, University Park, PA, United States

1598. B0 Inhomogeneity Correction of T2* from Fat-Water MRI: Application to a Diet-Induced Obesity Mouse Model at 15.2T
Henry H. Ong1,2, Corey D. Webb3, Marnie L. Gruen4, Alyssa H. Hasty1, John C. Gore1,2, E. Brian Welch1,2
1Vanderbilt University Institute of Imaging Science, Nashville, TN, United States; 2Radiology and Radiological Sciences, Vanderbilt University, Nashville, TN, United States; 3Molecular Physiology and Biophysics, Vanderbilt University School of Medicine, Nashville, TN, United States

1599. Improved IVIM Model Fitting with Non-Rigid Motion Correction
Oscar Gustafsson1,2, Mikael Montelius1, Maria Ljungberg1,2
1Department of Radiation Physics, University of Gothenburg, Göteborg, Sweden; 2Department of Medical Physics and Biomedical Engineering, Sahlgrenska University Hospital, Göteborg, Sweden

1600. Evaluation of Different Mathematical Models for Diffusion Weighted Imaging of Prostate Cancer Xenografts in Mice
Harri Merisaari1,2, Hanne Hakkarainen1, Heidi Liljenbäck1,4, Helena Ahinen1,4, Heikki Minn1,4, Matti Poutanen1,4,6, Anne Roivainen1,4, Timo Tiimatainen7, Ivan Jambor8
1Turku PET Centre, University of Turku, Turku, Finland; 2Department of Information Technology, University of Turku, Turku, Finland; 3Department of Biotechnology and Molecular Medicine, A.I. Virtanen Institute for Molecular Sciences, Kuopio, Finland; 4Turku Center for Disease Modeling, University of Turku, Turku, Finland; 5Department of Oncology and Radiotherapy, Turku University Hospital, Turku, Finland; 6Department of Physiology, University of Turku, Turku, Finland; 7Department of Biotechnology and Molecular Medicine, A.I. Virtanen Institute for Molecular Sciences, Kuopio, Finland; 8Department of Diagnostic Radiology, University of Turku, Turku, Finland

1601. Improved Abdominal Diffusion Weighted Imaging at 3T Using Optimized Shinnar-Le Roux Adiabatic Radiofrequency Pulses
Hadrien Dyvorne1, Priti Balchandani1
1Radiology, Icahn School of Medicine at Mount Sinai, New York, NY, United States

1602. Clinical Feasibility of Time-Dependent Diffusion MRI for Improved Prostate Cancer Grading
Gregory Lembersk1,2, Dmitry S. Novikov1, Henry Rusinek1, Els Fieremans1, Andrew Rosenkrantz2
1Bernard and Irene Schwartz Center for Biomedical Imaging, Department of Radiology, New York University School of Medicine, New York, NY, United States; 2Sackler Institute of Graduate Biomedical Sciences, New York University School of Medicine, New York, NY, United States

1603. A Spatially Constrained Probability Distribution Model of Incoherent Motion (SPIM) in Quantitative Diffusion Weighted MRI
Sila Kurugol1, Moti Freiman1, Onur Afacan1, Simon K. Warfield1
1Radiology, Boston Children's Hospital and Harvard Medical School, Boston, MA, United States

257
1604. Proposal and Evaluation of a Parameter Free Segmented Multistep Algorithm to Assess Diffusion Data with a Combined IVIM-DKI Model
Moritz C. Warnig1, David Kenkel1, Lukas Filli1, Andreas Boss1
1Institute of Diagnostic and Interventional Radiology, University Hospital Zurich, Zurich, Switzerland

1605. Readout-Segmented EPI with Simultaneous, Multi-Slice Acceleration for the Rapid Acquisition of High-Resolution, Diffusion-Weighted Images of the Breast
Wei Liu1, Himanshu Bhat2, Elisabeth Weiland1, Dingxin Wang3, Thomas Beck3, Stephen F. Cauley3, David A. Porter6
1Siemens Shenzhen Magnetic Resonance Ltd., Shenzhen, Guangdong, China; 2Siemens Medical Solutions USA, Inc., Charlestown, MA, United States; 3MR Application Development, Siemens Healthcare, Erlangen, Germany; 4Siemens Medical Solutions USA, Inc., Minneapolis, MN, United States; 5A.A. Martinos Center for Biomedical Imaging, Dept. of Radiology, MGH, Charlestown, MA, United States; 6Fraunhofer MEVIS, Institute for Medical Image Computing, Bremen, Germany

1606. Realtime B0 Inhomogeneity Correction in Multi-Station Diffusion Imaging
Maggie M. Fung1, Wu Gaohong1, Lloyd Estkowski1, Dan Xu2, Scott Hinks2, Ersin Bayram4
1Global MR Applications and Workflow, GE Healthcare, New York City, NY, United States; 2Global MR Applications and Workflow, GE Healthcare, Waukesha, WI, United States; 3Global MR Applications and Workflow, GE Healthcare, Menlo Park, CA, United States; 4Global MR Applications and Workflow, GE Healthcare, Houston, TX, United States

1607. A Comparison of Intravoxel Incoherent Motion (IVIM) Fitting Models in the Liver
Alexander D. Cohen1, Mark D. Hohenwalter1, Kathleen M. Sch mãi nda2, 3
1Radiology, Medical College of Wisconsin, Milwaukee, WI, United States; 2Biophysics, Medical College of Wisconsin, Milwaukee, WI, United States

1608. Spatially-Constrained Incoherent Motion (SCIM) Model Improves the Robustness of Fast and Slow Diffusion Parameter Estimation from DW-MRI Data in Various Multiple B-Value Acquisition Protocols
Vahid Taimouri1, Moti Freiman1, Simon K. Warfield1
1Radiology, Boston Children's Hospital, Boston, MA, United States

1609. Diffusion-Weighted Imaging Using a Statistical Model as a Functional MRI of the Kidney: Preliminary Experience
Kentaro Yamada1, Hiroshi Shinmoto1, Seigo Ito4, Hiroo Kumagai2, Tatsumi Kaji1, Koichi Oshio1
1Radiology, National Defense Medical College, Tokorozawa, Saitama, Japan; 2Nephrology and Endocrinology, National Defense Medical College, Saitama, Japan; 3Diagnostic Radiology, Keio University School of Medicine, Tokyo, Japan

1610. Read-Fly : Homogeneous and Distortion Free Whole Body Diffusion Weighted Imaging at 1.5T and 3 T
Lizhi Xie1, Bing Wu1, Ning Wu1, Xiaocheng Wei1, Zhenyu Zhou1
1GE Healthcare China, Beijing, China; 2Chinese Academy of Medical Sciences Cancer Hospital, Beijing, China

1611. Lesion Detection and Workflow Optimization in Whole Body Diffusion MR Imaging Using Trimodality PET/CT+MR in the Oncology Setting.
James L. Patrick1, Perry J. Pickhardt1, Hyungsok Jang1, Scott B. Perlman1, Alan B. McMillan1
1Radiology, University of Wisconsin School of Medicine and Public Health, Madison, WI, United States

1612. Evaluation of Urinary Bladder Cancer on Synthetic FOCUS Diffusion Weighted Imaging
Motoyuki Katayama1, Takayuki Masui1, Kimihiko Sato1, Kei Tsukamoto1, Kenichi Mizuki1, Maho Hayashi1, Tetsuya Wakayama1, Yuji Iwadate2
1Radiology, Seirei Hamamatsu General Hospital, Hamamatsu, Shizuoka, Japan; 2GE Healthcare Japan, Hino, Tokyo, Japan
1613. Evaluation of Endometrial Lesion on Synthetic FOCUS Diffusion Weighted Imaging
MotoyukiKatayama1, TakayukiMasui1, KimihikoSato1, KeiTsukamoto1, KenichiMizuki1, MahoHayashi1, TetsuyaWakayama1, YujiIwadate2
1Radiology, SeireiHamamatsuGeneralHospital, Hamamatsu, Shizuoka, Japan; 2GEHealthcareJapan, Hino, Tokyo, Japan

1614. Comparison of Mono-Exponential, Bi-Exponential and Stretched-Exponential Models Derived Parameters in Detecting Renal Cell Carcinomas
Wenhu Wang1, DegangDing2, DapengShi1, YanBai1, XiaoyueMa1, MeiyunWang1
1Radiology, HenanProvincialPeople'sHospital, Zhengzhou, Henan, China; 2Urology, HenanProvincialPeople'sHospital, Zhengzhou, Henan, China

1615. Abdominal Diffusion Imaging Parameters from Free-Breathing Multiple-Averaged and Finely-Sampled Decay Curves Compared to Acquisition Using Active Breathing Control
NeilPeterJerome1, EvangeliaKaza1, MatthewR.Orton1, JamesA.d'Arcy1, BerndKuehn2, Dow-MuKoh3, DavidJ.Collins1, MartinO.Leach1
1Radiotherapy&Imaging, TheInstituteofCancerResearch, Sutton, London, UnitedKingdom; 2Healthcare, SiemensAG, Erlangen, Germany; 3DepartmentofRadiology, RoyalMarsdenHospital, Sutton, UnitedKingdom

1616. Caloric Intake Influence on Hepatic MR Diffusion Measurement
FeifeiQu1, Pei-HungHor1, 2, ClaudioArena1, DebraDees1, RajaMuthupillar3
1PhysicsDepartment, UniversityofHouston, Houston, TX, UnitedStates; 2TexasCenterforSuperconductivity, Houston, TX, UnitedStates; 3DiagnosticandInterventionalRadiology, St.Luke'sMedicalCenter, Houston, TX, UnitedStates

1617. Intravoxel Incoherent Motion MRI of the Healthy Pancreas: MonoeXponential and Biexponential Apparent Diffusion Parameters and Age Correlations
ChaoMa1, LiLiu1, JingLi1, LiWang1, LuguangChen1, YanjunLi1, YongZhang2, ShiyueChen1, JianpingLu1
1Radiology, ChanghaiHospitalofShanghai, Shanghai, China; 2MRGroup, GEHealthcare, Shanghai, China

1618. Multiparametric MR Enterography Without the Use of Antiperistaltic Agents: Performance and Interpretation
AmeliaWnorowski1, FlaviusGuglielmo1, RobertFord1, DonaldMitchell1
1ThomasJeffersonUniversity, Philadelphia, PA, UnitedStates

1619. Small Bowel Stenosis in Crohn's Disease: Characterizing the "STENOSIS" with MR Enterography
KaiKinder1, KennethDaughters1, ChrisKuzminski1
1SantaBarbaraCottageHospital, SantaBarbara, CA, UnitedStates; 2SantaBarbaraCottageHospital, CA, UnitedStates

1620. Quantified Terminal Ileal Motility as a Biomarker of Crohn's Disease Activity Assessed Using Magnetic Resonance Enterography: A Prospective Study
AlexMenys1, CharlotteETuteinNolthenius1, CarlPuylaert1, MakanyangaJesica1, EvelienGryspeerd1, GaurangBhagnagar1, NikosDikaios1, DavidAtkinson1, JaapStoker1, StuartATaylor1
1UCL, London, UK, UnitedKingdom; 2AMC, Netherlands, Netherlands

1621. Highly Accelerated 4D Radial Single Breathhold Acquisition of the Entire Gastro-Intestinal Tract Using L1 K-T SPIRIT
VladCeregan1, JelenaCurcic1, 2, AndreasSteingoetter1, 2, SebastianKozek1
1InstituteforBiomedicalEngineering, UniversityandETHZurich, Zurich, Switzerland; 2DivisionofGastroenterologyandHepatology, UniversityHospitalZurich, Zurich, Switzerland

1622. Effect of Weight Loss and Regional Differences in Abdominal Adipose Tissue Hydration
1623. **Visualizing and Quantifying Human Fat Digestion with IDEAL**

Dian Liu1, Helen Louise Parker2, Jelena Curcic1, 2, Sebastian Kozerke1, Andreas Steingoetter1, 2

1Institute for Biomedical Engineering, University and ETH Zurich, Zurich, Switzerland; 2Division of Gastroenterology and Hepatology, University Hospital Zurich, Zurich, Switzerland

1624. **Quantification of Brown Adipose Tissue in DIXON Water-Fat Separation and T2* Mapping**

Defeng Wang1, Ka Long Ko1, Steve CN Hui1, Lin Shi1, 2, Winnie CW Chu1

1Dept of Imaging and Interventional Radiology, The Chinese University of Hong Kong, Shatin, NT, Hong Kong; 2Dept of Medicine and Therapeutics, The Chinese University of Hong Kong, Shatin, NT, Hong Kong; 3Chow Yuk Ho Technology Centre for Innovative Medicine, The Chinese University of Hong Kong, Shatin, NT, Hong Kong

1625. **Fast 3T Whole Body MR Exam Utilizing 2 Point DIXON T1 & T2w and Streamlined Workflow Approach**

Lloyd Estkowski1, Maggie M. Fung2, Ken-Pin Hwang1, Ersin Bayram1

1Global MR Applications and Workforce, GE Healthcare, Menlo Park, CA, United States; 2Global MR Applications and Workforce, GE Healthcare, New York City, NY, United States; 3Global MR Applications and Workforce, GE Healthcare, Houston, TX, United States

1626. **Improved Retinal Shape Detection Using High-Resolution MRI Compared to Partial Coherence Interferometry**

Jan-Willem M. Beenakker1, 2, Mihai State3, Denis P. Shamolin4, Marrie van der Mooren5, Berend C. Stoel1, Andrew G. Webb1, Gregorius PM Luyten2, Patricia Piers3

1Department of Radiology, C.J.Gorter Center for High Field MRI, Leiden University Medical Center, Leiden, Zuid-Holland, Netherlands; 2Department of Ophthalmology, Leiden University Medical Center, Leiden, Zuid-Holland, Netherlands; 3AMO Groningen BV, Groningen, Netherlands; 4Department of Radiology, division of Image Processing, Leiden University Medical Center, Leiden, Zuid-Holland, Netherlands

1627. **MRI of Aerated Beverages: Intragastric Behaviour and Role in Hunger Suppression**

Kathryn Murray1, Elisa Placidi1, Ewoud Schuring2, Caroline Hoad1, Wieneke Koppenol2, Luben Arnaudov2, Wendy Blom2, Susan Pritchard1, Simeon Stoyanov2, David Mela3, Penny Gowland2, Robin Spiller3, Harry Peters4, Luca Marciani2

1Sir Peter Mansfield Imaging Centre, Physics and Astronomy, University of Nottingham, Nottingham, United Kingdom; 2Unilever Research and Development, Unilever, Olivier van Noortlaan 120, 3133 AT Vlaardingen, Netherlands; 3Nottingham Digestive Diseases Biomedical Research Centre, Nottingham University Hospitals, Nottingham, United Kingdom

1628. **Comparison of True Technical Costs of MRI and CT**

Alex Lewis1, Andreas Loening1, Shreyas Vasanawala1

1Department of Radiology, Stanford University, Stanford, CA, United States

1629. **MRI-Compatible Motion Platform for Studying the Influence of Organ Motion on Body MRI**

Joris Nefiele1, Qing Yuan1, Quinn Torres1, Mohammad Kazem1, Ken Tatebe1, Ivan Pedrosa2, 3, Rajiv Chopra1, 3

1Radiology, University of Texas Southwestern Medical Center, Dallas, TX, United States; 2Imaging Research, Sunnybrook Research Institute, Toronto, Ontario, Canada; 3Advanced Imaging Research Center, University of Texas Southwestern Medical Center, Dallas, TX, United States
1630. **Ratios of Visceral and Subcutaneous Fat Mass Are Linearly Correlated with Aging**  
*In-Young Lee, Yunjung Lee, Jea Seung Kim, Hee-Sook Jun, Jong-Hee Hwang*  
1Lee Gil Ya Cancer and Diabetes Institute, Gachon University, Incheon, Korea

### Traditional Poster

**MR-Guided Focused Ultrasound**  
Exhibition Hall Tuesday 10:00-12:00

1631. **Real-Time 3D Spiral MR Thermometry**  
*Samuel Fielden*, Xue Feng, Wilson Miller, Kim Butts Pauly, Craig Meyer  
1Biomedical Engineering, University of Virginia, Charlottesville, VA, United States; 2Radiology, University of Virginia, Charlottesville, VA, United States

1632. **Detecting Signal Changes in Heated Bone with a 3D Spiral Ultra-Short Echo Time Sequence**  
*Samuel Fielden*, John Mugler, III, Wilson Miller, Kim Butts Pauly, Craig Meyer  
1Biomedical Engineering, University of Virginia, Charlottesville, VA, United States; 2Radiology, University of Virginia, Charlottesville, VA, United States

1633. **Fast Simultaneous Temperature and Displacement Imaging During HIFU Ablation in Swine Liver**  
Pierre Bour, Fabrice Marquet, Solenn Toupin, Matthieu Lepetit-coiffé, Bruno Quesson  
1Institut de RYthmologie et de Modélisation Cardiaque, Bordeaux, Aquitaine, France; 2SIEMENS-Healthcare, Saint-Denis, Île-de-France, France

1634. **MRI-Guided Transurethral Ultrasound Therapy of the Prostate Gland Using Real-Time Thermal Mapping: An Analysis of Technical Accuracy and Immediate Postinterventional Assessment of Tissue Destruction Via CE-MRI**  
Maya Barbara Müller-Wolf, Mathieu Burtnyk, Valentin Ionel Popescu, Gencay Hatiboglu, Michele Billia, Cesare Romagnoli, Joseph Chir, Sascha Pahnerik, Heinz-Peter Schlemmer, Matthias C. Roethke  
1Radiology, German Cancer Research Center, Heidelberg, Baden-Wuerttemberg, Germany; 2Profound Medical, Toronto, Ontario, Canada; 3Urology, University Hospital Heidelberg, Heidelberg, Baden-Wuerttemberg, Germany; 4Urology, Western University UWO London Victoria Hospital, London, Ontario, Canada; 5Radiology, Western University UWO London Victoria Hospital, London, Ontario, Canada; 6Radiology, German Cancer Research Center, Baden-Wuerttemberg, Germany; 7Radiology, German Cancer Research Center, Heidelberg, Baden-Wuerttemberg, Germany

1635. **MR Imaging for the Evaluation of Boiling Histotripsy Treatment or Thermal High Intensity Focused Ultrasound Treatment in Mouse Lymphoma**  
Martijn Hoogenboom, Dylan Eikelenboom, Martijn H. den Brok, Erik Dumont, Gosses J. Adema, Arend Heerschap, Jurgen J. Futterrer  
1Department of Radiology and Nuclear medicine, Radboud University Medical Center, Nijmegen, Gelderland, Netherlands; 2Department of Tumor Immunology, Radboud University Medical Center, Nijmegen, Gelderland, Netherlands; 3Image Guided Therapy, Pessac, France; 4MIRA Institute for Biomedical Technology and Technical Medicine, University of Twente, Enschede, Overijssel, Netherlands

1636. **DCE-MRI Permeability Analysis in Focused Ultrasound-Induced Blood–Brain Barrier Opening: The Association with Mechanical Index**  
Wen Yen Chai, Po Chun Chu, Chih Hung Tsai, Hao Li Liu  
1Department of Medical Imaging and Intervention, Chang Gung Memorial Hospital, Guishan, Taoyuan, Taiwan; 2Department of Electrical Engineering, Chang Gung University, Guishan, Taoyuan, Taiwan

1637. **Targeting Effects on the Volume and Gray-To-White-Matter Ratio of the Focused-Ultrasound Induced Blood-Brain Barrier Opening in Non-Human Primates In Vivo**  
Maria Eleni Karakatsani, Gesthimani Samiotaki, Matthew Downs, Vincent Ferrera, Elisa Konofagou  
1Department of Biomedical Engineering, Columbia University, New York, NY, United States; 2Department of Neuroscience, Columbia University, New York, NY, United States; 3Department of Radiology, Columbia University, New York, NY, United States
1638. Correlation of Lesion Size to Thermal Dose Measured by MR Thermometry in MR-Guided Focused Ultrasound for the Treatment of Essential Tremor
Yueei Huang1, Nir Lipsman2, Michael L. Schwartz2, Vibhor Krishna2, Francesco Sammartino2, Andres M. Lozano2, Kullervo Hynynen1, 4
1Sunnybrook Research Institute, Toronto, ON, Canada; 2Division of Neurosurgery, Toronto Western Hospital, Toronto, ON, Canada; 3Division of Neurosurgery, Sunnybrook Health Sciences Centre, Toronto, ON, Canada; 4Department of Medical Biophysics, University of Toronto, Toronto, ON, Canada

1639. Impact of Gradient-Induced Eddy Currents on Multi-Shot EPI-Based Temperature Map Accuracy in a Transcranial MR Guided Focused Ultrasound Applicator
Silke M. Lechner-Greite1, Nicolas Henn1, Beat Werner1, Eyal Zadicario1, Matthew Tarasek1, Desmond T.B. Yeo1
1Diagnostics, Imaging and Biomedical Technologies Laboratory, GE Global Research Europe, Garching n. Munich, Germany; 2Center for MR-Research, Children’s Hospital Zurich, Zurich, Switzerland; 3InSightec Ltd., Tirat Carmel, Israel; 4Diagnostics, Imaging and Biomedical Technologies Laboratory, GE Global Research Niskayuna, Albany, NY, United States

1640. Expanding the Treatment Envelope for Transcranial MR-Guided Focused Ultrasound with a 256-Element Clinical Transducer
Raag D. Airan1, Gregory T. Clement2, Ari Partanen1, Martin G. Pomper1, Keyvan Farahani1
1Radiology and Radiological Science, Johns Hopkins Medical Institutions, Baltimore, MD, United States; 2Biomedical Engineering, Cleveland Clinic Lerner Research Institute, Cleveland, OH, United States; 3Clinical Science MR Therapy, Philips Healthcare, Andover, MA, United States; 4National Cancer Institute, National Institutes of Health, Bethesda, MD, United States

1641. Focal Position Determination in Breast MRgHIFU Using 3 Tracking Coils
Bryant T. Svedin1, 2, Michael J. Beck, 13, J. Rock Hadley, 14, Robb Merrill1, 4, Bradley D. Bolster Jr. 5, Dennis L. Parker1, 4
1Utah Center for Advanced Imaging Research, Salt Lake City, UT, United States; 2Biomedical Engineering, University of Utah, Salt Lake City, UT, United States; 3Electrical Engineering, University of Utah, UT, United States; 4Radiology, University of Utah, Salt Lake City, UT, United States; 5Siemens HealthCare, Salt Lake City, UT, United States

1642. Open-Source Small-Animal MR-Guided Focused Ultrasound System
Megan E. Poorman1, 2, Vandiver L. Chaplain, 13, Ken Wilkens1, Shantanu Majumdar1, William A. Grissom1, 2, Charles F. Caskey1, 2
1Biomedical Engineering, Vanderbilt University, Nashville, TN, United States; 2Institute of Imaging Science, Vanderbilt University, Nashville, TN, United States; 3Computational and Physical Biology, Vanderbilt University, Nashville, TN, United States

1643. Comparison of Magnetic Resonance Temperature Imaging for Magnetic Resonance Guided Focused Ultrasound Treatments at 3 and 1.5 T Field Strengths.
Emilee Minalga1, Robb Merrill1, Dennis L. Parker1, Josh DeBever1, J. Rock Hadley1, Allison Payne1
1UCAIR, University of Utah, Salt Lake City, UT, United States

Traditional Poster
Therapy & Thermometry
Exhibition Hall Tuesday 10:00-12:00

1644. MR Compatible Electrode for RF Hyperthermia with Capacitive Coupling: Feasibility Demonstration
Han-Joong Kim1, Suchit Kumar1, Jong-Hoon Han1, Jong-Min Kim1, Jun-Sik Yoon1, Seung-Koo Lee2, Chulhyun Lee1, Chang-Hyun Oh1
1Korea University, Seoul, Korea; 2Unionmedical Corporation, Uijeongbu, Gyeonggi-do, Korea; 3The MRI Team, Korea Basic Science Institute, CheongjJu, Chungcheongbuk-do, Korea

1645. A Combined Interventional High-Resolution Targeted Ablation, Thermometry and Imaging Probe
M.Arcan Erturk1, 2, Shashank Sathyanarayana Hegde1, Paul A. Bottomley1
1646. **Comparison of Multi-Contrast MRI for Characterization of Irreversible Electroporation Ablation Zones in a Pig Liver Model with Histopathologic Correlation**
Isabel Dregely¹, Kyung Sung¹, Ferdinand Ozuagwui¹, Dong Jin Chung¹, Charles Lassman², David Lu¹, Holden H. Wu¹
¹Radiological Sciences, University of California Los Angeles, Los Angeles, CA, United States; ²Pathology and Laboratory Medicine, University of California Los Angeles, Los Angeles, CA, United States

1647. **Analysis of Respiratory-Induced 3D Deformation of Liver Based on Branching Structure of Portal Vein Obtained with Time-Resolved Volume Acquisitions**
Etsuko Kumamoto¹, Tastuhiko Matsumoto², Daisuke Kokuryo³, Kagayaki Kuroda⁴, ⁵
¹Information Science and Technology Center, Kobe University, Kobe, Hyogo, Japan; ²Graduate School of System Informatics, Kobe University, Kobe, Hyogo, Japan; ³Molecular Imaging Center, National Institute of Radiological Sciences, Chiba, Japan; ⁴Graduate School of Engineering, Tokai University, Hiratsuka, Kanagawa, Japan; ⁵Center for Frontier Medical Engineering, Chiba University, Chiba, Japan

1648. **Relationship Between Temperature and T2 in Subcutaneous Fat and Bone Marrow at 3T**
Eugene Ozhinsky¹, Misung Han¹, Serena J. Scott², Chris J. Diederich², Viola Rieke³
¹Radiology and Biomedical Imaging, University of California San Francisco, San Francisco, CA, United States; ²Radiation Oncology, University of California San Francisco, San Francisco, CA, United States

1649. **In Vivo Chemical Shift-Compensated MR Thermometry**
Pooya Gaur¹, ², Beat Werner¹, Pejman Ghanouni⁵, Rachelle Bitton¹, Kim Butts Pauly⁶, William A. Grissom, ²⁵
¹Chemical and Physical Biology, Vanderbilt University, Nashville, TN, United States; ²Institute of Imaging Science, Vanderbilt University, Nashville, TN, United States; ³Center for MR-Research, University Children's Hospital, Zurich, Switzerland; ⁴Radiology, Stanford University, Stanford, CA, United States; ⁵Biomedical Engineering, Vanderbilt University, Nashville, TN, United States

Fuyixue Wang¹, Zijing Dong¹, Yuxin Hu¹, Feiyu Chen¹, Shuo Chen¹, Bingyao Chen¹, Jiafei Yang¹, Xing Wei¹, Shi Wang¹, Kui Ying²
¹Department of Biomedical Engineering, Tsinghua University, Beijing, China; ²Key Laboratory of Particle and Radiation Imaging, Ministry of Education, Department of Engineering Physics, Tsinghua University, Beijing, China; ³Department of Orthopedics, First Affiliated Hospital of PLA General Hospital, Beijing, China

1651. **Dynamical Model Parameter Adjustments in Model Predictive Filtering MR Thermometry**
Henrik Odén¹, ², Dennis L. Parker³
¹Utah Center for Advanced Imaging Research, Department of Radiology, University of Utah, Salt Lake City, UT, United States; ²Department of Physics and Astronomy, University of Utah, UT, United States

1652. **Using a Double Echo Steady State (DESS) Sequence to Monitor Thermal Treatments**
Juan Plata¹, ², Kristin Granlund³, Brian Hargreaves⁴, Kim Butts Pauly²
¹Bioengineering, Stanford University, Stanford, CA, United States; ²Radiology, Stanford University, Stanford, CA, United States

1653. **Towards Accurate Temperature Mapping in Adipose and Aqueous Tissue with Joint T1 and PRFS Using Balanced SSFP**
Mingming Wu¹, ², Pauline Ferry³, Tim Sprenger¹, ², Desmond Teck Beng Yeo¹, Axel Haase¹, Silke Lechner-Greite⁵
¹IMETUM, Technische Universität München, Garching, Germany; ²GE Global Research, Garching, Germany; ³IADI, Nancy, Lorraine, France; ⁴GE Global Research, Niskayuna, NY, United States
1654. High Speed, High Sensitivity MR Thermometry Using a Balanced Steady-State Free Precession Pulse Sequence
Yuan Zheng1, G. Wilson Miller2
1Physics, University of Virginia, Charlottesville, VA, United States; 2Radiology and Medical Imaging, University of Virginia, Charlottesville, VA, United States

1655. 3D UTE MR Thermometry of Frozen Tissue During Cryoablation: Clinical Feasibility at 3T
Christiaan G. Overduin1, Eva Rothgang2, Jurgen J. Fütterer1, Tom W.J. Scheenen1
1Radiology, Radboud University Medical Center, Nijmegen, Netherlands; 2Siemens Corporate Research, Erlangen, Germany

1656. Real-Time Spectral Decomposition Imaging: Moving from Minutes to Seconds
Ethan K. Brodsky1, 2, Miles E. Olsen1, Walter F. Block1, 2
1Medical Physics, University of Wisconsin, Madison, WI, United States; 2Biomedical Engineering, University of Wisconsin, Madison, WI, United States

1657. A Body-Mounted MRI-Compatible Robot for Needle Interventions Such as Shoulder Arthrography
Reza Monfaredi1, 2, Emmanuel Wilson1, Bamshad Azizi Koutenaei1, Raymond Sze1, Karun Sharma1, Kevin Cleary1
1Sheikh Zayed Institute, Children's National Medical Center, Washington, DC, DC, United States; 2Industrial department, Azad University- South Tehran Branch, Tehran, Iran

1658. Empirical Investigation of Tools and Imaging Techniques for MRI-Guided Radiotherapy of Lung Cancer
Tatsuya J. Arai1, Joris Nofiele2, Yam Ki Cheung1, Rajiv Chopra1, Amit Sawant1
1Radiation Oncology, UT Southwestern Medical Center, Dallas, TX, United States; 2Radiology, UT Southwestern Medical Center, Dallas, TX, United States

1659. Automated Classification of Vessel Disease Based on High-Resolution Intravascular Multi-Parametric Mapping MRI
Guan Wang1, 2, M. Arcan Erturk3, Shashank Sathyanarayana Hegde2, Paul A. Bottomley1, 2
1Dept. of Electrical & Computer Engineering, Johns Hopkins University, Baltimore, MD, United States; 2Russell H. Morgan Dept. of Radiology & Radiological Sciences, Johns Hopkins University, Baltimore, MD, United States; 3Center for Magnetic Resonance Research, University of Minnesota, Minneapolis, MN, United States

1660. Optimizing Accuracy and Precision of Micro-Coil Localization in Active MR Tracking Under Low SNR Conditions
Barret Daniels1, Ronald Pratt2, Randy Giaquinto1, 2, Charles Dumoulin1, 2
1Biomedical Engineering, University of Cincinnati, Cincinnati, OH, United States; 2Imaging Research Center, Cincinnati Children's Hospital Medical Center, Cincinnati, OH, United States

1661. Spiral Imaging for Visualization of Commercial Nitinol Guidewires with Reduced Heating
Adrienne E. Campbell-Washburn1, Toby Rogers1, Burcu Basar1, 2, Merdim Sonmez2, Ozgur Kocaturk1, 2, Robert J. Lederman1, Michael S. Hansen1, Anthony Z. Faranesh1
1Cardiovascular and Pulmonary Branch, Division of Intramural Research, National Heart Lung and Blood Institute, National Institutes of Health, Bethesda, MD, United States; 2Institute of Biomedical Engineering, Bogazici University, Istanbul, Turkey

1662. Variable Echotimes in Radial Acquisitions to Achieve a Uniform Artifact for Passive MR Guidewires
Axel Joachim Krafft1, 2, Simon Reiff3, Klaus Duering1, Michael Bock1
1Radiology - Medical Physics, University Medical Center Freiburg, Freiburg, Germany; 2German Cancer Consortium (DKTK), Heidelberg, Germany; 3MaRVis Medical GmbH, Hannover, Germany
1663. isoPHASOR: Localizing Markers in a Variety of Scan Types Using Its Phase Saddles

**Job G. Bouwman**, 1, **Bram A. Custers**, 1, **Chris J.G. Bakker**, 2, **Peter R. Seevinck** 1

1Image Sciences Institute, University Medical Center Utrecht, Utrecht, Netherlands; 2Image Sciences Institute, University Medical Center, Utrecht, Netherlands

**Traditional Poster**

**Relaxometry**

**Exhibition Hall**

**Tuesday 13:30-15:30**

1664. Accelerated and Motion-Robust In Vivo T2 Mapping from Radially Undersampled Data Using Bloch-Simulation-Based Iterative Reconstruction

**Noam Ben-Eliezer**, 1, **Daniel K. Sodickson**, 1, **Timothy M. Shepherd**, 2, **Graham C. Wiggins**, 1, **Kai Tobias Block** 1

1Center for Biomedical Imaging, Department of Radiology, New York University School of Medicine, New York, NY, United States; 2Center for Advanced Imaging Innovation and Research (CAI2R), Department of Radiology, New York University School of Medicine, New York, NY, United States

1665. Quantitative MR Imaging Method: All of the Main MR Parameters Can Be Obtained in Little More Than a Single Scan

**Bruno Madore**, 1, **W. Scott Hoge**, 1, **Tai-Hsin Kuo**, 2, **Cheng-Chieh Cheng** 1

1Brigham and Women's Hospital, Harvard Medical School, Boston, MA, United States; 2Philips Healthcare, Taipei, Taiwan

1666. Paramagnetic Ion Phantom to Independently Tune T1 and T2

**Kathryn E. Keenan**, 1, **Karl A. Stupic** 1, **Elizabeth Horneber**, 2, **Michael Bos** 1, **Stephen E. Russek** 1

1National Institute of Standards and Technology, Boulder, CO, United States; 2University of Colorado, Boulder, CO, United States

1667. Time-Dependent Transverse Relaxation Reveals Statistics of Structural Organization in Microbead Samples

**Alexander Ruh** 1, **Philipp Emerich** 1, **Harald Scherer** 2, **Dmitry S. Novikov** 2, **Valerij G. Kiselev** 1

1Dept. of Radiology, Medical Physics, University Medical Center Freiburg, Freiburg, Germany; 2Dept. of Inorganic and Analytical Chemistry, University Freiburg, Freiburg, Germany; 3Bernard and Irene Schwartz Center for Biomedical Imaging, Department of Radiology, New York University School of Medicine, New York, NY, United States

1668. Effects of Formalin Fixation on MR Relaxation Times in the Human Brain

**Christoph Birkl**, 1, **Christian Langkammer** 2, **Nicole Golob-Schwarzl** 1, **Marlene Leoni** 1, **Johannes Haybaeck** 1, **Walter Goessler** 1, **Franz Fazekas** 1, **Stefan Ropele** 1

1Dept of Neurology, Medical University of Graz, Graz, Austria; 2MGH/HST Martinos Center for Biomedical Imaging, Harvard Medical School, Boston, MA, United States; 3Dept of Neuropathology, Institute of Pathology, Medical University of Graz, Austria; 4Institute of Chemistry, Analytical Chemistry, University of Graz, Austria

1669. A Structurally Anthropomorphic Brain Phantom

**Kyoko Fujimoto**, 1, **Trent V. Robertson**, 1, **Vanessa Douet** 1, **David G. Garmire** 1, **V. Andrew Stenger** 1

1Department of Electrical Engineering, University of Hawaii at Manoa, Honolulu, HI, United States; 2Department of Medicine, John A. Burns School of Medicine, University of Hawaii, Honolulu, HI, United States; 3Department of Medicine, John A. Burns School of Medicine, University of Hawaii, Honolulu, HI, United States

1670. Single-Shot Multi-Slice T1 Mapping at High Spatial Resolution – Inversion-Recovery FLASH with Radial Undersampling and Iterative Reconstruction

**Xiaoping Wang**, 1, **Volker Roeloffs** 1, **Klaus-Dietmar Merboldt** 1, **Dirk Voit**, 1, **Sebastian Schaeetz** 1, **Jens Frahm** 1

1Biomedizinische NMR Forschungs GmbH am Max-Planck-Institut fuer biophysikalische Chemie, Göttingen, Germany

1671. Simultaneous T1 and T2 Mapping Using a Modified Multi-Echo Spin-Echo Sequence (MOMSE)

**Andreas Petrovic** 1, **Rudolf Stollberger** 2

1670.
1672. **A Min-Max CRLB Optimization Approach to Scan Selection for Relaxometry**

**Gopal Nataraj**, Jon-Fredrik Nielsen, Jeffrey A. Fessler

1Electrical Engineering and Computer Science, University of Michigan, Ann Arbor, MI, United States; 2Biomedical Engineering, University of Michigan, Ann Arbor, MI, United States; 3Functional MRI Laboratory, University of Michigan, Ann Arbor, MI, United States

1673. **A Simple Method (EMoS) for T1 Mapping Is More Accurate and Robust Than the Variable Flip Angle (VFA) Method**

**Sofia Chavez**

1Centre for Addiction and Mental Health, Toronto, Ontario, Canada; 2Psychiatry, University of Toronto, Toronto, Ontario, Canada

1674. **Qualification of Rapid Decay Species with Short TE Spin Echo Sequence**

**Eamon K. Doyle**, Jonathan M. Chia, Krishna Nayak, John C. Wood

1Biomedical Engineering, University of Southern California, Los Angeles, CA, United States; 2Cardiology, Children's Hospital of Los Angeles, Los Angeles, CA, United States; 3Philips Healthcare, Cleveland, OH, United States; 4Electrical Engineering, University of Southern California, Los Angeles, CA, United States

1675. **Whole-Brain Multi-Parameter Mapping Using Dictionary Learning**

**Sampada Bhave**, Sajan Goud Lingala, Casey P. Johnson, Vincent A. Magnotta, Mathews Jacob

1University of Iowa, Iowa City, IA, United States; 2Electrical Engineering, University of Southern California, Los Angeles, CA, United States

1676. **Fast and Accurate Quantification of T1, T2 and Proton Density Using IR BSSFP with Slice Profile Correction and Model Based Reconstruction**

**Andreas Lesch**, Andreas Petrovic, Tilman Johannes Sumpf, Christoph Stefan Aigner, Rudolf Stollberger

1Department for Medical Engineering, Graz University of Technology, Graz, Styria, Austria; 2Institute of Medical Engineering, University of Technology Graz, Graz, Austria

1677. **Inversion Group (IG) Fitting: A New Fitting Algorithm for Modified Look-Locker Inversion Recovery (MOLLI) That Allows for Arbitrary Inversion Groupings**

**Issac Y. Yang**, Kai-Ho Fok, Bernd J. Wintersperger, Marshall S. Sussman

1Faculty of Medicine, University of Toronto, Toronto, Ontario, Canada; 2Department of Medical Imaging, University of Toronto, Toronto, Ontario, Canada; 3Joint Department of Medican Imaging, University Health Network & Mt. Sinai Hospital, Toronto, Ontario, Canada

1678. **Plug-N-Play Magnetic Resonance Fingerprinting (PnP-MRF)**

**Shivaprasad Ashok Chikop**, Antharikshanagar Bellappa Sachin Anchan, Shaikh Imam, Amaresha Shridhar Konar, Rashmi Rao, Arush Honnedevasthana Arun, Sairam Geethanath

1Medical Imaging Research Center, Dayananda Sagar Institutions, bangalore, Karnataka, India

1679. **Super-Resolution T1 Mapping: A Simulation Study.**


1Iminds-Vision Lab, University of Antwerp, Antwerp (Wilrijk), Antwerp, Belgium; 2BIGNR (Medical informatics and Radiology), Erasmus Medical Center Rotterdam, Rotterdam, Netherlands; 3Imaging Science and Technology, Delft University of Technology, Delft, Netherlands; 4Delft Center for Systems and Control, Delft University of Technology, Delft, Netherlands
1680. Removing SSFP Banding Artifacts from DESPOT2 Images Using the Geometric Solution
   Tobias Charles Wood¹, Stephen J. Wastling¹, Gareth J. Barker²
   ¹Neuroimaging, King's College London, London, United Kingdom

1681. Ultra-Low Field NMR Relaxometry: Calibration Method and T1-Dispersion Below 1000 Hz
   Vasileios Zapetoulas¹, Lionel M. Broche¹, David J. Lurie¹
   ¹Aberdeen Biomedical Imaging Centre, School of Medicine & Dentistry, University of Aberdeen, Foresterhill, AB25 2ZD, Aberdeen, United Kingdom

1682. B1* Field Mapping Improves Accuracy of T1 Measurements in Phantoms and Normal Breast at 3.0 T
   Jennifer G. Whisenant¹, Lori R. Arlinghaus¹, Richard D. Dortch¹, William A. Grissom¹, Gregory S. Karczmar², Thomas E. Yankeelov³
   ¹Vanderbilt University, Nashville, TN, United States; ²University of Chicago, Chicago, IL, United States

1683. Exponential T2 Fitting with Even Echoes Only or Skipping the First Echo: How Well Does It Work?
   Kelly C. McPhee¹, Alan H. Wilman²
   ¹Physics, University of Alberta, Edmonton, Alberta, Canada; ²Biomedical Engineering, University of Alberta, Edmonton, Alberta, Canada

1684. Proton Density Mapping: Removing Receive-Inhomogeneity Using Multi-Coil Information and T1 Regularization
   Aviv Mezer¹, Ariel Rokem², Trevor Hastie², Brian Wandell²
   ¹Edmond and Lily Safra Center for Brain Sciences, The Hebrew University, Jerusalem, Israel; ²Stanford university, CA, United States

1685. Bayesian Monte Carlo Analysis of McDESPOT
   Mustapha Bouhrara¹, Richard G. Spencer²
   ¹National Institute on Aging, NIH, BALTIMORE, MD, United States

1686. Compensating for Stimulated Echoes in Quantitative T2 Relaxometry
   Dushyant Kumar¹, Susanne Stienoppen², Jens Fiehler³, Jan Sedlacik¹
   ¹Neuroradiology, Universitätsklinikum Hamburg-Eppendorf, Hamburg, Germany; ²Multiple Sclerosis Imaging Section (SeMSI), Universitätsklinikum Hamburg-Eppendorf, Hamburg, Germany; ³Multiple Sclerosis Imaging Section (SeMSI), Universitätsklinikum Hamburg-Eppendorf, Hamburg, Germany

1687. Optimization of Acquisition Parameters for Magnetic Resonance Fingerprinting
   Amaresha Shridhar Konar¹, Rashmi R. Rao¹, Shaik Imam¹, Shivaprasad Chikop¹, Sachin Anchan¹, Sairam Geethanath¹
   ¹Medical Imaging Research Center, Dayananda Sagar College of Engineering, Bangalore, Karnataka, India

1688. Comparison of Indirect and Stimulated Echo Compensated T2 Relaxometry Techniques: Extended Phase Graph Vs Shinnar-Le Roux Based Modelling
   Kelly C. McPhee², Alan H. Wilman²
   ¹Physics, University of Alberta, Edmonton, Alberta, Canada; ²Biomedical Engineering, University of Alberta, Edmonton, Alberta, Canada

1689. Optimizing and Comparing the Efficiencies of Relaxometry Sequences in Quantitative T1 and T2 Imaging
   Yang Liu¹, John R. Buck¹, Shaokuan Zheng¹, Vasiliki N. Ikonomidou¹
   ¹Electrical and Computer Engineering, University of Massachusetts Dartmouth, North Dartmouth, MA, United States; ²Department of Radiology, University of Massachusetts Medical School, Worcester, MA, United States; ³Bioengineering, George Mason University, Fairfax, VA, United States
1690. **Sources of Systematic Error in MRI Liver Fat Quantification**
Mark Bydder¹, Gavin Hamilton⁵, Ajinkya Desai⁶, Elhamy R. Heba⁷, Tanya Wolfson⁵, Claude B. Sirlin²
¹CRBM UMR 7339, CNRS / Aix-Marseille Université, Marseille, France; ²University of California San Diego, CA, United States

1691. **Improving Noise Robustness of the Quantitative (Q)BOLD Model.**
Jan Sedlacek⁵, Dushyant Kumar⁵, Jens Fiehler⁵
¹University Medical Center Hamburg-Eppendorf, Hamburg, Germany

1692. **MR Fingerprint Assessment of Capillary with Quadratic Coefficient and Falling Down Parameter**
Feng Qi¹,², Limiao Jiang¹,², Quek Swee Tian¹, Ng Thian C.¹,²
¹Diagnostic Radiology, National University of Singapore, Singapore, Singapore; ²Clinical Imaging Research Centre, A*STAR-NUS, Singapore, Singapore

1693. **Fast and Accurate Two-Component Relaxometry with EPG Simulations and Dictionary Searching**
Pierre-Yves Baudin¹, Benjamin Marty²,³, Ericky C.A. Araujo²,³, Noura Azabou²,³, Pierre G. Carlier²,³, Paulo Loureiro de Sousa¹
¹Consultants for Research in Imaging and Spectroscopy, Tournai, Belgium; ²NMR Laboratory, Institute of Myology, Paris, France; ³NMR Laboratory, CEA/I2BM/MIRCen, Paris, France; ¹ICube, Université de Strasbourg, CNRS, Strasbourg, France

1694. **Rapid Calculation of Correction Parameters to Compensate for Imperfect RF Spoiling in Quantitative R1 Mapping**
Martina F. Callaghan¹, Shaihan J. Malik², Nikolaus Weiskopf²
¹Wellcome Trust Centre for Neuroimaging, UCL Institute of Neurology, London, United Kingdom; ²Division of Imaging Sciences and Biomedical Engineering, King's College London, London, United Kingdom

1695. **Performing Dynamic Contrast-Enhanced MRI Quality Assurance for Multi-Centre Trials Using a Multi-Compartment Phantom with Physiological T1s**
Neil Peter Jerome¹, Vasia Papoutsaki¹, James A. d'Arcy¹, Harold G. Parkes¹, Nandita deSouza¹, Martin O. Leach¹, David J. Collins¹
¹Radiotherapy & Imaging, The Institute of Cancer Research, Sutton, London, United Kingdom

1696. **Uncertainty Quantification of Multi-Site T1 Measurements with Polyvinylpyrrolidone (PVP) Phantom and Human Brain Using Wild Bootstrap Analysis**
Congyu Liao¹, Meng Chen¹, Darong Zhu¹, Hongjian He¹, Song Chen¹, Qiuping Ding¹, Jianhui Zhong¹
¹Center for Brain Imaging Science and Technology, Zhejiang University, Hangzhou, Zhejiang, China; ¹Hangzhou First People's Hospital, Zhejiang, China

1697. **The Optimal Curve-Fitting Models for Liver T2´ Measurements Iron Overload in β-Thalassemia Major Patients**
Busakol Ngammuang¹, Kittichai Wantanajittikul², Monruedee Tapanya¹, Suchaya Silvilairat³, Pimlak Charoenkwan³, Suwit Saekho¹
¹Department of Radiological Technology, Faculty of Associated Medical Sciences, Chiang Mai University, Chiang Mai, Thailand; ²Biomedical Engineering Center, Faculty of Engineering, Chiang Mai University, Chiang Mai, Thailand; ³Department of Pediatrics, Faculty of Medicine, Chiang Mai University, Chiang Mai, Thailand
1698. What Is the Lorentz Sphere Correction for the MRI Measured Field Generated by Tissue Magnetic Susceptibility: The Spatial Exclusivity of Source and Observer and the Cauchy Principal Value
Yi Wang¹, Dong Zhou¹, Pascal Spincemaille¹
¹Cornell University, New York, United States

1699. Oligodendrocytes and the Role of Iron in Magnetic Susceptibility Driven Frequency Shifts in White Matter
Tianyou Xu¹, Sean Foxley¹, Karla Miller¹
¹Oxford Centre for Functional Magnetic Resonance Imaging of the Brain, University of Oxford, Oxford, Oxfordshire, United Kingdom

1700. Lorentz Cavity Field in Media with Magnetic Structure
Alexander Ruh¹, Valerij G. Kiselev¹
¹Dept. of Radiology, Medical Physics, University Medical Center Freiburg, Freiburg, Germany

1701. Correlation Between Paramagnetic Ions and Quantitative Susceptibility Values of Postmortem Brain Study
Jean Haroldo Oliveira Barbosa¹, ², Rafael Emidio³, Ana Tereza Di Lorenzo Alho¹, Camila Fernandes Nascimento¹, André Henrique Fais Silva¹, Alexandre Valotta Silva¹, Maria Conception Garcia Otaduy¹, Maria da Graça Martin¹, Edson Amaro Junior¹, Oswaldo Baffa¹, Carlos Ernesto Garrido Salmon¹, ²
¹Department of Physics - FFCLRP, University of Sao Paulo, Ribeirao Preto, Select, Brazil; ²CNRS, ICube, FMTS., Université de Strasbourg, Strasbourg, Bas-Rhin, France; ³Department of Radiology - FM, University of Sao Paulo, Sao Paulo, Brazil; ⁴University of Nottingham, Sir Peter Mansfield Magnetic Resonance Center, Nottingham, Bas-Rhin, United Kingdom

1702. Detection and Quantification of Microbleeds on Fixed Brain Specimens
Shunshan Li¹, Mark J. Fisher², Ronald C. Kim³, David Cribbs⁴, Mark J. Hamamura¹, Vitaly Vasilevko⁵, Annlia P. Hill², Min-Ying Su¹
¹Tu&Yuen Center for Functional Onco-Imaging, University of California, Irvine, CA, United States; ²Department of Neurology, University of California, Irvine, CA, United States; ³Department of Pathology, University of California, Irvine, CA, United States; ⁴Institute for Memory Impairments and Neurological Disorders, University of California, Irvine, CA, United States

1703. Estimation of Blood Oxygenation Using Quantitative Susceptibility Mapping
Alexey Dimov¹, ², Thanh Nguyen², Zhe Liu², ³, Kofi Deh³, Jingwei Zhang¹, ², Martin Prince², Yi Wang¹, ²
¹Biomedical Engineering, Cornell University, Ithaca, NY, United States; ²Radiology, Weill Cornell Medical College, New York, NY, United States

1704. Susceptibility and Cross-Sectional Area Quantifications of Small Veins in Human Brain
Ching-Yi Hsieh¹, Yu-Chung Norman Cheng¹, Jaladhar Neelavalli¹, E. Mark Haacke¹
¹Wayne State University, Detroit, MI, United States

1705. MRI Susceptometry Measurements of Murine Brown and White Adipose Tissue
Henry H. Ong¹, Robert A. Horch¹, ², John C. Gore¹, E. Brian Welch¹
¹Vanderbilt University Institute of Imaging Science, Nashville, TN, United States; ²Radiology and Radiological Sciences, Vanderbilt University, Nashville, TN, United States

1706. MR-Based $R_2^*$ and Quantitative Susceptibility Mapping (QSM) of Liver Iron Overload: Comparison with SQUID-Based Biomagnetic Liver Susceptometry
Samir D. Sharma¹, Bjoern P. Schoennagel¹, Jin Yamamura², Peter Nielsen², Regine Grosse², Hendrik Kooijman¹, Roland Fischer¹, ², Diego Hernando¹, Gerhard Adam², Peter Bannas¹, Scott R. Reeder¹, ³
¹Wayne State University, Detroit, MI, United States; ²CNRS, ICube, FMTS., Université de Strasbourg, Strasbourg, Bas-Rhin, France; ³University of Nottingham, Sir Peter Mansfield Magnetic Resonance Center, Nottingham, Bas-Rhin, United Kingdom

Jingwei Zhang1,2, Cynthia Wisniewski1,2, Becky Schur1, Lu Zhengrong1, David Pitt4, Yi Wang1,2
1Biomedical Engineering, Cornell University, New York, United States; 2Radiology, Weill Cornell Medical College, New York, United States; 3Biomolecular Engineering, Case Western Reserve University, OH, United States; 4Neurology, Yale School of Medicine, CT, United States

1708. 2D-Segmented, Multi-TE 3D-EPI for High-Resolution R2* and Quantitative Susceptibility Mapping at 7 Tesla

Rüdiger Stirnberg1, Julio Acosta-Cabronero2, Benedikt A. Poser3, Tony Stöcker1,4
1German Center for Neurodegenerative Diseases (DZNE), Bonn, Germany; 2German Center for Neurodegenerative Diseases (DZNE), Magdeburg, Germany; 3Faculty of Psychology and Neuroscience, Maastricht University, Maastricht, Netherlands; 4Department of Physics and Astronomy, University of Bonn, Bonn, Germany

1709. Wave-CAIPI and TGV for Fast Sub-Millimeter QSM at 7 Tesla

Christian Langkammer1, Berkin Bilgic1, Celine Louapre1, Costanza Gianni1, Sindhuja T. Govindarajan1, Kawin Setsompop1, Catherine Mainiero1
1MGH/HST Martins Center for Biomedical Imaging, Harvard Medical School, Boston, MA, United States

1710. Rapid Phase Imaging with 3D Echo-Planar Imaging (EPI) for Quantitative MRI – a Simulation Study on Image Artifacts

Paul Polak1, Robert Zivadinov1,2, Ferdinand Schweser1,2
1Department of Neurology, Buffalo Neuroimaging Analysis Center, State University of New York at Buffalo, Buffalo, NY, United States; 2Molecular and Translational Imaging Center, MRI Center, Clinical and Translational Research Center, Buffalo, NY, United States

1711. Improving Quantitative Susceptibility and R2* Mapping by Applying Retrospective Motion Correction

Xiang Feng1, Alexander Loktyushin1, Andreas Deistung1, Juergen Reichenbach1
1Medical Physics Group, Institute of Diagnostic and Interventional Radiology, Jena University Hospital - Friedrich Schiller University Jena, Jena, Germany; 2Empirical Inference, Max Planck Institute for Intelligent Systems, Tübingen, Germany

1712. Image Quality Improvement Using Short Range Finite Difference in QSM Reconstruction

Maximilian Maerz1, Dong Zhou2, Yan Zhang2,3, Pascal Spincemaille1, Lars Ruthotto2, Yi Wang2
1Department of Mathematics and Computer Science, Emory University, Atlanta, GA, United States; 2Weill Cornell Medical College, New York, NY, United States; 3Department of Radiology, Tongji Hospital, Huazhong University of Science and Technology, Wuhan, Hubei, United States

1713. Optimizing the Data Acquisition Strategy for Quantitative Susceptibility Mapping in the Liver

Samir D. Sharma1, Diego Hernandez1, Debra E. Horng1,2, Scott B. Reeder1,2
1Radiology, University of Wisconsin, Madison, WI, United States; 2Medical Physics, University of Wisconsin, Madison, WI, United States

1714. Interleaved 3D Multi-Slab Echo Shift Sequence for Fast T2* Weighted Imaging

Yajun Ma1, Wentao Liu1, Weinan Tang1, Jia-Hong Gao1
1Center for MRI, Peking University, Beijing, China

1715. Limitations of Accelerated QSM by FOV Restriction to Deep Gray Matter

Ahmed M. Elkady1, Hongfu Sun1, Alan H. Wilman1
1716. **Ferumoxytol-Enhanced Plural Contrast Imaging of the Human Brain**  
*Samantha J. Holdsworth*, *Thomas Christen*, *Kristen Yeom*, *Jae Mo Park*, *Greg Zaharchuk*, *Michael E. Moseley*  
1Department of Radiology, Stanford University, Stanford, CA, United States

1717. **Inference at the Cluster Level from the Relationship Between QSM and Age**  
*Julio Acosta-Cabronero*, *Arturo Cardenas-Blanco*, *Peter J. Nestor*  
1German Center for Neurodegenerative Diseases (DZNE), Magdeburg, Saxony-Anhalt, Germany

1718. **QSM Standardisation Routine for Unbiased Whole-Brain Analysis**  
*Julio Acosta-Cabronero*, *Matthew TJ Betts*, *Arturo Cardenas-Blanco*, *Shan Yang*, *Oliver Speck*, *Peter J. Nestor*  
1German Center for Neurodegenerative Diseases (DZNE), Magdeburg, Saxony-Anhalt, Germany; 2Biomedical Magnetic Resonance (BMMR), Otto-von-Guericke University, Magdeburg, Saxony-Anhalt, Germany

1719. **Automated Segmentation of Midbrain Structures Using Quantitative Susceptibility Mapping Images**  
*Benjamin Garzion*, *Grégoria Kalpouzos*, *Rouslan Sitnikov*  
1Aging Research Center, Karolinska Institute and Stockholm University, Stockholm, Sweden; 2MRI Research Centre, Karolinska University Hospital, Stockholm, Sweden

1720. **Reproducibility of Quantitative Susceptibility Mapping (QSM) and R2* in the Human Brain**  
*Joon Yul Choi*, *Yoonho Nam*, *Jingyu Lee*, *Jongho Lee*  
1Department of Electrical and Computer Engineering, Seoul National University, Seoul, Korea

1721. **Anatomically Dependent Variations in Magnetic Susceptibility Produces Spectral Asymmetries in High Spectral and Spatial Resolution MRI of Post-Mortem Mouse Brain**  
*Sean Foxley*, *Miriam Domowicz*, *Nancy Schwartz*, *Gregory S. Karczmarz*  
1FMRIB Centre, University of Oxford, Oxford, OXON, United Kingdom; 2Department of Pediatrics, University of Chicago, IL, United States; 3Department of Radiology, University of Chicago, IL, United States

1722. **Quantification of Labeled Cell Clusters in a Rat Brain In Vivo Using MRI**  
*Paul Kokeny*, *Xie He*, *Saifeng Liu*, *Ching-Yi Hsieh*, *Quan Jiang*, *Yu-Chung Norman Cheng*, *E. Mark Haacke*  
1School of Biomedical Engineering, Wayne State University, Detroit, MI, United States; 2School of Physics, Wayne State University, Detroit, MI, United States; 3School of Biomedical Engineering, McMaster University, Hamilton, Ontario, Canada; 4Department of Radiology, Wayne State University, Detroit, MI, United States; 5Department of Neurology, Henry Ford Health System, Detroit, MI, United States; 6Department of Radiology, Henry Ford Health System, Detroit, MI, United States

1723. **A Dixon Method for Positive Contrast Imaging of Very Small Superparamagnetic Iron Oxide Nanoparticles in MRI**  
*Dirk Krüger*, *Silvia Lorrito González*, *René M. Botnar*  
1Division of Imaging Sciences & Biomedical Engineering, King's College London, London, United Kingdom

1724. **Susceptibility Quantification for Ferritin and Fe₃O₄ Nanoparticles: Observation of Hyperfine Shift in Phase Images and Comparison Between Phase Measurement and CISSCO**  
*He Xie*, *Yu-Chung Norman Cheng*, *Ching-Yi Hsieh*, *Paul Kokeny*, *E. Mark Haacke*  
1Physics and Astronomy, Wayne State University, Detroit, MI, United States; 2Radiology, Wayne State University, Detroit, MI, United States; 3Biomedical Engineering, Wayne State University, Detroit, MI, United States
1726. A Fully Flow Compensated Dual Echo Sequence: The Role of Acceleration and Background Gradient Effects on Flow Compensation
Dongmei Wu¹, Sagar Buch², Saiseng Liu², E. Mark Haacke¹, ³
¹Shanghai Key Laboratory of Magnetic Resonance, East China Normal University, Shanghai, China; ²School for Biomedical Engineering, McMaster University, Hamilton, Ontario, Canada; ³Department of Radiology, Wayne State University School of Medicine, Detroit, MI, United States

1727. SWI of the Cervical-Spinal Cord with Respiration Noise Correction Using Navigator Echo
Hongyang Lee¹, Yoonho Nam², Dongyeob Han³, Sung-Min Gho¹, Dong-Hyun Kim¹
¹Electrical & Electronic Engineering, Yonsei University, Seodaemun-gu, Seoul, Korea; ²Electrical & Computer Engineering, Seoul National University, Gwanak-gu, Seoul, Korea

1728. Optimization of Inter-Echo Variance Channel Combination Technique for Susceptibility Weighted Imaging at 3T and 7T
Zahra Hosseiní¹, Junmin Liu², Maria Drangova², ³
¹Biomedical Engineering Graduate Program, Western University, London, Ontario, Canada; ²Imaging Research Laboratories, Robarts Research Institute, London, Ontario, Canada; ³Medical Biophysics, Western University, London, Ontario, Canada

1729. Dipole Filtering, Decomposition and Quantification with 3D Radial Acquisition
Curtis A. Corum¹, Lauri J. Lehto², Djaudat S. Idiyatullin³, Olli Gröhn², Michael Garwood³
¹Center for Magnetic Resonance Research, Radiology, University of Minnesota, Minneapolis, MN, United States; ²Department of Neurobiology, Biomedical Imaging Unit, A. I. Virtanen Institute for Molecular Sciences, University of Eastern Finland, Kuopio, Northern Savonia, Finland

1730. Improved Contrast in Multi-Echo Susceptibility-Weighted Imaging by Using a Non-Linear Echo Combination
Zhaoxin Chen¹, Guillaume Gilbert², Miha Fuderer³
¹Clinical Excellence and Research, R&D, Philips Healthcare, Best, Noord-Brabant, Netherlands; ²MR Clinical Science, Philips Healthcare, Montreal, Canada

1731. Artefact Removal in High Phase Gradient Regions in Susceptibility Weighted Images.
Amanda Ching Lin Ng¹, Shweta Farquharson¹, Sonal Josan³, Roger J. Ordidge¹
¹Dept of Anatomy and Neuroscience, The University of Melbourne, The University of Melbourne, VIC, Australia; ²Imaging, The Florey Institute of Neuroscience and Mental Health, Melbourne, VIC, Australia; ³Siemens Healthcare, Melbourne, VIC, Australia

1732. Magnetic Susceptibility (QSM) of Thalamic Sub-Nuclear Groups in Multiple Sclerosis
Ferdinand Schweser¹, ²; Devika Rattan¹, Jesper Hagemeier¹, Paul Polak¹, Michael G. Dwyer¹, Christopher R. Magnan¹, Robert Zivadinov¹, ²
¹Buffalo Neuroimaging Analysis Center, Dept. of Neurology, School of Medicine and Biomedical Sciences, State University of New York at Buffalo, Buffalo, NY, United States; ²MRI Molecular and Translational Imaging Center, Buffalo CTRC, State University of New York at Buffalo, Buffalo, NY, United States

1733. Magnetic Susceptibility in Gray Matter Is Associated with Age-Related Neuropathology: an Ex-Vivo QSM Study in a Community Cohort
Arnold Moya Evia Jr.¹, David A. Bennett³, ¹, Julie A. Schneider³, ¹, Aikaterini Kotrotsou¹, Robert J. Dawe³, Konstantinos Arfanakis¹, ²
¹Illinois Institute of Technology, Chicago, IL, United States; ²Rush Alzheimer's Disease Center, IL, United States; ³Rush University Medical Center, IL, United States; ³MD Anderson Cancer Center, TX, United States

272
1734. **Susceptibility Mapping in Parkinson's Disease Patients at 3T**  
*Johannes Lindemeyer*, Ana-Maria Oroz-Pequesques, *Kathrin Reetz*, N. Jon Shah  
1Institute of Neuroscience and Medicine 4, INM-4, Medical Imaging Physics, Forschungszentrum Jülich GmbH, Jülich, Germany;  
2Faculty of Medicine, Department of Neurology, RWTH Aachen University, JARA, Aachen, Germany

1735. **Quantitative Susceptibility Mapping of the Squirrel Monkey at 3T and 11.7T: Application to a Model of Parkinson’s Disease**  
*Mathieu David Santin*, Alexandra Petiet, Elodie Laffrat, Stéphane Lehéricy, Chantal François, Stéphane Honoré  
1Centre de Neuroimagerie de Recherche (CENIR), Paris, France; 2Institut du Cerveau et de la Moelle épinière, Inserm U 1127, CNRS UMR 7225, Sorbonne Universités, UPMC Univ Paris 06 UMR S 1127, Paris, France

1736. **Quantitative Susceptibility Mapping (QSM) Indicates Possible Iron Deficiency in the Thalamus and Dentate Nucleus in Restless Legs Syndrome (RLS)**  
*Xu Li*, Hongjun Liu, Richard P. Allen, Christopher J. Earley, Richard A.E. Edden, Peter B. Barker, Tiana E. Cruz, Peter C.M. van Zijl  
1F.M. Kirby Research Center, Kennedy Krieger Institute, Baltimore, MD, United States; 2Radiology, Johns Hopkins University School of Medicine, Baltimore, MD, United States; 3Neurology, Johns Hopkins University School of Medicine, Baltimore, MD, United States

1737. **Measuring Venous Blood Oxygenation Using Quantitative Susceptibility Mapping: A Study Using Acetazolamide Challenge in Patients with Chronic Stenosis of Major Arteries**  
*Deqing Qu*, Fadi Nahab, Seena Dehkargarhi  
1Radiology and Imaging Sciences, Emory University, Atlanta, GA, United States; 2Neurology, Emory University, GA, United States

1738. **Quantifying Peripheral Vascular Calcifications with Quantitative Susceptibility Mapping**  
*Huan Tan*, Tian Liu, Yi Wang, Robert R. Edelman  
1Surgery, University of Chicago, Chicago, IL, United States; 2MedImageMetric LLC, New York, NY, United States; 3Radiology, Weill Cornell Medical College, New York, NY, United States; 4Radiology, NorthShore University HealthSystem, Evanston, IL, United States; 5Radiology, Northwestern University Feinberg School of Medicine, Chicago, IL, United States

1739. **Can Susceptibility Weighted with Quantitative Phase MR Imaging Be Diagnostic in Differentiation of Haemorrhagic from Calcified Female Pelvic Lesion? - A Preliminary Study**  
sakshi khurana, Rakesh Kumar Gupta, Mukta Kapila, Swati Mittal, Manavita Mahajan, Ritu Tyagi, kirti verma  
1Radiology, fortis memorial research institute, Gurgaon, Haryana, India; 2gynaecology, fortis memorial research institute, Gurgaon, Haryana, India

**Traditional Poster**  
**Magnetization Transfer & CEST**  
Exhibition Hall: Tuesday 13:30-15:30

1740. **Optimization of Selective Inversion Recovery Magnetization Transfer Imaging for Clinical Applications**  
*Richard D. Dortch*, Ke Li, Daniel F. Gochberg, John C. Gore, Seth A. Smith  
1Radiology and Radiological Sciences, Vanderbilt University, Nashville, TN, United States; 2Vanderbilt University Institute of Imaging Science, Vanderbilt University, Nashville, TN, United States

1741. **B₁-Sensitivity Analysis of QMT**  
*Mathieu Boudreau*, Nikola Stikov, G. Bruce Pike  
1McConnell Brain Imaging Center, Montreal Neurological Institute, McGill University, Montreal, Quebec, Canada; 2Hotchkiss Brain Institute, Faculty of Medicine, University of Calgary, Calgary, Alberta, Canada
1742. Magnetization Transfer from Inhomogeneously Broadened Lines (IhMT): Sequence Optimization for Preclinical Investigation at Very High Magnetic Field (11.75T)  
Valentin H. Prevost1, Olivier M. Girard2, Gopal Varma3, David C. Alsop2, Guillaume Dubamel4  
1CRMBM CNRS UMR 7339, Aix-Marseille University, Marseille, France; 2Department of radiology, BIDMC, Harvard Medical School, Boston, MA, United States

1743. Modulation of Inter-Slice Frequency Offsets for Magnetization Transfer Ratio Imaging  
Sal-Li Lee1, Seung Hong Choi2, Sung-Hong Park2  
1Department of Bio and Brain Engineering, Korea Advanced Institute of Science and Technology, Daejeon, Korea; 2Department of Radiology, Seoul National University College of Medicine, Korea

David ML Lilburn1, Annette S. Cooper1, Philip Murphy2, Christopher DJ Sinclair2, Scott I. Semple2,3, Robert L. Janiczek1  
1Clinical Research Imaging Centre, University of Edinburgh, Edinburgh, East Lothian, United Kingdom; 2Experimental Medicine Imaging, GlaxoSmithKline, Uxbridge, Middlesex, United Kingdom; 3Institute of Neurology, University College London, London, United Kingdom; 4BHF Centre for Cardiovascular Science, University of Edinburgh, Edinburgh, East Lothian, United Kingdom

1745. Multi-Parameter Mapping of post-Mortem Lumbar Spinal Cord Tissue in Multiple Sclerosis  
Marco Battiston1, Marios C. Yiannakas1, Jia Newcombe2, Claudia A M Wheeler-Kingshott1, Rebecca S. Samson1  
1NMR Research Unit, Department of Neuroinflammation, Queen Square MS Centre, UCL Institute of Neurology, London, England, United Kingdom; 2NeuroResource Tissue Bank, UCL Institute of Neurology, London, England, United Kingdom

1746. Cross-Relaxation Parameter Quantification in Cortical Bone from Repeated Binomial Excitations  
Khouloua Bouazizi-Verdier1, Genevieve Guillot1  
1IR4M, UMR8081, CNRS, Univ. Paris-Sud, Orsay, France

1747. Assessment of Membrane Fluidity Using Nuclear Overhauser Enhancement Mediated Magnetization Transfer  
Xiao-Yong Zhang1, Jingping Xie1, Hua Li2, Junzhong Xu3, John C. Gore4, Zhongliang Zu5  
1Institute of Imaging Science, Vanderbilt University, Nashville, TN, United States

1748. Bound Water in Reconstructed Skin Samples: Quantification by NMR  
Genevieve Guillot1, Sarah Risquez2, Chih-Ying Wang1, Jean-Baptiste Galey2, Marion Ghibaudo2, Bernard Querleux2  
1CNRS Univ Paris-Sud, IR4M UMR8081, ORSAY, France; 2L'Oreal Research & Innovation, AULNAY-SOUS-BOIS, France

1749. Magnetization Transfer Imaging of Suicidal Patients with Major Depressive Disorder  
Ziqi Chen1, Huawei Zhang1, Zhiyun Jia2, Jingjie Zhong3, Xiaqi Huang4, Mingying Du, Lizhou Chen5, Weihong Kuang1, John A. Sweeney6, Qiyong Gong7  
1Huaxi MR Research Center (HMRRC), Department of Radiology, West China Hospital of Sichuan University, Chengdu, Sichuan, China; 2Department of Nuclear Medicine, West China Hospital of Sichuan University, Chengdu, Sichuan, China; 3Department of Radiology, West China Hospital of Sichuan University, Chengdu, Sichuan, China; 4Department of Psychiatry, State Key Lab of Biotherapy, West China Hospital of Sichuan University, Chengdu, Sichuan, China; 5Departments of Psychiatry and Pediatrics, University of Texas Southwestern, TX, United States

1750. Eliminating MT Contribution in Z-Spectra Using Dual Band Macromolecular Background Suppression (DBMS)  
Simon Shah1, Nicolas Geades1, Andrew Peters1, Penny Gowland1, Olivier Mougin1  
1Sir Peter Mansfield Imaging Centre, School of Physics and Astronomy, University of Nottingham, Nottingham, Nottinghamshire, United Kingdom
1751. **Spiral-CEST Encoding with Spectral and Spatial B0 Correction**  
*Suil Kim1, 2, Jaeseok Park1*  
1Department of Brain and Cognitive Engineering, Korea University, Seoul, Korea; 2Center for Neuroscience Imaging Research, Institute for Basic Science (IBS), Sungkyunkwan University, Suwon, Korea; 3Biomedical Imaging and Engineering Lab., Department of Global Biomedical Engineering, Sungkyunkwan University, Suwon, Korea

1752. **Retrospective Motion Correction in CEST MRI Data Using Time Domain Analysis**  
*Nirbhay N. Yadav1, 2, Kanne W. Y. Chan1, 2, Monica Pearl1, Piotr Walczak1, Miroslaw Janowski1, 2, Peter C. M. van Zijl2, 2, Michael T. McMahon1, 2*  
1The Russell H. Morgan Department of Radiology and Radiological Science, The Johns Hopkins University, Baltimore, MD, United States; 2FM Kirby Research Center for Functional Brain Imaging, Kennedy Krieger Institute, Baltimore, MD, United States; 3NeuroRepair Department, MMRC, PAS, Warsaw, Poland

1753. **A Multi-Parametric Multi-Echo Saturation (MMS) Method Enabling CEST Fingerprinting**  
*Xiaolei Song1, 2, Xiaowei He, Jiadi Xu, Pikachu Oskolkov, Nirbhay Yadav, 2, Monica Pearl1, Peter C. M. van Zijl, Michael T. McMahon1, 2.\*  
1Department of Brain and Cognitive Engineering, Korea University, Seoul, Korea; 2Center for Neuroscience Imaging Research, Institute for Basic Science (IBS), Sungkyunkwan University, Suwon, Korea; 3Biomedical Imaging and Engineering Lab., Department of Global Biomedical Engineering, Sungkyunkwan University, Suwon, Korea

1754. **Quantitative CEST (QCEST) Using Ω-plots in the Case of Trains of Gaussian-shaped Saturation Pulses**  
*Jan-Eric Meissner1, 2, Moritz Zaiss1, Eugenia Rerich1, Peter Bachert1*  
1Division of Medical Physics in Radiology, German Cancer Research Center, Heidelberg, Baden-Württemberg, Germany; 2Neurooncologic Imaging, Division of Radiology, German Cancer Research Center, Heidelberg, Baden-Württemberg, Germany

1755. **Quantitative Assessment of Amide Proton Transfer (APT) and Nuclear Overhauser Enhancement (NOE) Imaging with Extrapolated Semi-Solid Magnetization Transfer Reference (EMR) Signals - An Accurate and Straightforward Measurement Approach**  
*Hye-Young Heo1, Yi Zhang2, Shanshan Jiang2, Dong-Hoon Lee2, Jinyuan Zhou2*  
1Russell H Morgan Department of Radiology and Radiological Science, Johns Hopkins University, Baltimore, MD, United States; 2Russell H Morgan Department of Radiology and Radiological Science, Johns Hopkins University, Baltimore, MD, United States

1756. **Optimal Sampling Schedule for PARACEST Agents and Analysis of Its Performance**  
*Li Liang1, Jing Yuan, Jiadi Xu, Heather T. Ma1, 2, 3*  
1Department of Electronic and Information Engineering, Harbin Institute of Technology Shenzhen Graduate School, Shenzhen, Guangdong, China; 2Medical physics and research department, Hong Kong Sanatorium & Hospital, Hong Kong; 3F. M. Kirby Research Center, Kennedy Krieger Institute, Baltimore, MD, United States; 4Radiology Department, Johns Hopkins University, Baltimore, MD, United States

1757. **Improved Diagnosis of Tumor Tissues with QUESPOWR MRI**  
*Edward A. Randiske1, Mark D. Pagel1, Julio Cárdenas-Rodriguez1*  
1Biomedical Engineering, University of Arizona, Tucson, AZ, United States

1758. **Quantum Chemical Prediction and Experimental Validation of the Characteristics of DiaCEST MRI Contrast Agents**  
*Luis A. Montano1, Mark D. Page1, 2, Julio Cárdenas-Rodriguez2*  
1Chemistry and Biochemistry, University of Arizona, Tucson, AZ, United States; 2Biomedical Engineering, University of Arizona, Tucson, AZ, United States; 3Arizona Cancer Center, University of Arizona, Tucson, AZ, United States

1759. **Salicylic Acid Based CEST Agents for Assessing Brain Perfusion Territory and Blood-Brain Barrier Permeability**  
*Xiaolei Song1, 2, Piotr Walczak1, 2, Xing Yang, Xiaowei He1, 2, Jeff W.M. Bulte, 2, Monica Pearl, Peter C. M. van Zijl1, 2, Martin Pomper, Michael T. McMahon1, 2, Miroslaw Janowski1, 2, 3*  
1Department of Brain and Cognitive Engineering, Korea University, Seoul, Korea; 2Center for Neuroscience Imaging Research, Institute for Basic Science (IBS), Sungkyunkwan University, Suwon, Korea; 3Biomedical Imaging and Engineering Lab., Department of Global Biomedical Engineering, Sungkyunkwan University, Suwon, Korea
Traditional Poster

1760. Iopamidol CEST for pH Mapping on a 7T Scanner: Phantom and Normal Mice Kidneys In Vivo Study
Wei Hu1, Phillip Zhe Sun2, Renhua Wu3
1the Second Affiliated Hospital of Shantou University Medical College, Shantou, GuangDong, China; 2Athinoula A. Martinos Center for Biomedical Imaging, Department of Radiology, Massachusetts General Hospital and Harvard Medical School, Charlestown, MA, United States; 3Shantou University Medical College, Shantou, Guangdong, China

1761. Topiramate Induced Intracellular Acidification in Brain Tumors: In-Vivo Detection Using Chemical Exchange Saturation Transfer Magnetic Resonance Imaging
Kamini Yogesh Marathe1, Nevin McVicar1, Alex Li2, Mojmir Suchy1, Miranda Bellyou2, Susan Meakin2, Robert Bartha1, 2
1Medical Biophysics, Western University, London, Ontario, Canada; 2Centre for Functional and Metabolic Mapping, Robarts Research Institute, London, Ontario, Canada; 3Chemistry, Western University, London, Ontario, Canada; 4Biochemistry, Western University, London, Ontario, Canada

1762. Sensitivity of CEST MRI for Absolute PH Measurement in Brain Metastases
Kevin Ray1, James Larkin1, Yee Kai Tee1, 3, Alexandre Khraipatchev1, Michael Chappell1, Nicola Sibson1
1CRUK and MRC Oxford Institute for Radiation Oncology, Department of Oncology, University of Oxford, Oxford, United Kingdom; 2Department of Mechatronics and Biomedical Engineering, Faculty of Engineering and Science, Universiti Tunku Abdul Rahman, Kuala Lumpur, Malaysia; 3Department of Engineering Science, Johns Hopkins University School of Medicine, Baltimore, MD, United States

1763. Quantitative Measurements of Amide Proton Transfer (APT) Signals and Tissue PH in Acute Ischemic Stroke
Dong-Hoon Lee1, Xiaoqiang Liu2, Kai Zhang2, Yi Zhang1, Hye-Young Heo1, Wenxiao Li2, Raymond C. Koehler2, Jinyuan Zhou1
1Division of MR Research, Department of Radiology, Johns Hopkins University School of Medicine, Baltimore, MD, United States; 2Department of Anesthesiology, Johns Hopkins University School of Medicine, Baltimore, MD, United States

1764. 31P MRS and Creatine CEST: A Method to Monitor Creatine Kinase Metabolism in a Perfused Heart Model
Kevin D'Aquilla1, Rong Zhou2, Hari Haritharan3, 4, Neil Wilson1, Ravinder Reddy4
1Center for Magnetic Resonance and Optical Imaging, Department of Radiology, University of Pennsylvania, Philadelphia, PA, United States

1765. Glutamate CEST MRI in MPTP Mouse Model of Parkinson’s Disease
Puneet Baggal1, Rachelle Crescenzi1, Guruprasad Krishnamoorthy1, Ravi Prakash Reddy Nanga1, Sidyarth Garimall1, Kevin D’Aquilla1, Damodara Reddy1, Joel H. Greenberg2, John A. Detre2, Hari Haritharan3, Ravinder Reddy4
1Department of Radiology, University of Pennsylvania, Philadelphia, PA, United States; 2Department of Neurology, University of Pennsylvania, Philadelphia, PA, United States

1766. GlucoCEST as Method for Early Detection of Renal Allograft Rejection
Annika Busch1, Dominik Kentrup2, Helga Pawelski2, Nirbhay N. Yadav3, 4, Guanshu Liu3, 4, Peter C.M. van Zijl3, 4, Stefan Reuter1, Verena Hoerr1, 4
1Department of Clinical Radiology, University Hospital Muenster, Muenster, Germany; 2Department of Medicine D - Experimental Nephrology, University Hospital Muenster, Muenster, Germany; 3Russel H. Morgan Department of Radiology and Radiological Science, Johns Hopkins University School of Medicine, Baltimore, MD, United States; 4F.M. Kirby Research Center for Functional Brain Imaging, Kennedy Krieger Research Institute, Baltimore, MD, United States; 5Institute of Medical Microbiology, Jena University Hospital, Jena, Germany
1767. Dynamic Glucose Enhanced (DGE) MRI for Imaging Brain Cancer
Xiang Xu1, Kannie WY Chan1, Linda Knutsson1, Dmitri Artemov1, Jiadi Xu2, Guanshu Liu2, Yoshi Kato4, Bachchu Lal6, John Laterra6, Michael T McMahon1, Peter van Zijl12
1Russell H. Morgan Department of Radiology and Radiological Science, Johns Hopkins Medicine, Baltimore, MD, United States; 2Department of Neurology, Kennedy Krieger Institute, Baltimore, MD, United States; 3Division of Cancer Imaging Research and JHU In Vivo Cellular Molecular Imaging Center, Johns Hopkins Medicine, MD, United States; 4Department of Neurology, Kennedy Krieger Institute, MD, United States; 5Department of Neurosurgery, Johns Hopkins Hospital, MD, United States

1768. Cardiac CEST Imaging of Diffuse Fibrosis
Scott William Thalman1, Zhengshi Yang1, Andrea Mattingly1, Moriel Vandsburger1, Giuseppe Ferrauto1, Enza Di Gregorio1, Simona Baroni1, Silvio Aime1
1Molecular Biotechnology and Health Science, Molecular Imaging Center-University of Torino (IT), Torino, Italy

1769. Breath-Hold CEST-MRI of Liver Cirrhosis: A Clinical Feasibility Study
Xin Chen1, Weibo Chen1, Guangbin Wang1, Jianhua Lu1, Jinyuan Zhou1, Guang Jia1, Jianqi Li1
1Shanghai Medical Magnetic Resonance Imaging Research Institute, Shanghai Medical University, Jinhua, Shanghai, China; 2Philips Healthcare, Shanghai, China; 3Shanghai Key Laboratory of Magnetic Resonance and Department of Physics, East China Normal University, Shanghai, China; 4Department of Physics and Astronomy, Louisiana State University, Baton Rouge, LA, United States; 5Johns Hopkins University, Baltimore, MD, United States; 6Pennington Biomedical Research Center, Baton Rouge, LA, United States

1770. CEST and FLEX MRI for Detection of CNS Graft Rejection
Sujith V. Sajja1, Guanshu Liu1, Nibrhay Yadav1, Jiadi Xu1, Antje Arnold1, Anna Jablonska1, Michael McMahon1, Peter van Zijl1, Jeff Bulle1, Piotr Walczak1, Miroslaw Janowski1
1Department of Radiology and Radiological Science, Johns Hopkins University School of Medicine, Baltimore, MD, United States; 2Cellular Imaging Section and Vascular Biology Program, Institute for Cell Engineering, Johns Hopkins University, Baltimore, MD, United States; 3F.M. Kirby Research Center for Functional Brain Imaging, Kennedy Krieger Institute, Baltimore, MD, United States; 4Department of Radiology, University of Würzburg, Würzburg, Germany; 5Department of Radiology, University of Warmia and Mazury, Olsztyn, Poland; 6NeuroRepair Department, Polish Academy of Sciences, Warsaw, Poland

1771. Effects of Water Proton Concentration and Water T1 Changes on APT and NOE Imaging Signals in Gliomas
Dong-Hoon Lee1, Hye-Young Heo1, Kai Zhang1, Yi Zhang1, Shanshan Jiang1, Jinyuan Zhou1
1Division of MR Research, Department of Radiology, Johns Hopkins University School of Medicine, Baltimore, MD, United States

1772. Amide Proton Transfer Imaging in Hemorrhagic Brain Lesions at 3T
Sung Soo Ahn1, Yoon Seong Choi1, Ha-Kyu Jeong1, Jinyuan Zhou2, Yansong Zhao3, Seung-Koo Lee1
1Radiology, Yonsei University College of Medicine, Seoul, Korea; 2Philips Korea, Seoul, Korea; 3Radiology, Johns Hopkins University, Baltimore, MD, United States; 4Philips Healthcare, Cleveland, OH, United States

1773. Isolated Amide Proton CEST Contrast at 7 T Correlates with Contrast-enhanced T1-weighted Images of Tumor Patients
Johannes Windschuh1, Steffen Goerke1, Jan-Eric Meissner1, Alexander Radbruch1, Peter Bachert1, Moritz Zais2
1Division of Medical Physics, and Biophysics, German Cancer Research Center (DKFZ), Heidelberg, Baden-Württemberg, Germany; 2Department of Neuropathology, University of Heidelberg Medical Center, Heidelberg, Baden-Württemberg, Germany

1774. Frequency-Encoded MRI-CEST Agents Based on Paramagnetic Liposomes/RBC Aggregates
Giuseppe Ferrauto1, Enza Di Gregorio1, Simona Baroni1, Silvio Aime1
1Molecular Biotechnology and Health Science, Molecular Imaging Center-University of Torino (IT), Torino, Italy
1775. A System for in Situ S-Parameter Measurements of MR Transmit Arrays
Gerd Weidemann¹, Frank Seifert¹, Werner Hoffmann¹, Rainer Seemann¹, Patrick Waxmann¹, Bernd Ittermann¹
¹Physikalisch-Technische Bundesanstalt, Braunschweig und Berlin, Germany

1776. 7T Coil Decoupling in Near-Magnet Power Amplifier
Ashraf Abuelhaija¹, Klaus Solbach²
¹Duisburg-Essen University, Duisburg, Germany; ²Duisburg-Essen University, Duisburg, Germany

1777. An Open 4ch. Transmit / 16 Ch. Receive Coil for High Resolution Occipital and Temporal Visual Cortex Imaging at 7T
Shubharthi Sengupta¹, Gregor Adalmary², Valentin G. Kemper³, Jan Zimmermann³, Rainer Goebel¹, Alard Roebroeck¹
¹Dept. of Cognitive Neuroscience, Maastricht University, Maastricht, Netherlands; ²Dept. of Radiology, University of Minnesota, MN, United States; ³New York University, NY, United States

1778. A 32-Channel Intracranial and Extracranial Vascular Array for Three Dimension Arterial Wall MR Imaging at 3T
Xiaoqing Hu¹, Lei Zhang¹, Chao Zou¹, Huabin Zhu¹, Xiaoliang Zhang¹, Yiu-cho Chung¹, Xin Liu¹, Hairong Zheng¹, Ye Li¹
¹Lauterbur Research Center for Biomedical Imaging, Shenzhen Institutes of Advanced Technology of Chinese Academy of Sciences, Shenzhen, Guangdong, China; ²Suzhou Medcoil Healthcare Co.,Ltd, Suzhou, Jiangsu, China; ³Department of Radiology and Biomedical Imaging, University of California San Francisco, San Francisco, CA, United States

1779. Determination of the Optimal Number of Coil Elements: A Semi-Theoretical Approach
Mark Schuppert¹, Karl-Friedrich Kreitner, Stefan Fischer¹, Simon Wein¹, Boris Keil², Lawrence L. Wald³, Laura M. Schreiber¹⁴
¹Section of Medical Physics, Department of Radiology, Johannes Gutenberg University Medical Center, Mainz, Germany; ²A.A. Martinos Center for Biomedical Imaging, Department of Radiology, Massachusetts General Hospital, Charlestown, MA, United States; ³Harvard Medical School, Boston, MA, United States; ⁴Department of Cellular and Molecular Imaging, Comprehensive Heart Failure Center, Wuerzburg, Germany

1780. Design Optimization and Evaluation of a 64-Channel Cardiac Array Coil at 3T
Robin Etzel¹,², Xueming Cao¹,³, Choukri Mekkaoui¹, David E. Sosnovik¹, Timothy G. Reese¹, Mark Schuppert¹, Laura M. Schreiber⁴,²⁵, Martin Fiebich², Lawrence L. Wald³, Boris Keil¹
¹A.A. Martinos Center for Biomedical Imaging, Dept. of Radiology, Massachusetts General Hospital, Harvard Medical School, Charlestown, MA, United States; ²Mittelhessen University of Applied Sciences, Institute for Medical Physics and Radiation Protection, Giessen, Germany; ³Medical Physics, Department of Radiology, University Medical Center Freiburg, Freiburg, Germany; ⁴Department of Radiology, Johannes Gutenberg University Medical Center, Section of Medical Physics, Mainz, Germany; ⁵Comprehensive Heart Failure Center, Department of Cellular and Molecular Imaging, Wuerzburg, Germany

1781. B¹ Homogenization Capabilities at 9.4T from a Simulation Approach
Jörg Felder¹, N. Jon Shah²
¹Institute of Neurosciences and Medicine, Forschungszentrum Jülich, Jülich, NRW, Germany; ²Faculty of Medicine, Department of Neurology, JARA, RWTH Aachen University, Aachen, NRW, Germany

1782. Evaluating the SNR Performance of Using Dielectric Pads with Multiple Channel RF Coils at 7T
Bei Zhang¹, Zahi A. Fayad³, Junqian Xu¹, Bernd Stoeckel², Priti Balachandran¹
¹Translational and Molecular Imaging Institute, Icahn School of Medicine at Mount Sinai, New York, United States; ²Siemens Medical Solution, New York, United States
1783. **Transmit Volume Coil-Receive Surface Coil for Proton Operating at 14 Tesla**
Masoumeh Dehghani M. 1, Arthur Magill W. 2, Yves Pilloud1, Nicolas Kunz2, Rolf Gruetter1, 2
1Laboratory for Functional and Metabolic Imaging, Ecole Polytechnique Fédérale de Lausanne, Lausanne, Vaud, Switzerland; 2Centre d’Imagerie Biomédicale, Ecole Polytechnique Fédérale de Lausanne, Lausanne, Vaud, Switzerland

1784. **Design and Development of General Propose Transmit-Receive (TR) Switch for a Linear, Quadrature and Dual Tuned Coils**
Bijaya Thapa1, Joshua Kaggie1, Naabraj Sapkota1, Eun Kee Jeong1, 2
1Dept. of Physics and Astronomy, Utah Center for Advanced Imaging Research, University of Utah, Salt Lake City, UT, United States; 2Dept. of Radiology, Korea University, Seoul, Korea

1785. **A Low Cost Signal Modulator for a Field Programmable Gate Array Based Parallel Transmit System**
Benson Yang1, Clare McElcheran1, Fred Tam1, Simon Graham1, 2
1Physical Sciences, Sunnybrook Research Institute, Toronto, ON, Canada; 2Medical Biophysics, The University of Toronto, Toronto, ON, Canada

1786. **Frequency Translation for 1H Decoupled Multichannel 13C Spectroscopy**
Stephen E. Ogier1, Steven M. Wright1, 2
1Electrical and Computer Engineering, Texas A&M University, College Station, TX, United States; 2Biomedical Engineering, Texas A&M University, College Station, TX, United States

1787. **Phase Correction with Asynchronous Digitizers**
John C. Bosshard1, Steven M. Wright1
1Department of Electrical & Computer Engineering, Texas A&M University, College Station, TX, United States

1788. **A Novel Dsm Based All-Digital IQ Modulator for a Highly Efficient MRI Transmitter**
Filiz Ece Sagcan1, Bulent Sen1, Aylin Bayram1
1Power Amplifier Technologies, ASELSAN A.S., Ankara, Turkey

1789. **Wi-Fi Tuning/detuning Switch for Inductively Coupled Wireless Phased Array Coil for Intraoperative MRI Applications**
Seunghoon Ha1, Haoqin Zhu1, Labros Petropoulos1
1R&D, IMRIS Inc., Minnetonka, MN, United States

1790. **Comparisons of RF Signal Tuning and Matching Networks**
Sung-Min Sohn1, Lance DelaBarre1, J. Thomas Vaughan1
1Center for Magnetic Resonance Research, University of Minnesota, Minneapolis, MN, United States

1791. **Cryogenic Receive-Only 7 Tesla Coil for MRI of Hyperpolarized 13C**
Jarek Wosik1, 2, Krzysztof Nesteruk1, I-Chih Tan1, Kuang Qin1, James A. Bankson1
1Electrical and Computer Engineering, University of Houston, Houston, TX, United States; 2Texas Center for Superconductivity, University of Houston, Houston, TX, United States; 1Institute of Physics Polish Academy of Sciences, Warsaw, Poland; 2Center for Molecular Imaging, The University of Texas Health Science Center, Houston, TX, United States; 2Department of Imaging Physics, The University of Texas M. D. Anderson Cancer Center, Houston, TX, United States

1792. **Materials for Printed MRI Surface Coils: Towards Better Image Quality and Coil Flexibility**
Balthazar Pierre Lechene1, Anita Flynn1, Joseph Corea1, Michael Lustig1, Ana Claudia Arias1
1Electrical Engineering and Computer Science, University of California Berkeley, Berkeley, CA, United States
1793. **A Single Channel Spiral Volume Coil for In Vivo Imaging of the Whole Human Brain at 6.5 MT**  
**Cristen LaPierre**, **Mathieu Sarracanie**, **David E J Waddington**, **Matthew S. Rosen**  
1MGH/A.A. Martinos Center for Biomedical Imaging, Charlestown, MA, United States; **Martin J. Graves**, **Fraser J. Robb**, **David J. Lomas**  
1Philips Healthcare, Cleveland, OH, United States; **David J. Lomas**  
1MRI.TOOLS GmbH, Berlin, Germany; **Cristen LaPierre**  
1Department of Physics, Harvard University, Cambridge, MA, United States; **David J. Lomas**  
1ARC Centre of Excellence for Engineered Quantum Systems, School of Physics, University of Sydney, Sydney, NSW, Australia

1794. **High Spatial Resolution RF Coil for Brain Imaging of Small Monkeys at 11.7 T**  
**Helmar Waiczies**, **Alexandra Petier**, **Eloïde Laffratt**, **Darius Lysiak**, **Stephane Hunot**, **Thoralf Niendorf**  
1MRI.TOOLS GmbH, Berlin, Germany; **Center for Neuroimaging Research, Brain and Spine Institute, ICM, Paris, France**; **Inserm U 1127, CNRS UMR 7225, Sorbonne Universités, UPMC Univ Paris, Paris, France**; **Institut du Cerveau et de la Moelle épinière, ICM, Paris, France**

1795. **Parallel-Plate Waveguide for Subject-Insensitive RF Transmission**  
**Haif Lu**, **Shumin Wang**  
1Auburn University, Auburn, AL, United States

1796. **Improvement of Signal-To-Noise Ratio Using Graphene-Based Surface RF Coils on 3T MRI**  
**Hsuan-Han Chiang**, **Ming-Yye Chen**, **Chien-Cheng Kuo**, **You-Yin Chen**, **Changwei W. Wu**, **Li-Wei Kuo**  
1Institute of Biomedical Engineering and Nanomedicine, National Health Research Institutes, Miaoli County, Taiwan; **Graduate Institute of Biomedical Engineering/Thin Film Technology Center, National Central University, Taoyuan County, Taiwan**; **Department of Electrical Engineering, National Yang-Ming University, Taipei, Taiwan**; **Graduate Institute of Biomedical Engineering, National Central University, Taoyuan County, Taiwan**

1797. **MEMS Reconfigurable Coils**  
**Selaka B. Bulumulla**, **Eric Fiveland**, **Keith Park**, **Joseph Iannotti**  
1GE Global Research, Niskayuna, NY, United States

1798. **Self-Selecting, Cable-Free MRI RF Coils**  
**Oliver Heid**, **Jürgen Heller**, **Yong Wu**, **Xiaoyu Yang**, **Hiroyuki Fujita**  
1CT NTF HTC, Siemens AG, Erlangen, Bavaria, Germany; **Quality Electrodynamics, Mayfield Village, OH, United States**

1799. **B1+, SAR, and Temperature Distributions in the Breast with Different Tissue Ratio: FDTD Simulations and Experimental RF Field and Temperature Measurements at 7T**  
**Jung-Hwan Kim**, **Narayan Krishnamurthi**, **Yujuan Zhao**, **Tiejun Zhao**, **Kyongtae Ty Bae**, **Tamer Ibrahim**  
1Bioengineering, University of Pittsburgh, Pittsburgh, PA, United States; **Radiology, University of Pittsburgh, Pittsburgh, PA, United States**; **Siemens Medical Solution USA, Inc, Pittsburgh, PA, United States**

1800. **Numerical Comparison of a Dedicated Paediatric Radiofrequency Array with Existing Adult Coil Designs**  
**Gemma R. Cook**, **Martin J. Graves**, **Fraser J. Robb**, **David J. Lomas**  
1Department of Radiology, University of Cambridge, Addenbrooke's Hospital, Cambridge, United Kingdom; **MRIS, Cambridge University Hospitals NHS Foundation Trust, Addenbrooke's Hospital, Cambridge, United Kingdom**; **GE Healthcare Coils, Aurora, OH, United States**

1801. **7T Head Coil with Two Independent T/R Channels**  
**Zhiyong Zhai**, **Michael Morick**  
1Philips Healthcare, Cleveland, OH, United States

1802. **Multi-Channel MOSFET Amplifiers for Parallel Excitation in 7T Animal MRI System**  
**Yizhe Zhang**, **Yan Liu**, **Bingyao Sun**, **Xiaoliang Zhang**, **Xiaohua Jiang**
1803. Balanced Feed Lines with Bridged Shield Gaps for RF Coil Arrays
Roland Müller1, Mikhail Kozlov1, Harald E. Möller1
1Max Planck Institute for Human Cognitive and Brain Sciences, Leipzig, Saxony, Germany

1804. Characterization of B0 and B1 Maps in 3D Printer Materials at 9.4T
Hedok Lee1, 2, Andrew Ravin1
1Anesthesiology, State University of New York at Stony Brook, Stony Brook, NY, United States; 2Radiology, State University of New York at Stony Brook, Stony Brook, NY, United States

1805. Modular Extensions to MRI Systems Architecture with Example Application of Pulse Sequence Independent Real-Time Scan Plane Control
J. Andrew Derbyshire1, Peter A. Bandettini1
1fMRI Core, National Institute of Mental Health, NIH, Bethesda, MD, United States

1806. Impact of Matching Capacitors in SAR Evaluation for a 7T Endo-Rectal Coil
Jinfeng Tian1, Lance Delabarre1, Greg Metzger1, J. Thomas Vaughan1
1U. of Minnesota, Minneapolis, MN, United States

1807. On the Electrodynamic Constraints and Antenna Array Design for Human In Vivo MR Up to 70 Tesla and EPR Up to 3GHz
Lukas Winter1, Thoralf Niendorf1, 2
1Berlin Ultrahigh Field Facility (B.U.F.F.), Max-Delbrück Center for Molecular Medicine, Berlin, Germany; 2Experimental and Clinical Research Center (ECRC), a joint cooperation between the Charité and the Max-Delbrueck Center for Molecular Medicine, Berlin, Germany

1808. Hybrid Monopole/loop Coil Array for Human Head Parallel MR Imaging at 7T
Xinqiang Yan1, 2, Xiaoliang Zhang1, Long Wei1, Yuqian Liu1, Rong Xue1
1State Key Laboratory of Brain and Cognitive Science, Beijing MRI Center for Brain Research, Institute of Biophysics, Chinese Academy of Sciences, Beijing, China; 2Key Laboratory of Nuclear Analysis Techniques, Institute of High Energy Physics, Chinese Academy of Sciences, Beijing, China; 3Department of Radiology and Biomedical Imaging, University of California San Francisco and UCSF/UC Berkeley Joint Graduate Group in Bioengineering, San Francisco, CA, United States

1809. Geometry Optimization of 7T Dual-Row Transmit Arrays
Mikhail Kozlov1, Roland Müller1, Harald Möller1
1MPI Leipzig, Leipzig, Saxony, Germany

1810. Impact of Different Meander Sizes on the RF Transmit Performance and Decoupling of Micro Strip Line Elements at 7T
Stefan H. G. Rietsch1, 2, Harald H. Quick1, 2, Stephan Orzada1
1Erwin L. Hahn Institute for MR Imaging, Essen, Germany; 2High Field and Hybrid MR Imaging, University Hospital Essen, Essen, Germany

1811. 2nd Prototype of an Automatic Tune and Match RF Transceive Coil: Design and Evaluation
Sung-Min Sohn1, Lance Delabarre1, Anand Gopinath2, J. Thomas Vaughan1, 2
1Center for Magnetic Resonance Research, University of Minnesota, Minneapolis, MN, United States; 2Department of Electrical and Computer Science Engineering, University of Minnesota, MN, United States
1812. RF Instrumentation for Same-Breath Triple-Nuclear Lung MR Imaging of $^1$H and Hyperpolarized $^3$He and $^{129}$Xe at 1.5T
Madhwesha Rao¹, Juan Parra-Robles¹, Helen Marshall¹, Neil Stewart¹, Guilhem Collier¹, Jim Wild¹
¹University of Sheffield, Sheffield, South Yorkshire, United Kingdom

1813. Investigation of Flexible Transmit/Receive Coil Concepts on B1+ Performance at 3T
Christoph Leusser¹, Christian Findeklee¹, Peter Vernickel¹, Kay Nehrke¹, Peter Börnert¹
¹Philips GmbH Innovative Technologies, Research Laboratories, Hamburg, Germany

1814. Novel Splittable N-Tx/2N-Rx Transceiver Phased Array to Optimize Both SNR and Transmit Efficiency at 9.4 T
Nikolai I. Avdievich¹, Ioannis A. Giapitzakis¹, Anke Henning¹, ²
¹Max Planck Institute for Biological Cybernetics, Tübingen, Germany; ²Institute for Biomedical Engineering, UZH and ETH Zurich, Zurich, Switzerland

1815. An Interface to Connect a 16-Channel Transmit Array to an 8-Channel Parallel Transmit System
Shajan G¹, Jens Hoffmann¹, Klaus Scheffler¹, ², Rolf Pohmann¹
¹Max Planck Institute for Biological Cybernetics, Tuebingen, Baden Wuerttemberg, Germany; ²Department of Biomedical Magnetic Resonance, University Hospital, Tuebingen, Baden Wuerttemberg, Germany

1816. An On-Coil Current-Source Amplifier with Integrated Real-Time Optical Monitoring of B1 Amplitude and Phase
Natalia Gudino¹, Qi Duan¹, Jacco A. de Zwart¹, Joe Murphy-Boesch¹, Peter van Gelderen¹, Jeff H. Duyn¹
¹Advanced MRI section, LFMI, NINDS, National Institutes of Health, Bethesda, MD, United States

1817. On-Coil Power Monitor with a High Directivity Coupler
Sung-Min Sohn¹, Anand Gopinath², J. Thomas Vaughan¹, ²
¹Center for Magnetic Resonance Research, University of Minnesota, Minneapolis, MN, United States; ²Department of Electrical and Computer Science Engineering, University of Minnesota, Minneapolis, MN, United States

1818. A Digital Power Amplifier for 1.5 T
Redi Poni¹, ², Taner Demir¹, ², Ergin Atalar, ²
¹Electrical and Electronics Engineering, Bilkent University, Ankara, Turkey; ²UMRAM, Ankara, Turkey

1819. Optimization of Parallel RF Transmission Enabled by Concurrent Recording of RF and Gradient Fields
Mustafa Cavusoglu¹, Benjamin E. Dietrich¹, David O. Brunner¹, Klaas P. Pruessmann¹
¹Biomedical Engineering, ETH Zurich, Zurich, Switzerland

1820. Prediction of RF Preamplifier Noise Temperature Variations in a Magnetic Field
Cameron M. Hough¹, Russell L. Lagore¹, Cecilia Possanzini¹, Nicola De Zanche¹
¹Department of Oncology, University of Alberta, Edmonton, Alberta, Canada; ²Center for Magnetic Resonance Research, University of Minnesota, Minneapolis, MN, United States; ³Philips Healthcare, Best, Netherlands

1821. An Integrated Negative Resistance Current Amplifier to Enhance the Sensitivity of a Weakly Coupled Local Detector
Chunqi Qian¹, Qi Duan¹, Stephen Dodd¹, Alan Koretsky¹, Joseph Murphy-Boesch¹
¹NIH, Bethesda, MD, United States
1822. The RTL-SDR USB Dongle: A Versatile Tool in the RF Lab
Roland Müller1, Torsten Schlumm1, André Pampel1, Harald E. Möller1
1Max Planck Institute for Human Cognitive and Brain Sciences, Leipzig, Saxony, Germany

1823. Converting Digital MRI Receivers Built for 1.5T Into 7T Receivers Using Surface Acoustic Wave Filters
Mark Gosselink2, Andrea Anzellotti2, Giel Mens2, Marco Boutelje2, Bart Voermans2, Hans Hoogduin1, Peter R. Luijten1, Cecilia Possanzini3, Dennis W.J. Klop1
1University Medical Center Utrecht, Utrecht, Netherlands; 2Philips Healthcare, Best, Netherlands

1824. High Performance Probe for In Vivo Overhauser MRI
David E. J. Waddington1, 2, Mathieu Sarracanie1, 2, Najat Salameh1, 3, Matthew S. Rosen1, 3
1MGH/A.A. Martinos Center for Biomedical Imaging, Charlestown, MA, United States; 2ARC Centre of Excellence for Engineered Quantum Systems, School of Physics, University of Sydney, Sydney, NSW, Australia; 3Department of Physics, Harvard University, Cambridge, MA, United States

1825. Quadrifilar Helical Antenna as a Whole-Body Traveling-Wave RF Coil for 3T and 7T MRI
Branislav M. Notaros1, Milan M. Ilic1, Alexey A. Tonyushkin1, Nada J. Sekeljic1, Pranav Athalye1
1Department of Electrical and Computer Engineering, Colorado State University, Fort Collins, CO, United States; 2Radiology Dept., Massachusetts General Hospital, Harvard Medical School, Boston, MA, United States

1826. Feasibility of a New Actuator Type for Magnetic Resonance Elastography Based on Transient Air Pressure Impulses
Jürgen Braut1, Sebastian Hirsch2, Tassilo Heinze3, Ingo Sack2
1Department of Medical Informatics, Charité - Universitätsmedizin Berlin, Berlin, Germany; 2Department of Radiology, Charité - Universitätsmedizin Berlin, Berlin, Germany; 3SPL Spindel und Präzisionslager GmbH, Sachsen, Germany

Traditional Poster
MR-PET, Gradients & Other Hardware
Exhibition Hall Tuesday 16:00-18:00

1827. Incorporation of TOF Information Reduces Artifacts in Simultaneous TOF PET/MR Scanning
Edwin G.W. ter Voo1, Helen Davison,1,2, Felipe de Galiza Barbosa1, 3, Martin Huellner1, 4, Patrick Veit-Haibach1, 3, Gaspar Delso3
1Department of Medical Imaging, Division of Nuclear Medicine, University Hospital Zurich, Zurich, Switzerland; 2Department of Medical Physics, Royal United Hospitals Bath NHS Foundation Trust, Bath, Somerset, United Kingdom; 3Department of Diagnostic and Interventional Radiology, University Hospital Zurich, Zurich, Switzerland; 4Department of Medical Imaging, Clinic of Neuroradiology, University Hospital Zurich, Zurich, Switzerland; 5GE Healthcare, Waukesha, WI, United States

1828. Integrated PET/MR: Attenuation Correction and Implementation of a 16-Channel RF-Coil for Breast Imaging
Mark Oehmigen1, Maike Lindemann1, Titus Lanz1, Sonja Kinner1, Harald H. Quick1, 4
1High Field and Hybrid MR Imaging, University Hospital Essen, Essen, Germany; 2Rapid Biomedical GmbH, Rimpar, Germany; 3Institute for Diagnostic and Interventional Radiology and Neuroradiology, University Hospital Essen, Essen, Germany; 4Erwin L. Hahn Institute for MR Imaging, University Duisburg-Essen, Essen, Germany

1829. Hybrid PEM/MRI, a New Approach for High Resolution Breast Imaging
Farouk Nouizi1, Jaedu Cho1, Alex Luk, Edward anashkin2, Pavel Stepanov2, Val zavarzin2, Irving weinberg2, Lydia Min-Ying Su1, Gultekin Gulsen, Orhan Nalcioglu1
1Radiology, University of California Irvine, Irvine, CA, United States; 2Weinberg Medical Physics, LLC, Bethesda, MD, United States

1830. Novel Coil Design for a Simultaneous PET-MR System
Saikat Saha1, Kyle Reiser2
1University of California Irvine, Irvine, CA, United States; 2Weinberg Medical Physics, LLC, Bethesda, MD, United States
1831. Investigation of Acoustic Noise Reduction Method for MRI-LINAC Hybrid System
Yaohui Wang1, Feng Liu1, Ewald Weber1, Stuart Crozier1
1School of Information Technology and Electrical Engineering, The University of Queensland, Brisbane, Queensland, Australia

1832. Novel Approaches in the Coupled Circuit Simulation of Eddy Currents Induced by Cylindrical Gradient Coils
Md. Shahadat Hossain Akram1, Koki Matsuzawa1, Yasuhiko Terada1, Katsumi Kose1
1Institute of Applied Physics, University of Tsukuba, Tsukuba, Ibaraki, Japan

1833. A Novel Acoustic Quiet Coil for Neonatal MRI System
Christopher M. Ireland1, 2, Randy O. Giaquinto1, Jean A. Tkach1, Ronald G. Pratt1, Charles L. Dumoulin1
1Department of Biomedical Engineering, University of Cincinnati, Cincinnati, OH, United States; 2Imaging Research Center, Cincinnati Children's Hospital Medical Center, Cincinnati, OH, United States

1834. A Straightforward Direct Optimization Method for Designing Biplanar Gradient Coils Using Artificial Bee Colony Algorithm
Yasuhiko Terada1, Kazunori Ishizawa1, Katsumi Kose1
1Institute of Applied Physics, University of Tsukuba, Tsukuba, Ibaraki, Japan

1835. Impact of Gradient Nonlinearity on the Accuracy of NMR Field Camera Readouts
Paul Chang1, 2, Martin Eschelbach1, Roland Syha1, Klaus Scheffler1, Anke Henning1, 4
1Max Planck Institute for Biological Cybernetics, Tuebingen, Baden-Wuerttemberg, Germany; 2Graduate School of Neural & Behavioural Sciences, University of Tuebingen, Tuebingen, Baden-Wuerttemberg, Germany; 3Diagnostic and Interventional Radiology, University Hospital Tuebingen, Tuebingen, Baden-Wuerttemberg, Germany; 4Institute for Biomedical Engineering, UZH and ETH Zurich, Zurich, Switzerland

1836. Optimization of Matrix Gradient Coil Switching for a Limited Number of Amplifiers
Stefan Kroboth1, Kelvin Layton1, Feng Jia1, Sebastian Littin1, Huijun Yu1, Maxim Zaitsev1
1Medical Physics, University Medical Center Freiburg, Freiburg, BW, Germany

1837. Comparison of Gradient Induced Heating Around an Active Implantable Medical Device
Shogo Horinouchi1, Etsuko Kumamoto2, Kagayaki Kuroda3, 4
1Graduate School of System Informatics, Kobe University, Kobe, Hyogo, Japan; 2Information Science and Technology Center, Kobe University, Kobe, Japan; 3Graduate School of Engineering, Tokai University, Hiratsuka, Japan; 4Center for Frontier Medical Engineering, Chiba University, Chiba, Japan

1838. Sub-Ppb/K Temperature Drift of NMR Field Probes Using Intrinsic Magnetostatic Compensation
Simon Gross1, Christoph Barmel1, 2, Klaus Paul Pruessmann1
1Institute for Biomedical Engineering, University and ETH Zurich, Zurich, Switzerland; 2Skope Magnetic Resonance Technologies, Zurich, Switzerland

1839. Design of Sample-Immersed Microcoil (SIM) Probes and Their Magnetic Field Monitoring Capabilities
Eric Michel1, Daniel Hernandez1, Min Young Cho1, Soo Yeol Lee1
1Kyung Hee University, Suwon, Gyeonggi-Do, Korea

1840. Assessment of the Aging Human Skin with a Unilateral NMR Scanner
Elad Bergman1, Yifat Sarda1, Noa Ritz2, Edmond Sabo2, Reuven Bergman3, Uri Nevo1
1GE Healthcare, Waukesha, WI, United States; 2GE Healthcare, WI, United States
1841. **A Novel 31-Channel Imaging Grid Coil**  
*Wolfgang Loew1, Nathan Lamba2, Randy Giaquinto1, Matthew Lanier1, Lacey Sickinger1, Brynne Williams1, Christopher Ireland1, Yu Li1, Charles Dumoulin1*  
1Imaging Research Center, Cincinnati Children’s Hospital Medical Center, Cincinnati, OH, United States; 2Ohio State University, OH, United States

We present a novel approach for detecting MR signals using a 31-channel imaging grid coil. The coil was designed and fabricated for high-resolution imaging applications. Imaging experiments were performed to evaluate the coil's performance in phantoms.

1842. **Development of a Digital MRI Console Using General Purpose Digital Instruments and Board Computers**  
*Makoto Tsuda1, Daiki Tamada1, Yasuhiko Terada1, Katsuaki Kose1*  
1University of Tsukuba, Tsukuba, Ibaraki, Japan

A digital console for a 1.5T MRI system was developed using a digital oscilloscope, an arbitrary waveform generator, and a programmable logic controller. The system was used to perform various imaging and spectroscopy experiments.

1843. **Optimizing the Current-Mode Class D (CMCD) Amplifier for Decoupling in PTX Arrays**  
*Michael Twieg1, Mark A. Griswold2*  
1Department of Electrical Engineering and Computer Science, Case Western Reserve University, Cleveland, OH, United States; 2Department of Radiology, Case Western Reserve University, Cleveland, OH, United States

Decoupling of elements in a parallel transmit array has proven to be a significant obstacle to implementing parallel transmit in MRI. This work focuses on optimizing the CMCD amplifier for decoupling in PTX arrays.

1844. **Quench Propagation Study for Magnesium Diboride (MgB2) MRI Magnets**  
*Charles Randall Poole1, Tanvir Baig2, Robert Deissler2, Robert W. Brown2, Michael A. Martens1*  
1Department of Physics, Case Western Reserve University, Cleveland, OH, United States

Magnesium diboride (MgB2) has been considered for use in conduction cooled MRI magnets due to its high superconducting transition temperature. This work presents a study of quench propagation in MgB2 magnets.

1845. **Bias Field Correction on 7T Using Novel 3D Edge Detector and High-Order Legendre Polynomial Approximation.**  
*Artem Mikheev1, Henry Rusinek1*  
1Radiology, NYU Langone Medical Center, New York, NY, United States

A new algorithm for bias field correction at 7T was presented, along with a software implementation. The algorithm achieves high correction quality at 7T, and a new methodology for bias correction evaluation was proposed.

1846. **Magnetohydrodynamic Design of Radiofrequency Powered Microscopic Endocapsules in 3T MRI**  
*T. Stan Gregory1, Kevin J. Wu1, Jasper Yu1, James Brent Box1, Rui Cheng1, Leidong Mao1, Guoyi Tang2, Zion Tsz Ho Tse2*  
1College of Engineering, The University of Georgia, Athens, GA, United States; 2Advanced Materials Institute, Tsinghua University, Shenzhen, Guangdong, China

The development of an MRI-compatible actuator based on Magnetohydrodynamic propulsion was presented, potentially allowing for simultaneous endocapsule control during MR imaging sequences.

1847. **Use of a NURBS-Based, Full-Body Anatomy and FEA Model to Evaluate RF-Induced Heating During MR Imaging**  
*Alan Leewood1, Sharath Gopal1, Kerim Genc2, Steve Cockram3, Philippe Young4, Jeff Crompton4, Josh Thomas4*  
1MED Institute, Inc., West Lafayette, IN, United States; 2Simpleware Ltd, VA, United States; 3Simpleware Ltd, Devon, United Kingdom; 4AltaSim Technologies, LLC, OH, United States

A full-body human anatomy and multiphysics finite element analysis (FEA) model was developed to evaluate RF-induced heating in MR imaging. The results will be extended to include passive implants (e.g. stents and orthopedic devices) into the anatomy.
1850. On the Subjective Acceptance During Cardiovascular Magnetic Resonance Imaging at 7.0 Tesla
Sabrina Klix1, Antje Els1, Katharina Paed1, Andreas Graesel1, Celal Oezderem1, Oliver Weinberger1, Lukas Winter1, Christof Thalhammer1, Till Huelnhagen1, Jan Rieger1, Heidrun Mehling2, Jeanette Schulz-Menger2, 3, Thoralf Niendorf2, 4
1Berlin Ultrahigh Field Facility (B.U.F.F.), Max-Delbrück Center for Molecular Medicine, Berlin, Germany; 2Experimental and Clinical Research Center (ECRC), a joint cooperation between the Charité and the Max-Delbrueck Center for Molecular Medicine, Berlin, Germany; 3Physikalisch Technische Bundesanstalt (PTB), Braunschweig and Berlin, Germany

1851. Derived MRI Induced Maximum Torque (ASTM F2213) from Measured MRI Induced Maximum Force (Per ASTM F2052)
Richard Williamson1, Michael Childers2, Tusshar Dharampal1, Shiloh Sison1, Amber Durica1, Gabriel Mouchawar1, John Nyenhuis2
1St. Jude Medical, Sylmar, CA, United States; 2Purdue University, West Lafayette, IN, United States

1852. RF Current Measurements in Implanted Wires in Phantoms by Fiber Optic Current Clamps
Gerd Weidemann1, Frank Seifert2, Werner Hoffmann2, Bernd Ittermann2
1Physikalisch-Technische Bundesanstalt, Braunschweig and Berlin, Germany; 2Physikalisch-Technische Bundesanstalt, Braunschweig and Berlin, Germany

1853. Quantitative MR System Evaluation Using the KRMP-4 Phantom - Comparison with the ACR Phantom
Jong-Min Kim1, Jang-Gyu Cha2, Ji-Young Hwang3, Seung-Eun Jung4, Hyun-Kyoong Lim1, Do-wan Kim1, Kwang-Su Kim1, Sung-Jin Kang1, Hun-Joong Kim1, Suchit Kumar1, Junyong Park1, Chulhyun Lee1, Chang-Hyun Oh1
1Electronic and information engineering, Korea University, Seongbuk-Gu, Seoul, Korea; 2Department of Radiology, Soonchunhyang University Bucheon Hospital, Seoul, Korea; 3Department of Radiology, Ewha Women's University Mokdong Hospital, Seoul, Korea; 4Department of Radiology, The Catholic University of Korea St. Mary's Hospital, Seoul, Korea; 5Korea Research Institute of Standards and Science, Daejeon, Korea; 6Korean Institute of Accreditation of Medical Imaging, Seoul, Korea; 7The MRI Team, Korea Basic Science Institute, Chungcheongbuk-do, Korea

1854. RF Heating on a Vagus Nerve Stimulation Device During Head Imaging in a 3T Transmit Body Coil Using a Numerical Analysis
Melina Bouldi1, 2, Olivier David1, 2, Stephan Chabardes3, 4, Alexandre Krainik2, 4, Jan M. Wyrnking1, 3
1Université Grenoble Alpes, Grenoble Institut des Neurosciences, Grenoble, Rhône-Alpes, France; 2Université Grenoble Alpes, Grenoble, Rhône-Alpes, France; 3CHU de Grenoble, Grenoble, Rhône-Alpes, France; 4CHU Grenoble, Rhône-Alpes, France

1855. Local SAR Estimation Via Electrical Properties Tomography: Physical Phantom Validations at 7T
Xiaotong Zhang1, Jiaen Liu1, Pierre-Francois Van de Moortele2, Bin He1, 3
1Department of Biomedical Engineering, University of Minnesota, Minneapolis, MN, United States; 2Center for Magnetic Resonance Research, University of Minnesota, Minneapolis, MN, United States; 3Institute for Engineering in Medicine, University of Minnesota, Minneapolis, MN, United States

1856. Retrospective Analysis of Data in RF Heating Tests of Small Passive Medical Implants
Ting Song1, Maria Ida Iacono1, Leonardo M. Angelone1, Sunder Rajan1
1Center for Devices and Radiological Health, U.S. Food and Drug Administration, Silver Spring, MD, United States
1857. Heating of Lead Electrodes Disconnected from Sacral Stimulator During Routine Lumbar and Pelvic MRI at 1.5T with Receive-Only Coil

Pallab K. Bhattacharyya\textsuperscript{1}, Howard Goldman\textsuperscript{2}, Mark J. Lowe\textsuperscript{1}, Adrienne Quirouet\textsuperscript{2}, Stephen E. Jones\textsuperscript{1}

\textsuperscript{1}Imaging Institute, Cleveland Clinic, Cleveland, OH, United States; \textsuperscript{2}Glickman Urological Institute, Cleveland Clinic, Cleveland, OH, United States

1858. Quantification of Ultrasonic Motor Behaviour in MRI

Peyman Shokrollahi\textsuperscript{4}, Wendong Wang\textsuperscript{2}, Adam C. Waspe\textsuperscript{3}, James M. Drake\textsuperscript{4}, Andrew A. Goldenberg\textsuperscript{4}

\textsuperscript{1}Institute of Biomaterials and Biomedical Engineering, University of Toronto, Toronto, ON, Canada; \textsuperscript{2}School of Mechanical Engineering, Northwestern Polytechnical University, Xi'an, Shaanxi, China; \textsuperscript{3}Hospital for Sick Children, Toronto, ON, Canada

1859. Optical E-Field Measurements in the MR Environment with High Spatial Resolution

Simon Reij\textsuperscript{1}, Andreas Bitzer\textsuperscript{2}, Michael Bock\textsuperscript{2}

\textsuperscript{1}Radiology - Medical Physics, University Medical Center Freiburg, Freiburg, Germany; \textsuperscript{2}Biolab Technology AG, Zürich, Switzerland

1860. Correlation of Improved Local SAR Deposition with Reduced Shading Close to Hip Implants

Thomas Lottner\textsuperscript{1}, Mathias Nittka\textsuperscript{1}, Theresa Bachschmidt\textsuperscript{1}, Heiko Meyer\textsuperscript{1}, Wolfgang Nitz\textsuperscript{1,2}

\textsuperscript{1}Siemens Healthcare, Erlangen, Germany; \textsuperscript{2}University of Regensburg, Regensburg, Germany; \textsuperscript{3}Experimental Physics 5, University of Würzburg, Würzburg, Germany

1861. MR Safety Investigation of RF Heating of a Generic Wire-Shaped Device Immersed to a Human Body Simulating Medium at 63.58 MHz (1.5 T MRI-Equivalent)

Mahdi Abbasi\textsuperscript{1},\textsuperscript{2}, Gregor Schaefer\textsuperscript{1}, Amin Douiri\textsuperscript{1}, Daniel Erni\textsuperscript{2}

\textsuperscript{1}MR:comp GmbH, Gelsenkirchen, NRW, Germany; \textsuperscript{2}General and Theoretical Electrical Engineering (ATE), University of Duisburg-Essen, Duisburg, NRW, Germany

1862. Mathematical Tools to Define SAR Margins for Phased Array Coil In-Vivo Applications Given E-Field Uncertainties

Guillaume Ferrand\textsuperscript{4}, Michel Luong\textsuperscript{4}, Alexis Amadon\textsuperscript{4}, Nicolas Boulant\textsuperscript{4}

\textsuperscript{1}DSM/IRFU/SACM, CEA-Saclay, Gif-sur-Yvette, France; \textsuperscript{2}DSV/I2BM/Neurospin, CEA-Saclay, Gif-sur-Yvette, France

1863. Effect of Anisotropy on the Accuracy of Quantitative Conductivity Imaging. a Numerical Study

Naňha M H Elsad\textsuperscript{1}, Adrian I. Nachman\textsuperscript{2,3}, Weiijing Ma\textsuperscript{2}, Tim P. DeMonte\textsuperscript{4}, Michael L G Joy,\textsuperscript{4,12}

\textsuperscript{1}IBBME, University of Toronto, Toronto, Ontario, Canada; \textsuperscript{2}Electrical and Computer Engineering, University of Toronto, Toronto, Ontario, Canada; \textsuperscript{3}Department of Mathematics, University of Toronto, Toronto, Ontario, Canada; \textsuperscript{4}FieldMetrica Inc., Toronto, Ontario, Canada

1864. RF Safety Assessment of Simultaneous EEG-fMRI at 7T MR

Özlem İpek\textsuperscript{1}, Joao Jorge\textsuperscript{1,2}, Frederic Grouiller\textsuperscript{3}, Wietske van der Zwaag\textsuperscript{1}, Lijing Xin\textsuperscript{2}, Rolf Gruetter\textsuperscript{1,5}

\textsuperscript{1}CIBM-AIT, EPFL, Lausanne, Vaud, Switzerland; \textsuperscript{2}LIFMET, EPFL, Lausanne, Vaud, Switzerland; \textsuperscript{3}Bioengineering, University of Lisbon, Lisbon, Portugal; \textsuperscript{4}CIBM, Geneva University Hospital, Geneva, Switzerland; \textsuperscript{5}Radiology, University of Lausanne, Lausanne, Vaud, Switzerland

1865. A Method for the Measurement of the RF Power Radiated by 7T Transmit Coils

Gerd Weidemann\textsuperscript{1}, Frank Seifert\textsuperscript{1}, Werner Hoffmann\textsuperscript{1}, Harald Pfeiffer\textsuperscript{1}, Bernd Ittermann\textsuperscript{1}

\textsuperscript{1}Physikalisch-Technische Bundesanstalt, Braunschweig und Berlin, Germany

1866. Ultra High Resolution 3D Gradient Recalled Echo with Reduced FOV Spiral Selective Excitation.

Malek I. Makki\textsuperscript{1}

\textsuperscript{1}MRI Research, University Children Hospital Zurich, Zurich, Switzerland
1867. Hearing Loss in Dogs After Routine Neurological MRIs
Rebecca Krimins1, 2, Larry Gainsburg3, Amanda Laufer4, Meiyappan Solaiyappan2, Dara Kraitchman1, 2
1Center for Image-Guided Animal Therapy, Johns Hopkins University, Baltimore, MD, United States; 2Russell H. Morgan Department of Radiology and Radiological Science, Johns Hopkins University, Baltimore, MD, United States; 3Mid-Atlantic Veterinary Neurology and Neurosurgery, Catonsville, MD, United States; 4Department of Otolaryngology and Center for Hearing and Balance, Johns Hopkins University, Baltimore, MD, United States

1868. Improved MR Thermometry in the Presence of Non-Water Proton Signals
Jacco A. de Zwart1, Peter van Gelderen2, Qi Duan1, Natalia Giudino1, Cem M. Deniz2, Leeor Alon1, Jeff H. Duyn1
1Advanced MRI, LFMI, NINDS, National Institutes of Health, Bethesda, MD, United States; 2Dept. of Radiology & Sackler Institute of Graduate Biomedical Sciences, NYU School of Medicine, New York, NY, United States

1869. Are MR Manufacturer-Reported Specific Absorption Rate Values on Clinical MRI Systems Correct?
Youngseob Seo1, Min-Jae Kang1
1Center for Medical Metrology, Korea Research Institute of Standards and Science, Daejeon, Korea

1870. Spatially Localized Tissue Fingerprinting (STIF)
Shivapravas Ashok Chikop1, Antharikshanagar Bellappa Sachin Anchan1, Arush Arun Hommedevasthana1, Shaikh Imam1, Sairam Geethanath1
1Medical Imaging Research Center, Dayananda Sagar Institutions, Bangalore, Karnataka, India

1871. Reducing the Peak SAR Surrounding Implanted Lead Tips in 3T MRI Using a High-Dielectric Helmet Former: A Numerical Feasibility Study
Zidan Yu1, Sherman Xuegang Xin1, 2, Christopher Collins3
1Bernard and Irene Schwartz Center for Biomedical Imaging, New York University School of Medicine, New York, United States; 2Biomedical Engineering, Southern Medical University, Guangzhou, Guangdong, China

1872. Globally Applicable MR Safety Program for Medical Students
Steffen Sammet1, 2, Christina Louise Sammet3, 4
1Department of Radiology, University of Chicago Medical Center, Chicago, IL, United States; 2Department of Radiology, The Ohio State University, Columbus, OH, United States; 3Department of Radiology, Ann & Robert H. Lurie Children’s Hospital of Chicago, Chicago, IL, United States; 4Department of Radiology, Northwestern University, Chicago, IL, United States

1873. Faster B1 Field and SAR Estimation in Parallel Transmit Arrays Without Tuning Using Voltage Sources
Hongbue Jeong1, Konstantinos Papoutsis1, Peter Jezzard4, Aaron T. Hess2
1FMRIB Centre, University of Oxford, Oxford, Oxfordshire, United Kingdom; 2Department of Cardiovascular Medicine, University of Oxford, Oxford, Oxfordshire, United Kingdom

1874. MRI in Patients with Cardiac Implantable Electronic Devices, Our Institutional Experience
Iva Petkovska1, Bobby Kalb1, John Hur1, Peter Ott1, Kusum Lata1, Farinhta Dherange2, Isabel Olivd 1, Shannon Urbina1, Hina Arif1, Surya Chundrud, James Costello1, Diego Martin1
1Medical Imaging, University of Arizona, Tucson, AZ, United States; 2Serar Heart Center, University of Arizona, Tucson, AZ, United States

1875. Is Pacemaker Lead-Tip Heating Greater at 1.5T or 3T?
Deborah Anne Langman1, Eric Aliotta1, 2, Dan Margolis1, J. Paul Finn1, 2, Daniel B. Ennis1, 2
1Radiological Sciences, UCLA, Los Angeles, CA, United States; 2Biomedical Physics IDP, UCLA, Los Angeles, CA, United States
1876. RF Safety Evaluation of a Breast Expander Implant at 3.0T  
BuSik Park1, Amir Razjouyan2, Leonardo Angelone2, Sunder s. Rajan1  
1FDA/CBER, Silver Spring, MD, United States; 2FDA/CDRH/OSEL, MD, United States; 3Div. of Biomedical Physics, FDA/CDRH, Silver Spring, MD, United States

1877. Roemer-Optimal Reconstruction of Hyperpolarized 13C Cardiac Images with an 8 Channel Coll  
William Dominguez-Viqueira1, Benjamin Geraghty2, Justin Y. C. Lau3, Albert P. Chen4, Charles H. Cunningham2, 5  
1Imaging Research, Sunnybrook Health Sciences Centre, Toronto, Ontario, Canada; 2Imaging Research, Sunnybrook Health Sciences Centre, Toronto, Ontario, Canada; 3Medical Biophysics, University of Toronto, Toronto, Ontario, Canada; 4GE Healthcare, Toronto, Ontario, Canada; 5Medical Biophysics, University of Toronto, Toronto, Ontario, Canada

1878. 19F-Hyperpolarized Structures as Markers for the Improved Detection of Amyloid Plaques  
Ute Bommerich1, Thomas Trantzschel1, Markus Plaumann1, Denise Lego2, Gerd Buntkowski3, Grit Sauer3, Torsten Gutmann3, Joachim Bargon4, Johannes Bernarding1  
1Institute for Biometrics and Medical Informatics, Otto von Guericke University Magdeburg, Magdeburg, Saxony-Anhalt, Germany; 2Special Lab Non-Invasive Brain Imaging, Leibniz Institute for Neurobiology, Magdeburg, Saxony-Anhalt, Germany; 3Eduard-Zintl-Institute for Inorganic Chemistry, Technical University Darmstadt, Darmstadt, Hesse, Germany; 4Institute for Physical and Theoretical Chemistry, University Bonn, North Rhine-Westphalia, Germany

1879. PHIP Hyperpolarization of Linear and Branched Fluorinated Alkanes as Well as Their Interaction with Cyclodextrins  
Markus Plaumann1, Thomas Trantzschel1, Jan Wüstemann1, Denise Lego2, Grit Sauer3, Torsten Gutmann3, Joachim Bargon4, Gerd Buntkowski3, Johannes Bernarding1, Ute Bommerich1, 2  
1Department for Biometrics and Medical Informatics, Otto von Guericke University Magdeburg, Magdeburg, Saxony-Anhalt, Germany; 2Special Lab Non-Invasive Brain Imaging, Leibniz Institute for Neurobiology, Magdeburg, Saxony-Anhalt, Germany; 3Eduard-Zintl-Institute for Inorganic Chemistry, Technical University Darmstadt, Darmstadt, Hesse, Germany; 4Institute of Physical and Theoretical Chemistry, University Bonn, North Rhine-Westphalia, Germany

1880. Speeding Up Dynamic Spiral Chemical Shift Imaging with Incoherent Sampling and Low-Rank Matrix Completion: Application in Hyperpolarized 13C Metabolic Imaging  
Stephen DeVience1, Dirk Mayer1  
1Diagnostic Radiology, University of Maryland School of Medicine, Baltimore, MD, United States

1881. The Effects of Acute and Chronic Up-Regulation of Pyruvate Dehydrogenase on Myocardial Metabolism  
Lucia F. Giles1, Vicky Ball1, Damian J. Tyler1  
1Department of Physiology, Anatomy and Genetics, University of Oxford, Oxford, Oxfordshire, United Kingdom

1882. Generation of Hyperpolarized Bicarbonate in Large Concentrations to Image PH  
Rajat K. Ghosh1, Mehrdad Pourfathi1, Stephen J. Kadlecsek1, Rahim R. Rizi1  
1Radiology, University of Pennsylvania, Philadelphia, PA, United States

Karlos X. Moreno1, Santhosh Satapati1, Ralph J. DeBerardinis2, Shawn C. Burgess2, Craig R. Malloy1, Matthew E. Merritt1  
1Advanced Imaging Research Center, UT Southwestern Medical Center, Dallas, TX, United States; 2Children's Medical Center Research Institute, UT Southwestern Medical Center, Dallas, TX, United States
1884. **Partial-Volume Correction for Metabolic Imaging with Hyperpolarised [1-13C]Pyruvate**
Rolf F. Schulte, Martin A. Janich, Ulrich Koellisch, Markus Durst, Florian Wiesinger, Markus Schweiger, Axel Haase, Marion I. Menzel

1Department of Cardiovascular Medicine, University of Oxford, Oxford, Oxfordshire, United Kingdom; 2Department of Physiology, Anatomy, and Genetics, University of Oxford, Oxford, Oxfordshire, United Kingdom; 3Department of Physics, University of Oxford, Oxford, Oxfordshire, United Kingdom

1885. **Hyperpolarized Ketone Body Metabolism in the In Vivo Rat Heart**
Angus Z. Lau, Jack J. Miller, Damian J. Tyler, Alfonso Mastropietro, Chiara Cordiglieri, Ilaria Tirotta, Francesca Baldelli Bombelli, Fulvio Baggi, Giuseppe Arif Wibowo, Jae Mo Park, Ralph Hurd, Graham F Sommer, Chaitan Khosla, Daniel M Spielman, Rolf F. Schulte, Martin A. Janich, Ulrich Koellisch, Christoffer Laustsen, Thomas S. Nørlinger, Concetta V. Gringeri, Marion I. Menzel

1Institute of Medical Engineering, Technische Universität München, Munich, Germany; 2MR Research Centre, Aarhus University, Aarhus, Denmark

1886. **Development of Hyperpolarized 13C-MRS Probes for Oxidative Stress Measurement**
Arif Wibowo, Jae Mo Park, Ralph Hurd, Graham F Sommer, Chaitan Khosla, Daniel M Spielman

1arifw@stanford.edu, Stanford, CA, United States; 2GE healthcare, CA, United States; 3Diagnostic Radiology, Stanford University, CA, United States; 4Chemistry and ChEM-H, Stanford University, CA, United States

1887. **Quantitative Analysis for Hyperpolarized 13C-Pyruvate Imaging: Comparison of Methods on a Clinical System.**
Charlie J. Daniels, Mary A. McLean, Nicholas McGlashan, Martin J. Graves, Fraser J. Robb, David J. Lomas, Rolf F. Schulte, Kevin M. Brindle, Ferdia A. Gallagher

1Department of Radiology, University of Cambridge, Cambridge, United Kingdom; 2Cancer Research UK Cambridge Institute, University of Cambridge, Cambridge, United Kingdom; 3AIRC, UT Southwestern Medical Center, Dallas, TX, United States; 4Chemical and Biomedical Engineering, University of South Florida, Tampa, FL, United States

1888. **31P Dynamic Nuclear Polarization Applied to Phosphonates for MRS/MRI Applications.**
Rohal Afzal, Gary V. Martinez, Robert J. Gillies

1Cancer Imaging and Metabolism, H.Lee Moffitt Cancer Centre, Tampa, FL, United States; 2Chemical and Biomedical Engineering, University of South Florida, Tampa, FL, United States

1889. **Hepatic Metabolism of Hyperpolarized [1-13C]Pyruvate in the Zucker Rat**
Jian-Xiong Wang, Leila Fidelino, Karlos Moreno, A. Dean Sherry, Craig Malloy, Matthew E. Merritt

1AIRC, UT Southwestern Medical Center, Dallas, TX, United States; 2Radiology, UT Southwestern Medical Center, Dallas, TX, United States; 3AIRC, UT Southwestern Medical Center, TX, United States; 4Chemistry, University of Texas at Dallas, TX, United States; 5Internal Medicine, UT Southwestern Medical Center, TX, United States; 6Radiology, UT Southwestern Medical Center, Dallas, United States

1890. **Low Cell Number Perfusion Bioreactor System for Hyperpolarized MRS in a MRI Setting**
Lotte Bonde Bertelsen, Simon Lauritsen, Christoffer Laustsen, Preben Daugaard, Xiaolu Zhang, Hans Stöckilje-Jørgensen

1The MR Research Centre, Department of Clinical Medicine, Aarhus University, Aarhus University Hospital, Aarhus, Denmark

1891. **Investigation of Metabolic Changes in STZ Induced Diabetic Rats with Hyperpolarized [1-13C]Acetate**
Ulrich Koellisch, Christoffer Laustsen, Thomas S. Nørlinger, Concetta V. Gringeri, Marion I. Menzel, Rolf F. Schulte, Axel Haase, Hans Stöckilje-Jørgensen

1Institute of Medical Engineering, Technische Universität München, Munich, Germany; 2MR Research Centre, Aarhus University, Aarhus, Denmark; 3Nuklearmedizinische Klinik und Poliklinik, Technische Universität München, Germany; 4GE Global Research, Munich, Germany

1892. **19F-MRI Applications of PERFECTA at 7T: Characterization Studies on Phantoms and on In Vitro Fibroblasts and T Cells.**
Alfonso Mastropietro, Chiara Cordiglieri, Ilaria Tirotta, Francesca Baldelli Bombelli, Fulvio Baggio, Giuseppe Resnati, Pierangelo Metrangolo, Maria Grazia Brazzone, Ilenea Zucca

1Institute of Medical Engineering, Technische Universität München, Munich, Germany; 2MR Research Centre, Aarhus University, Aarhus, Denmark; 3Nuklearmedizinische Klinik und Poliklinik, Technische Universität München, Germany; 4GE Global Research, Munich, Germany
1893. **Chemical Exchange Sensitive Spin-Lock MRI of 3-O-Methyl-D-Glucose Transport in Brain**

*Hunter Mehrens*, *Tao Jin*, *Seong-Gi Kim*.

1Radiology, University of Pittsburgh, Pittsburgh, PA, United States; 2Center for Neuroscience Imaging Research, Institute for Basic Science, SKKU, Suwon, Korea

1894. **New PARACEST MRI Contrast Agents Based on the DOTMA Scaffold**

*Mojmir Sichy*, *Alex X. Li*, *Robert Bartha*, *Robert H. E. Hudson*.

1Department of Chemistry, University of Western Ontario, London, Ontario, Canada; 2Centre for Functional and Metabolic Mapping, University of Western Ontario, London, Ontario, Canada

1895. **Enriching Fluorine Nanoparticles with Saturated Phosphoethanolamines to Improve Dendritic Cell Detection by MRI**

*Sonia Waiczies*, *Stefano Lepore*, *Min-Chi Ku*, *Helmar Waiczies*, 1, 2, *Conrad Martin*, *Susanne Drechsler*, *Karl Sydow*, *Margitta Dathe*, *Andreas Pohlmann*, *Thoralf Niendorf*.

1Berlin Ultra High Field Facility (B.U.H.F.), Max Delbrück Center for Molecular Medicine, Berlin, Germany, Germany; 2MRI.Tools GmbH, Berlin, Germany; 3Leibniz-Institut für Molekulare Pharmakologie, Berlin, Germany

1896. **Detecting Nanodiamonds with DNP**


1MGH/A.A. Martins Center for Biomedical Imaging, Charlestown, MA, United States; 2ARC Centre of Excellence for Engineered Quantum Systems, School of Physics, University of Sydney, Sydney, NSW, Australia; 3Department of Physics, Harvard University, Cambridge, MA, United States; 4Harvard-Smithsonian Center for Astrophysics, Cambridge, MA, United States

1897. **High Relaxivity MRI Contrast Agents Based on a Closo-Borane Platform**

*Shatadru Chakravarty*, 1, 2, *Lixin Ma*, *Lalit N. Goswami*, *Satish S. Jalisatgi*, *M. Frederick Hawthorne*.

1Radiology, International Institute of Nano and Molecular Medicine-University of Missouri-Columbia, Columbia, MO, United States; 2Department of Physics, Harvard University, Cambridge, MA, United States

1898. **Vesicles Assembled from New Dendrimeric Amphiphiles and Their Applicable Potential as MRI-Based Theranostic Nanocarriers**

*Miriam Filippi*, *Deysse Patrucco*, *Jonathan Martinelli*, *Lorenzo Teri*, *Mauro Botta*, *Enzo Terreno*.

1Department of Molecular Biotechnology and Health Sciences, Molecular Imaging Center, University of Turin, Turin, To, Italy; 2Department of Sciences and Technological Innovation, University of Eastern Piedmont 'A. Avogadro', Alessandria, Al, Italy; 3Center for Preclinical Imaging, University of Turin, Colleretto Giacosa, To, Italy

1899. **Improved Liposomes-Based Ca(II) Responsive MRI Contrast Agents**

*Francesca Garello*, *Sandip Vibhute*, *Serhat Gunduz*, *Nikos K. Logothetis*, *Goran Angelovski*, *Enzo Terreno*.

1University of Torino, Torino, Italy; 2Max Planck Institute for Biological Cybernetics, Tübingen, Germany

1900. **Organic Radical Contrast Agents Based on Polyacetylenes Containing 2,2,6,6-Tetramethylpiperidine 1-Oxyl (TEMPO): Targeted MR/optical Bimodal Imaging of Folate Receptor Expressing HeLa Tumors In Vitro and In Vivo**

*Lixia Huang*, *Chenggong Yan*, *Danting Cui*, *Xiang Liu*, *Xiaodan Lu*, *Yichen Yan*, *Xiangliang Tan*, *Jun Xu*, *Yingjie Mei*, *Xinwei Lu*, *Yikai Xu*, *Ruiyuan Liu*.

1Department of Medical Imaging Center, Nanfang Hospital, Southern Medical University, Guangzhou, Guangdong, China; 2Department of Medical Imaging Center, Nanfang Hospital, Southern Medical University, Guangzhou, Guangdong, China; 3School of
1901. Detection of Matrix Metalloproteinases Using an "on/off" \textsuperscript{19}F MR Probe

*Alex John Taylor*, \textsuperscript{1} *James Lee Krupa*, \textsuperscript{2} *Huw Williams*, \textsuperscript{3} *Dorothee P. Auer*, \textsuperscript{1} *Simon R. Johnson*, \textsuperscript{2} *Neil R. Thomas*, \textsuperscript{2} *Henryk Michael Faas*

\textsuperscript{1}Sir Peter Mansfield Imaging Centre, School of Medicine, University of Nottingham, Nottingham, Nottinghamshire, United Kingdom; \textsuperscript{2}School of Chemistry, University of Nottingham, Nottingham, Nottinghamshire, United Kingdom; \textsuperscript{3}Centre for Biomolecular Sciences, University of Nottingham, Nottingham, Nottinghamshire, United Kingdom


*Ina Vernikouskaya*, \textsuperscript{1,2} *Alexander Pochert*, \textsuperscript{3} *Mika Linden*, \textsuperscript{2} *Volker Rasche*, \textsuperscript{3}

\textsuperscript{1}Internal Medicine II, University Hospital of Ulm, Ulm, Baden-Wuerttemberg, Germany; \textsuperscript{2}Small Animal MRI, University of Ulm, Ulm, Baden-Wuerttemberg, Germany; \textsuperscript{3}Inorganic Chemistry II, University of Ulm, Ulm, Baden-Wuerttemberg, Germany

1903. Multifunctional Gd2O3-Loaded Nanoprobe for Targeted Molecular MR Imaging

*Xiang Liu*, \textsuperscript{1} *Xiaodan Li*, \textsuperscript{1} *Chenggong Yao*, \textsuperscript{1} *Danting Cui*, \textsuperscript{1} *Yichen Yan*, \textsuperscript{1} *Xinwei Lu*, \textsuperscript{1} *Queenie Chan*, \textsuperscript{1} *Jun Xu*, \textsuperscript{1} *Yikai Xu*, \textsuperscript{1} *Ruyuan Liu*

\textsuperscript{1}Department of Medical Imaging Center, Nanfang Hospital, Southern Medical University, Guangzhou, Guangdong, China; \textsuperscript{2}School of Pharmaceutical Sciences, Southern Medical University, Guangzhou, Guangdong, China; \textsuperscript{3}Philips Healthcare, HongKong, China; \textsuperscript{4}Department of Hematology, Nanfang Hospital, Southern Medical University, Guangzhou, Guangdong, China

1904. Facilitating the EPR Effect and Improving Tumor Penetration and Nanoparticle Delivery with Ultrafine Iron Oxide Nanoparticle as Observed Via Its Dual-Contrast Effect

*Jing Huang*, \textsuperscript{1,2} *Liya Wang*, \textsuperscript{1,2} *Hui Wu*, \textsuperscript{1,2} *Lily Yang*, \textsuperscript{1,2} *Hui Mao*, \textsuperscript{1,2}

\textsuperscript{1}Laboratory of Functional-Molecular Imaging and Nanomedicine, Emory University School of Medicine, Atlanta, GA, United States; \textsuperscript{2}Surgery, Emory University, Atlanta, GA, United States

1905. Theranostic Prospects of Gadolinium-Based Mesoporous Silica Nanoparticle Probes for Functional MRI

*Veronika Mamaeva*, \textsuperscript{1,2} *Tina Pavlin*, \textsuperscript{1,2} *Didem Sen Karaman*, \textsuperscript{2} *Diti Desai*, \textsuperscript{2} *Melanie Ostermann*, \textsuperscript{1} *Jessica Rosenholm*, \textsuperscript{1} *Emmet McCormack*, \textsuperscript{1}

\textsuperscript{1}Department of Clinical Science, Hematology Section, University of Bergen, Bergen, Norway; \textsuperscript{2}Department of Internal Medicine, Hematology Section, Haukeland University Hospital, Bergen, Norway; \textsuperscript{3}Department of Biomedicine, Molecular Imaging Center, University of Bergen, Bergen, Norway; \textsuperscript{4}Department of Radiology, Haukeland University Hospital, Bergen, Norway; \textsuperscript{5}Laboratory of Physical Chemistry, Åbo Akademi University, Turku, Finland

1906. Brain Redox Imaging Using Nitroxide Contrast Agents in Pentylentetrazol-Kindled Mice with EPR Imaging

*Hirotada G. Fujii*, \textsuperscript{1} *Miho C. Emoto*, \textsuperscript{1} *Mayumi Yamato*, \textsuperscript{1} *Ken-ichi Yamada*

\textsuperscript{1}Center for Medical Education, Sapporo Medical University, Sapporo, Hokkaido, Japan; \textsuperscript{2}Faculty of Pharmaceutical Sciences, Kyushu University, Fukuoka, Japan

1907. A NIR830-Bevacizumab-Conjugated Iron Oxide Nanoparticle Probe for Vascular Endothelial Growth Factor (VEGF) Targeted MRI

*Run Lin*, \textsuperscript{1,2} *Jing Huang*, \textsuperscript{1} *Liya Wang*, \textsuperscript{1} *Yuancheng Li*, \textsuperscript{1} *Prieto Ventura Veronica E*, \textsuperscript{1} *Kevin Kim*, \textsuperscript{1} *Hui Mao*

\textsuperscript{1}Department of Radiology and Imaging Sciences, Emory University School of Medicine, Atlanta, GA, United States; \textsuperscript{2}Department of Radiology, the First Affiliated Hospital of Sun Yat-Sen University, Guangzhou, Guangdong, China

1908. Probing Gq-GPCR Signaling in Rat Primary Motor Cortex with Pharmacogenetic fMRI

*Manasmita Das*, \textsuperscript{1} *Heather K. Decot*, \textsuperscript{1} *Yu-Chieh Kao*, \textsuperscript{1} *Oyarzabal Esteban*, \textsuperscript{1} *Yen-Yu Ian Shih*

\textsuperscript{1}Biomedical Research Imaging Center, University of North Carolina at Chapel Hill, Chapel Hill, NC, United States
1909. Engineering of a MRI Theranostic Agent for Detection and Treatment of Cerebrovascular Amyloid
Jens T. Rosenberg1, 2, Kristen MJ Ahlschwede1, 4, Edward K. Agyare3, Geoffrey L. Curran4, Samuel C. Grant1, 2, Karunya K. Kambalakkal1, 4
1National High Magnetic Field Laboratory, Florida State University, Tallahassee, FL, United States; 2Chemical & Biomedical Engineering, Florida State University, Tallahassee, FL, United States; 3Pharmaceuticals and Brain Barriers Research Center, University of Minnesota, Minneapolis, MN, United States; 4Neurology, Neuroscience and Biochemistry/Molecular Biology, Mayo Clinic College of Medicine, Rochester, MN, United States; 5College of Pharmacy and Pharmaceutical Science, Florida A&M University, Tallahassee, FL, United States

1910. An EDB Fibronectin Specific Contrast Agent for Molecular Imaging of Cancer Metastasis
Zheng Han1, Zhuxian Zhou1, Maneesh Gujrati1, Zheng-Rong Lu1
1Department of Biomedical Engineering, Case Western Reserve University, Cleveland, OH, United States

1911. Improving Tumor Targeting and MRI of Pancreatic Cancer Using IGF-1R Targeted "Stealth" Iron Oxide Nanoparticles
Yuancheng Li1, 2, Hongyu Zhou1, Run Lin1, 2, Liya Wang1, 2, Jing Huang1, 2, Hui Wu1, 2, Lily Yang3, Hui Mao1, 2
1Laboratory of Functional-Molecular Imaging and Nanomedicine, Emory University School of Medicine, Atlanta, GA, United States; 2Department of Radiology and Imaging Sciences, Emory University School of Medicine, Atlanta, GA, United States; 3Department of Surgery, Emory University School of Medicine, Atlanta, GA, United States

1912. Paramagnetic Micelles Targeting VCAM-1 Receptors for Imaging Inflamed Endothelium by MRI
Amerigo Pagoto1, Rachele Stefanis1, Francesca Garrello1, Francesca Arena1, Giuseppe Digiilio1, Silvio Aime2, Enzo Terreno1
1University of Torino, Torino, Italy; 2University of Torino, Italy; 3University of Eastern Piedmont, Italy

1913. Functional Brain Mapping in ADHD Rats Using Manganese-Enhanced MRI
Chieh-Yin Chang1, Chi-Ru Lai1, Bor-Show Tzang2, Vincent Chin-Hung Chen1, Yeu-Sheng Tyan1, 4, Jun-Cheng Weng1, 4
1School of Medical Imaging and Radiological Sciences, Chung Shan Medical University, Taichung, Taiwan; 2Institute of Biochemistry and Biotechnology, Chung Shan Medical University, Taichung, Taiwan; 3Department of Psychiatry, Chung Shan Medical University Hospital, Taichung, Taiwan; 4Department of Medical Imaging, Chung Shan Medical University Hospital, Taichung, Taiwan

1914. Manganese Accumulations in Brain and Toenails Reflect Different Time Periods of Exposure
Chien-Lin Yeh1, 2, Eric Ward1, Sandy Snyder1, Frank Rosenthal1, Ulrike Dydak1, 2
1School of Health Sciences, Purdue University, West Lafayette, IN, United States; 2Radiology and Imaging Sciences, Indiana University School of Medicine, Indianapolis, IN, United States

1915. Adult Neurogenesis and Olfactory Activity Regulate Olfactory Bulb Volume
Nikorn Pothayee1, Diana Cummings2, Timothy Schoenfeld1, Heather Cameron1, Leonardo Belluscio1, Alan Koretsky1
1Laboratory of functional and molecular imaging, NINDS, NIH, Bethesda, MD, United States; 2Developmental neural plasticity section, NINDS, NIH, Bethesda, MD, United States; 3Neuroplasticity Section, NIMH, NIH, Bethesda, MD, United States

1916. Distinction Between Pro and Anti-Inflammatory Macrophages Using MRI Relaxometry and Quantitative Susceptibility Mapping
Wassef Khaled1, Benjamin Leporq1, Jing Hong Wan1, Philippe Garteiser1, Simon Auguste Lambert1, Nathalie Migner1, Bich-Thuy Doan1, Simona Manza1, Sophie Lotersztajn1, Bernard Edgar Van Beers1
1Center of research on inflammation, Paris 7 University; INSERM U1044, Paris, France; 2Chemical, Genetic and Imaging Pharmacology Laboratory; CNRS UMR 8151; INSERM U1022, Faculty of Pharmacy, Paris Descartes University, Sorbonne Paris Cité, Chimie-ParisTech, Paris, France

293
1917. A Novel Assay for the In Vivo Detection of Reactive Oxygen Species Using MRI
Gary Sinnett1, Kelly Ann Moore1, Errol Loic Samuel1, Ming Ge1, Brett Graham1, James Tour2, Robia G. Pautler3
1Molecular Physiology and Biophysics, Baylor College of Medicine, Houston, TX, United States; 2Department of Chemistry, Rice University, Houston, TX, United States; 3Molecular and Human Genetics, Baylor College of Medicine, Houston, TX, United States

1918. Non-Invasive Analysis of the Degree of Inflammatory Areas by In Vivo Time Course MRI Using Long Circulating Nanoparticles in Myocardial Inflammation Rat Model
Hyeyoung Moon1, Jongeun Kang2, Hyunseung Lee3, Kwan Soo Hong1, 2
1Division of MR research, Korea Basic Science Institute, Cheongju, Chungcheongbuk-do, Korea; 2Graduate School of Analytical Science and Technology, Chungnam National University, Daejeon, Korea

1919. Morphological and Quantitative Imaging of Iron Using MP-RAGE and UTE Sequences
Wen Hong1, Qun He2, Hongda Shao1, Jiang Du2
1Radiology, China-Japan friendship hospital, Beijing, China; 2Radiology, UC, San Diego, San Diego, CA, United States

1920. Characterization of Perfluorocarbon Relaxation Times and Optimization of Fluorine-19 MRI at 3 Tesla
Roberto Colotti1, 2, Christine Gonzales3, Juerg Schwitter4, Ruud B. van Heeswijk1, 2
1Department of Radiology, University Hospital (CHUV) and University of Lausanne (UNIL), Lausanne, Switzerland; 2Center for Biomedical Imaging (CIBM), Lausanne, Switzerland; 3Division of Cardiology and Cardiac MR Center, Department of Internal Medicine, University Hospital of Lausanne (CHUV), Lausanne, Switzerland

1921. Disentangling Different Gadolinium Concentrations: A Comparison Between High Field and Very Low Field MRI
Allegra Conti1, Massimo Caulo1, Angela Galante3, Vittorio Pizzella3, Gian Luca Romani1, 2, Stefania Della Penna1, 2
1Department of Neuroscience, Imaging and Clinical Sciences, G. D'Annunzio Univ. of Chieti and Pescara, Chieti, CH, Italy; 2Institute for Advanced Biomedical Technologies (ITAB), G. D'Annunzio Univ. of Chieti and Pescara, Chieti, CH, Italy; 3MESVA, Department of Life, Health & Environmental Sciences, L'Aquila University, L'Aquila, AQ, Italy

1922. Design of Implantable Alginate MRI PH Sensors for Cell Transplantation
Nikita Oskolov1, 2, Xiaolei Song1, 2, Kannie W.Y. Chan1, 2, Jeff W.M. Bulte1, 2, Michael T. McMahon1, 2
1The Russell H. Morgan Department of Radiology and Radiological Science, Johns Hopkins School of Medicine, Baltimore, MD, United States; 2F.M. Kirby Research Center for Functional Brain Imaging, Kennedy Krieger Institute, Baltimore, MD, United States

1923. Iron Retention in Nonproliferative Cancer Cells Allows for Tracking by MRI: An In Vivo Assay for Studying Cancer Cell Dormancy
Donna H. Murrell1, 2, Fiona Dickson1, Amanda M. Hamilton1, Paula J. Foster1, 2
1Imaging, Robarts Research Institute, London, Ontario, Canada; 2Medical Biophysics, Western University, London, Ontario, Canada

1924. Tracking and Quantification of T-Cells Labelled with Iron Oxide Nanoparticles Using Positive Contrast
Jinjin Zhang1, Siddh C. Kumarappanuma1, Katie Hurley3, Hattie L. Ring1, Michael Garwood1
1Center for Magnetic Resonance Research, Department of Radiology, University of Minnesota, Minneapolis, MN, United States; 2Department of Medicinal Chemistry, University of Minnesota, MN, United States; 3Department of Chemistry, University of Minnesota, MN, United States

1925. Labeling of Human Peripheral Blood Mononuclear Cells with a Fluorine-19 Perfluorocarbon Agent Permits Their In Vivo Detection Using Cellular MRI and Allows for Cancer Vaccine Formulation Comparisons
Corby Fink1, 2, Jeffrey Gaudet2, 3, Paula Foster2, 3, Gregory Dekaban1, 2
1Microbiology and Immunology, Western University, London, Ontario, Canada; 2Robarts Research Institute, London, ON, Canada; 3Medical Biophysics, Western University, London, ON, Canada
1926. MR Molecular Imaging of Homing of Integrin-Linked Kinase-Overexpressing Mesenchymal Stem Cells After Transplantation Via Coronary in Swine Acute Myocardial Infarction Model

Dan Mu1, Hong Ming Yu2, Bin Zhu3, Biao Xu4, Wei Bo Chen5
1Drum Tower Hospital, Nanjing, Jiangsu, China; 2Drum Tower Hospital, Jiangsu, China; 3Radiology, Drum Tower Hospital, Nanjing, Jiangsu, China; 4Cardiology, Drum Tower Hospital, Jiangsu, China; 5Philips Healthcare, Shanghai, China

1927. MRI Detection of Brain Metastases Labeled with Iron Oxide Nanoflowers

Emily Alexandria Waters1, Luke Vistain2, Liang Mu3, Madhavi Puchalapalli4, Chad Haney1, Basa El Haddad1, Brandon Parker1, Thomas Meade1, Jennifer Kobliński1
1Center for Advanced Molecular Imaging, Northwestern University, Evanston, IL, United States; 2Interdisciplinary Biological Sciences Program, Northwestern University, Evanston, IL, United States; 3Northwestern University, IL, United States; 4Pathology, Virginia Commonwealth University, Richmond, VA, United States; 5Chemistry, Northwestern University, Evanston, IL, United States

1928. In Vivo Quantification of Human Natural Killer Cells by 19F MRI

Kai D. Ludwig1, Myriam Bouchlaka2, Jeremy Gordon1, Christian Capitini2, Sean B. Fain1,3
1Medical Physics, University of Wisconsin-Madison, Madison, WI, United States; 2Pediatrics and Carbone Cancer Center, University of Wisconsin-Madison, Madison, WI, United States; 3Radiology and Biomedical Engineering, University of Wisconsin-Madison, WI, United States

1929. Tracking Iron Labeled Stem Cells in Bone Injury Model Using MRI

May A. Taha1, Roman Krawetz2, Derrick E. Rancourt2, John R. Matyas3, Jeff F. Dunn4
1Department of Radiology, Calgary, Alberta, Canada; 2Department of Biochemistry & Molecular Biology, Alberta, Canada; 3Department of Comparative Biology and Experimental Medicine, Faculties of Medicine and Veterinary Medicine, University of Calgary, Alberta, Canada

1930. Comparison of Iron-Related MR Susceptibility and Transverse Relaxation Rates in the P19 Cell Model

Linshan Liu1,2, Neil Gelman1,2, Rebecca McGirr1, R. Terry Thompson1,2, Frank S. Prato1,2, Lisa Hoffman1,2, Donna E. Goldhawk1,2
1Imaging program, Lawson Health Research Institute, London, Ontario, Canada; 2Medical Biophysics, Western University, London, Ontario, Canada

1931. Fluorine-19 Labelling of Stromal Vascular Fraction Cells for Clinical Imaging Applications

Laura C. Rose1, Guan Wang1, Brooke M. Helfer2, Charles F. O'Hanlon2, Amnon Bar-Shir1, Dara L. Kraitchman1, Ricardo L. Rodriguez1, Jeff WM Bulte1
1Johns Hopkins University, Baltimore, MD, United States; 2Research & Development, CelSense Inc, PA, United States; 3CosmeticSurg LLC, Luthersville, MD, United States

1932. RRx-001 Oxidation of Redox Sensitive Protein Thiols in Tumors Measured by Gd-LC7-SH Enhanced MRI in Preclinical Tumor Models

Natarajan Raghuanan1, Jan Scicinski2, Bryan Oronsky2, Bhumasamudram Jagadish3, Eugene A. Mask4, Ronald L. Korre4
1Cancer Imaging & Metabolism, Moffitt Cancer Center, Tampa, FL, United States; 2RadiosRx Pharmaceuticals, Mountain View, CA, United States; 3Dept. of Chemistry & Biochemistry, The University of Arizona, Tucson, AZ, United States; 4Imaging Endpoints LLC, Scottsdale, AZ, United States

1933. Non-Invasive Assessment of Hyperthermic Ultrasound Enhanced Tumor Drug Delivery with CE-MRI

Nadia Rose Ayat1, Rebecca Schur1, Zheng-Kong Lu1
1Biomedical Engineering, Case Western Reserve University, Cleveland, OH, United States
1934. **Eight Channel Tx/Rx RF Coil Array for ¹H/¹⁹F MR of the Human Knee and Fluorinated Drugs at 7.0 T**
Yyi Ji¹, Helmar Watcizes²,³, Lukas Winter¹, Pavla Neumanova¹, Daniela Hofmann¹, Jan Rieger¹,², Ralf Mekle³, Sonia Watcizes¹, Thoralf Niendorf⁴.
¹Berlin Ultrahigh Field Facility (B.U.F.F.), Max Delbrück Center for Molecular Medicine, Berlin, Germany; ²MRI.TOOLS GmbH, Berlin, Germany; ³Medical Physics, Physikalisch-Technische Bundesanstalt, Berlin, Germany; ⁴Experimental and Clinical Research Center, a joint cooperation between the Charité Medical Faculty and the Max Delbrück Center, Berlin, Germany

Matthew Tarasek¹, Amanda Aleong²,³, Jinzi Zheng²,³, Yannan Dou¹, Christine Allen¹,⁴, David Jaffray³,⁴, Tom Foo¹, Desmond T.B. Yeo¹.
¹MRI, GE Global Research, Niskayuna, NY, United States; ²Princess Margaret Cancer Centre, Toronto, Canada; ³Techna Institute, University Health Network, Toronto, Canada; ⁴University of Toronto, Toronto, Canada

1936. **Functionalized Mesoporous Silica Iron Oxide Nanoparticles for Thermal Therapy and T₁ Contrast**
Hattie L. Ring¹,², Katie R. Hurley², Michael Etheridge²,³, Jinjin Zhang¹,³, Nathan D. Klein¹, Connie Chung²,³, Qi Shao², John C. Bischof²,³, Christy L. Haynes², Michael Garwood²,³.
¹Center for Magnetic Resonance Research, University of Minnesota, Minneapolis, MN, United States; ²Chemistry, University of Minnesota, Minneapolis, MN, United States; ³Mechanical Engineering, University of Minnesota, Minneapolis, MN, United States; ⁴Biomedical Engineering, University of Minnesota, Minneapolis, MN, United States; ⁵Physics, University of Minnesota, Minneapolis, MN, United States; ⁶Radiology, University of Minnesota, Minneapolis, MN, United States

1937. **Quantitative Treatment Response Mapping in Asthma Patients Using ³He Ventilation MRI**
Felix C. Horn¹, Helen Marshall¹, Richard Kay¹, Christopher E. Brightling¹, Juan Parra-Robles¹, Jim M. Wild¹.
¹Academic Radiology, Sheffield University, Sheffield, South Yorkshire, United Kingdom; ²Novartis, Switzerland; ³University of Leicester, United Kingdom

1938. **NanoflIron Phantom to Validate In-Vivo Iron Mapping**
Stephen E. Russek¹, Kathryn E. Keenan¹, Karl Stupiec¹, Michael A. Boss¹, Zydrunas Gimbutas¹, Andrew M. Dienstfrey¹, Robert J. Usselman².
¹NIST, Boulder, CO, United States; ²University of Montana, Bozeman, MT, United States

1939. **Machine Learning and Computer Vision Based Quantification of Cell Number in MRI-Based Cell Tracking**
Muhammed Jamal Afridi¹, Matt Latourette¹, Margaret F. Bennewitz¹, Arun Ross¹, Xiaoming Liu¹, Erik M. Shapiro².
¹Department of Computer Science and Engineering, Michigan State University, East Lansing, MI, United States; ²Department of Radiology, Michigan State University, East Lansing, MI, United States; ³Vascular Medicine Institute, University of Pittsburgh, Pittsburgh, PA, United States

**Traditional Poster**

**MRS Acquisition Methods**

**Exhibition Hall**

**Wednesday 10:00-12:00**

1940. **Natural Abundance of Glycogen and Lipids in Human Calf Muscle Measured Before and After Exercise by ¹³C MRS at 7T**
Eulalia Serés Roig¹, Rolf Gruetter².
¹Laboratory of Functional and Metabolic Imaging (LIFMET), Ecole Polytechnique Fédérale de Lausanne (EPFL), Lausanne, Vaud, Switzerland; ²Department of Radiology, Universities of Lausanne and Geneva, Vaud, Switzerland

1941. **Quantum Coherence Spectroscopy to Measure 1D ¹H-¹³C-Lipid Signals**
Lucas Lindeboom¹,², Robin A. de Graaf³, Christine I. Nabuurs³,⁴, Matthijs KC Hesselink⁴, Joachim E. Wildberger³, Patrick Schrauwen¹, Vera B. Schrauwen-Hinderling².
¹Department of Human Biology, Maastricht University Medical Center, Maastricht, Netherlands; ²Department of Radiology, Maastricht University Medical Center, Maastricht, Netherlands; ³Department of Diagnostic Radiology, Magnetic Resonance Research Center, Yale University School of Medicine, New Haven, CT, United States; ⁴Department of Human Movement Sciences, Maastricht University Medical Center, Maastricht, Netherlands
1942. In Vivo MR Spectroscopy of Human Breast Tissue: Composition of Lipids at Clinical Field Strength (3 T).
Amandine COUM1,2, Lobna OULD AMER1,4, Laurent BARANTIN1, Fanny NOURY1,4, Anne VILDE6, Aymeric SAINT-HILAIRE1, Philippe BOUGNOUX4,7, Giulio GAMBAROTA1,2
1 LTSI, Université de Rennes 1, Rennes, France; 2 INSERM UMR 1099, Rennes, France; 3 Department of Gynecology, CHU Tours, Tours, France; 4 INSERM U1069, Université François-Rabelais, Tours, France; 5 INSERM U930, Université François-Rabelais, Tours, France; 6 Department of Radiology, CHU Tours, Tours, France; 7 Department of Oncology, CHU Tours, Tours, France

1943. A Novel Broadband Coil for Multinuclear Spectroscopy
Hai Lu1, Shumin Wang1
1 Auburn University, Auburn, AL, United States

1944. The Effect of the Chemical Shift Displacement Artefact on J-Modulation in the STEAM Sequence
Carolina Campanha Fernandes1, Emma Louise Hall2, Chen Chen2, Peter Gordon Morris2, Carlos Garrido Salmon2,3
1 Sir Peter Mansfield Imaging Centre, University of Nottingham, Nottingham, United Kingdom; 2 Sir Peter Mansfield Imaging Centre, University of Nottingham, Nottingham, United Kingdom; 3 Department of Physics, University of Sao Paulo, Ribeirao Preto, Brazil

1945. Influence of Different TE on Reliability of Brain Metabolites Quantification in High Field 1H MRS
Veronika Rackayova1, Cristina Cudalbu1, Lijing Xin1, Nicolas Kunz2, Jana Starcukova2, Zenon Starcuk, Jr.2, Rolf Graetter1,2
1 Laboratory of Functional and Metabolic Imaging, Center for Biomedical Imaging, Ecole Polytechnique Fédérale de Lausanne (EPFL), Lausanne, Vaud, Switzerland; 2 Centre d'Imagerie Biomédicale (CIBM), Ecole Polytechnique Fédérale de Lausanne (EPFL), Lausanne, Vaud, Switzerland; 3 Centre d'Imagerie Biomédicale (CIBM-AIT), Ecole Polytechnique Fédérale de Lausanne (EPFL), Lausanne, Vaud, Switzerland; 4 Institute of Scientific Instruments of the Academy of Sciences of the Czech Republic, Brno, Czech Republic

1946. Requirements for Optimal B0 Shimming for a Spectroscopy Voxel in the Frontal Cortex at Ultra-High Fields
Ariane Fillmer1, Anke Henning,12
1 Institute for Biomedical Engineering, UZH and ETH Zurich, Zurich, Switzerland; 12 Max Planck Institute for Biological Cybernetics, Tuebingen, Germany

1947. Long Echo Time In-Vivo Spectroscopy Without J-Modulation
Clark Lemke1, Aaron Hess1, Jamie Near1, Stuart Clare1, Peter Jezzard1, Uzay Emir1
1 FMRIB, University of Oxford, Oxford, Oxfordshire, United Kingdom; 2 OCMR, University of Oxford, Oxford, Oxfordshire, United Kingdom; 3 Douglas Institute, McGill University, Verdun, Quebec, Canada

1948. A Method to Obtain 2D High Resolution MRS Under Inhomogeneous Magnetic Fields
Liangjie Lin1, Zhiliang Wei1, Jian Yang1, Yanqin Lin1, Zhong Chen1
1 Electronic Science, Xiamen University, Xiamen, Fujian, China

1949. Quantitation Error in 1H MRS Caused by B1 Inhomogeneity and Chemical Shift Displacement at High B0 Field
Hidehiro Watanabe1, Nobuo Takaya1, Fumiyuki Mitsumori1
1 Center for Environmental Measurement and Analysis, National Institute for Environmental Studies, Tsukuba, Ibaraki, Japan

1950. Comparison of GABA+ and Macromolecular-Suppressed GABA Measurements
Ashley D. Harris1,2, Nicolaas AJ Puts1,2, Peter B. Barker3,4, Richard A. E. Edden1,2
1 The Russell H Morgan Department of Radiology and Radiological Sciences, The John Hopkins School of Medicine, Baltimore, MD, United States; 2 F.M. Kirby Center for Functional Brain Imaging, Kennedy Krieger Institute, Baltimore, MD, United States
1951. Measuring Glutathione Using 1H MR Spectroscopy at 3T: MEGA-PRESS Vs. STEAM
Felix Raschke1, Ralph Noeske2, Dorothee P. Auer1, Dineen Rob1
1Sir Peter Mansfield Imaging Centre, School of Medicine, University of Nottingham, Nottingham, Nottinghamshire, United Kingdom; 2GE Healthcare, Berlin, Germany MR Application and Workflow Development, Berlin, Germany

1952. Glutathione Cannot Be Quantified Reliably from Short Echo PRESS Spectra
Faech Sanaei Nezhad1, Adriana Anton1, Bill Deakin2, Stephen Williams1
1Center for Imaging Science, University of Manchester, Manchester, United Kingdom; 2Neuroscience and Psychiatry Unit, University of Manchester, Manchester, United Kingdom

1953. Measuring GABA Using 1H MR Spectroscopy at 3T: A Comparison of Techniques
Felix Raschke1, Antonio Napolitano2, Ralph Noeske1, Dineen Rob1, Dorothee P. Auer2
1Sir Peter Mansfield Imaging Centre, School of Medicine, University of Nottingham, Nottingham, Nottinghamshire, United Kingdom; 2Enterprise Risk Management, Unity of Imaging Research, Bambino Gesù Children’s Hospital, Rome, Italy; 3GE Healthcare, Berlin, Germany MR Application and Workflow Development, Berlin, Germany

1954. Glutathione Measurement Using Short-TE 1H MRS at 3T: Accuracy and Precision Assessment
Lijing Xin1, 2, Rolf Gruetter3, 4
1Laboratory for Functional and Metabolic Imaging (LIFMET), École polytechnique fédérale de Lausanne, Lausanne, Vaud, Switzerland; 2Department of Psychiatry, Lausanne University Hospital, Lausanne, Vaud, Switzerland; 3Laboratory for Functional and Metabolic Imaging (LIFMET), École polytechnique fédérale de Lausanne, Lausanne, Vaud, Switzerland; 4Department of Radiology, University of Lausanne and Geneva, Vaud, Switzerland

1955. 2D Correlated MRS as a Quantitative Method to Asses Liver Fatty Acid Composition of Ob/ob Mouse
Dimitri Martel1, Jean Baptiste Langlois2, Denis Frihoutel1, Olivier Beuf1, Helene Ratiney1
1CREATIS; CNRS UMR 5220; INSERM U1044, Université Lyon 1; INS Lyon, Villeurbanne, France; 2CERMEP- Imagerie du Vivant, Bron, France

1956. Quantification of Individual and Group Uncertainty of Gamma-Aminobutyric Acid Concentration in Different Brain Regions Using Residual Bootstrap Analysis
Song Chen1, Meng Chen1, Congyu Liao1, Linfei Wen1, Darong Zhu2, Xiu Yan3, Keith Heberlein1, Jianhui Zhong1
1Center for Brain Imaging Science and Technology, Department of Biomedical Engineering, Zhejiang University, Hangzhou, Zhejiang, China; 2Hangzhou First People's Hospital, Hangzhou, Zhejiang, China; 3MR Collaboration NE Asia, Siemens Healthcare, Shanghai, China; 4Siemens Medical Solutions USA, Inc; Malvern, PA, United States

1957. Editing Efficiency for Macromolecule-Suppressed and Unsuppressed J-Edited GABA Spectroscopy
Georg Oeltzschner1, 2, Pallab K. Bhattacharyya1, 2
1Department of Diagnostic and Interventional Radiology, Medical Faculty, University Dusseldorf, Düsseldorf, Germany; 2Institute of Clinical Neuroscience and Medical Psychology, Medical Faculty, Heinrich-Heine-University Düsseldorf, Düsseldorf, Germany; 3Imaging Institute, Cleveland Clinic, Cleveland, OH, United States; 4Cleveland Clinic Lerner College of Medicine - CWRU, Cleveland, OH, United States

1958. Resolution-Enhanced MRS of Red Bone Marrow Fat Via Intermolecular Double-Quantum Coherences in Human Knees
Jianfeng Bao1, 2, Yuchuan Zhang1, Yangin Lin1, Zhong Chen1, Jianhui Zhong1
1University of Rochester, Rochester, NY, United States; 2Xiamen University, Xiamen, Fujian, China

1959. Accelerating NMR Spectroscopy with Low Rank Constraint on Time Domain Signal
XiaoBo Qu1, Maxim Mayzel1, Jian-Feng Cai2, Zhong Chen1, Vladislav Orekhov2
1Department of Electronic Science, Xiamen University, Xiamen, Fujian, China; 2Swedish NMR Centre, University of Gothenburg, Gothenburg, Sweden; 3Department of Mathematics, University of Iowa, Iowa City, IA, United States
1960. **Six Fucose-α(1–2) Sugars and α-Fucose Assigned in Human Brain Using In Vivo 1-COSY**

Scott Gregory Quadrelli¹, Alexander Lin², Saadallah Ramadan¹, Carolyn Mountford¹, ²

¹Centre for MR in Health, The University of Newcastle, Callaghan, NSW, Australia; ²Center for Clinical Spectroscopy, Brigham & Women’s Hospital - Harvard Medical School, Boston, MA, United States; ³Center for Clinical Spectroscopy, Brigham & Women’s Hospital - Harvard Medical School, Boston, NSW, Australia

---

**Traditional Poster**

**MRS Processing & Quantification**

<table>
<thead>
<tr>
<th>Exhibition Hall</th>
<th>Wednesday 10:00-12:00</th>
</tr>
</thead>
</table>


Kyu-Ho Song¹, Sang-Young Kim¹, Do-Wan Lee¹, Jin-Young Jung¹, Hyeon-Man Baeck², Bo-Young Choe¹

¹Department of Biomedical Engineering, Research Institute of Biomedical Engineering, Seoul, Korea; ²Center for Magnetic Resonance Research, Korea Basic Science Institute, Chungbuk, Korea

1962. **The Effect of Software Processing Pipelines on 7T MRS Metabolite Quantification**

Lotte C. Houtepen¹, Remmelt R. Schuur¹, Vincent O. Boer¹, Bart van de Bank¹, Tom Scheenen³, Anouk Marsman⁴, Christiaan H. Vinkers¹, Dennis W.J. Klomp²

¹Psychiatry, University Medical Center Utrecht, Utrecht, Netherlands; ²Radiology, University Medical Center Utrecht, Utrecht, Netherlands; ³Radiology, Radboud University Nijmegen Medical Centre, Nijmegen, Gelderland, Netherlands; ⁴Russell H. Morgan Department of Radiology and Radiological Science, Johns Hopkins University School of Medicine, Baltimore, MD, United States


Merieen Taous Laleg¹, Zineb Kaisserli¹, Rick Achten², ³, Hacene Serrai², ³

¹King Abdullah University of Sciences and Engineering, Jeddah, Saudi Arabia; ²University of Gent, Gent, Belgium; ³universitair Ziekenhuis Gent, Gent, Belgium

1964. **One-Class Classifier for Accurate Brain Tissue Classification from Noisy 1H-MRS Spectra**

Keyvan Ghassemi¹, ², Mohammadreza Khanmohammadi Khorami¹, Hamidreza Saligheh Rad², ³

¹Chemistry Department, Faculty of Science, Imam Khomeini International University, Qazvin, Iran; ²Quantitative MR Imaging and Spectroscopy Group, Research Center for Molecular and Cellular Imaging, Tehran University of Medical Sciences, Tehran, Iran; ³Department of Medical Physics and Biomedical Engineering, School of Medicine, Tehran University of Medical Sciences, Tehran, Iran

1965. **The Influence of Macromolecule Baseline on 1H Magnetic Resonance Spectroscopic Imaging Reproducibility**

Rebecca Birch¹, ², Andrew C. Peet¹, ², Hamid Dehghani³, Martin Wilson¹, ²

¹PSIBS Doctoral Training Centre, University of Birmingham, Birmingham, West Midlands, United Kingdom; ²Department of Oncology, Birmingham Children's Hospital NHS Foundation Trust, Birmingham, West Midlands, United Kingdom; ³School of Cancer Sciences, University of Birmingham, Birmingham, West Midlands, United Kingdom; ⁴School of Computer Science, University of Birmingham, Birmingham, West Midlands, United Kingdom

1966. **Correction for Tissue Fractions in GABA-Edited MRS**

Ashley D. Harris¹, ², Nicolaas AJ Puts¹, ², Richard A. E. Edden¹, ²

¹The Russell H Morgan Department of Radiology and Radiological Sciences, The John Hopkins School of Medicine, Baltimore, MD, United States; ²F.M. Kirby Center for Functional Brain Imaging, Kennedy Krieger Institute, Baltimore, MD, United States

1967. **MRS Data Quantification Through the KBDM: Reducing the Effect of Noise by Using Multiple Signal Truncations**

Danilo Mendes Dias Delfino da Silva¹, Thales Sinelli Lima¹, Alberto Tannús¹, Claudio José Magon¹, Fernando Fernandes Paiva¹

¹Centre for MR in Health, The University of Newcastle, Callaghan, NSW, Australia; ²Department of Radiology, Radboud University Nijmegen Medical Centre, Nijmegen, Gelderland, Netherlands; ³Psychiatry, University Medical Center Utrecht, Utrecht, Netherlands; ⁴Department of Radiology and Radiological Science, Johns Hopkins University School of Medicine, Baltimore, MD, United States
300

1968. **A Lorentzian-Function-Sparsity Approach for Fast High-Dimensional Magnetic Resonance Spectroscopy**  
*Boyu Jiang*¹, *Xiaoping Hu*², *Hao Gao*³, ⁴  
¹School of Biomedical Engineering, Shanghai Jiao Tong University, Shanghai, China; ²Department of Biomedical Engineering, Emory University and Georgia Institute of Technology, Atlanta, GA, United States; ³Department of Mathematics, Shanghai Jiao Tong University, Shanghai, Shanghai, China

1969. **Simple Method for Automatic Frequency and Phase Alignment of In-Vivo MR Spectra**  
¹Radiology and Nuclear Medicine, Radboud University Medical Center, Nijmegen, Gelderland, Netherlands; ²Internal Medicine, Radboud University Medical Center, Nijmegen, Gelderland, Netherlands; ³Cancer Research UK Cambridge Institute, University of Cambridge, Cambridge, United Kingdom; ⁴Pediatrics, Radboud University Medical Center, Nijmegen, Gelderland, Netherlands

1970. **Water Sidebands Removal in Spectral Fitting**  
*Jan Willem van der Veen*¹, *Stefano Marenco*², *Jun Shen*¹  
¹Magnetic Resonance Spectroscopy Core, NIH, NIMH, Bethesda, MD, United States; ²CTNB, NIH, NIMH, Bethesda, MD, United States

1971. **A New Algorithm for the Fusion of MRSI & MRI on the Brain Tumour Diagnosis**  
*Xin Liu*¹, *Yuqian Li*², *Yiming Pi*³, *Sofie Van Cauter*², *Yi Yao*³, ⁴, *Jiunjie Wang*⁵  
¹School of Electronic Engineering, University of Electronic Science and Technology of China, Chengdu, China; ²Department of Radiology, University Hospitals Leuven, Belgium; ³School of Communication and Information Engineering, University of Electronic Science and Technology of China, Chengdu, China; ⁴National Key Laboratory of Science and Technology on Communications, China; ⁵Department of Medical Imaging and Radiological Sciences, ChangGung University, Taiwan

1972. **Joint Estimation of Spectral Parameters from MR Spectroscopic Imaging Data**  
*Qiang Ning*¹, *Chao Ma*², *Zhi-Pei Liang*¹, ²  
¹Electrical and Computer Engineering, University of Illinois at Urbana-Champaign, Urbana, IL, United States; ²Beckman Institute for Advanced Science and Technology, University of Illinois at Urbana-Champaign, Urbana, IL, United States

1973. **Multimodal Post-Processing Software for MRSI Data Evaluation**  
*Michal Považan*¹, *Bernhard Strasser*¹, *Gilbert Hangel*¹, *Stephan Gruber*¹, *Siegfried Trattnig*¹, *Wolfgang Bogner*¹  
¹MRCE, Department of Biomedical Imaging and Image-guided therapy, Medical University Vienna, Vienna, Austria

1974. **Test-Retest Quantitation of Absolute Metabolite Concentrations with Partial Volume Correction Using Different Segmentation Methods**  
*Ahmad Seif Kanaan*¹, ², *André Pampel*¹, *Kirsten Müller-Vahl*², *Harald E. Möller*¹  
¹Nuclear Magnetic Resonance, Max Planck Institute for Human Cognitive and Brain Sciences, Leipzig, Sachsen, Germany; ²Department of Psychiatry, Social Psychiatry and Psychotherapy, Medical School of Hannover, Hannover, Niedersachsen, Germany

1975. **Absolute Metabolite Quantification of 31P MRS Spectra in the Rat Brain In Vivo at 17.2 Tesla Using LCModel**  
*Alfredo Liubomir Lopez Kolkovsky*¹, *Fawzi Boumezbeur*¹  
¹Neurospin, I2BM, Commissariat à l’Energie Atomique, Gif-sur-Yvette, Essonne, France

1976. **Don’t Use Relative Cramer Rao Lower Bounds for Elimination of Low Quality Data!**  
*Roland Kreis*¹, *Sreenath Pruthviraj Kyathanahally*¹  
¹Depts. Radiology and Clinical Research, University Bern, Bern, Switzerland
1977. **Necessity of Tissue Volume Composition Correction for Internal Referencing**

Niklaus Zaelch¹, Andreas Hock¹,², Milan Scheidegger¹,², Lea Hulka¹, Boris Quednow¹,³, Anke Henning¹,⁴

¹Institute for Biomedical Engineering, UZH and ETH Zurich, Zurich, Switzerland; ²Department of Psychiatry, Psychotherapy and Psychosomatics Hospital of Psychiatry, University of Zurich, Zurich, Switzerland; ³Zurich Center for Integrative Human Physiology, University of Zurich, Zurich, Switzerland; ⁴Max Planck Institute for Biological Cybernetics, Tuebingen, Germany

1978. **Comparison of Different Methods for Combination of Multichannel Spectroscopy Data**

Ioannis Angelos Giapitzakis¹, Anke Henning¹,²

¹Max Planck Institute for Biological Cybernetics, Tuebingen, Baden-Wuerttemberg, Germany; ²Institute for Biomedical Engineering, UZH and ETH Zurich, Zurich, Switzerland

**Traditional Poster**

**MRS Animal Cells**

Exhibition Hall Wednesday 10:00-12:00

1979. **Mapping Stimulus-Evoked Glutamate and Lactate Changes in the Mouse Brain Using Spectroscopic Imaging**

Aline Seuwen¹, Aileen Schröter¹, Markus Rudin¹,²

¹Institute for Biomedical Engineering, ETH & University of Zürich, Zürich, Switzerland; ²Institute for Pharmacology and Toxicology, University of Zürich, Zürich, Switzerland

1980. **High Glutamine C57BL/6 Mice**

Ivan Tkac³

³Center for Magnetic Resonance Research, University of Minnesota, Minneapolis, MN, United States

1981. **In Vivo Longitudinal Measurements of Brain Energy Metabolism in Chronic Hepatic Encephalopathy in a Rat Model Using 31P MRS and 1H MRS**

Veronika Rackayova¹, Bernard Lanz², Corina Berset², Rolf Gruetter¹, ³, Valérie A. McLin¹, Olivier Braissant⁴, Cristina Cudalbu⁵

¹Laboratory of Functional and Metabolic Imaging, Center for Biomedical Imaging, Ecole Polytechnique Fédérale de Lausanne (EPFL), Lausanne, Vaud, Switzerland; ²Centre d’Imagerie Biomedicale (CIBM), Ecole Polytechnique Fédérale de Lausanne (EPFL), Lausanne, Vaud, Switzerland; ³Swiss Center for Liver Disease in Children, Department of Pediatrics, University Hospitals Geneva, Geneva, Switzerland; ⁴Service of Biomedicine, University Hospital of Lausanne, Lausanne, Vaud, Switzerland

1982. **Influence of Short-Term Intermittent Ethanol Exposure and Abstinence on Cerebral Neurometabolite Concentrations Determined by Ex Vivo 11.7-T Proton Nuclear Magnetic Resonance Spectroscopy**

Do-Wan Lee¹,², Jung-Whan Min¹, Jung-Hoon Lee¹,³, Kyu-Ho Song¹, Bo-Young Choe¹

¹Department of Biomedical Engineering and Research Institute of Biomedical Engineering, The Catholic University of Korea College of Medicine, Seoul, Korea; ²Asan Institute for Life Sciences, Asan Medical Center, Seoul, Korea; ³Department of Radiological Science, The Shingu University College of Korea, Seongnam, Korea; ⁴Department of Radiology, Kyunghee Medical Center, Seoul, Korea

1983. **1H-MRS of Human Pancreas Grafts: Relaxation Times and Metabolite Concentrations**

Jan Weis¹, Lina Carlbom¹, Lars Johansson¹, Alireza Biglarnaia¹, Olle Korsgren¹, Håkan Ahlström¹

¹Department of Radiology, Oncology and Radiation Science, Uppsala University, Uppsala, Sweden; ²Department of Surgical Sciences, Uppsala University, Uppsala, Sweden; ³Department of Immunology, Genetics and Pathology, Uppsala University, Uppsala, Sweden


Santosh Kumar Bharti¹, Zaver Bhujwalla²

¹Div. of Cancer Imaging Research, The Russell H. Morgan Dept. of Radiolog and Radiological science, Johns Hopkins University, School of Medicine, Baltimore, MD, United States; ²Div. of Cancer Imaging Research, The Russell H. Morgan Dept. of Radiolog and Radiological science, Johns Hopkins University, School of Medicine, Baltimore, MD, United States
1985. Action of Antibiotics Characterized and Predicted by NMR Metabolomics
Verena Hoerr1, 2, Gavin E. Duggan3, Lori Zbytnuik4, Karen K.H. Poon3, Bettina Löfler5, Hans J. Vogel2
1Department of Clinical Radiology, University Hospital Muenster, Muenster, Germany; 2Institute of Medical Microbiology, Jena University Hospital, Jena, Germany; 3Department of Biological Sciences, University of Calgary, Calgary, Alberta, Canada;
4Department of Physiology and Pharmacology, University of Calgary, Calgary, Alberta, Canada

1986. Lipid Characterization of Different Organs Using HR-MAS NMR Spinning Speed Variation.
Gaëlle Diserens1, Christina Precht2, Martina Vermathen3, Anna Oevermann4, Chris Boesch1, Peter Vermathen1
1Depts. Radiology and Clinical Research, University Bern, Bern, Switzerland; 2Dept. of Clinical Veterinary Medicine, University Bern, Bern, Switzerland; 3Dept. of Chemistry & Biochemistry, University Bern, Bern, Switzerland; 4Dept. of Clinical Research and Veterinary Public Health, University Bern, Bern, Switzerland

1987. Direct Determination of Phosphate Sugars in Biological Material by 1H High Resolution-Magic Angle Spinning (HR-MAS) NMR Spectroscopy
Gaëlle Diserens1, Martina Vermathen2, Iche Gjuroski3, Sandra Eggimann4, Christina Precht4, Chris Boesch1, Peter Vermathen1
1Depts. Radiology and Clinical Research, University Bern, Bern, Switzerland; 2Dept. of Clinical Veterinary Medicine, University Bern, Bern, Switzerland; 3University Institute of Clinical Chemistry, Bern University Hospital, Bern, Switzerland; 4Dept. of Clinical Research and Veterinary Public Health, University Bern, Bern, Switzerland

1988. Metabolic Profiling of Milk in Preeclampsia Patients & Healthy Controls: An In-Vitro NMR Study
Naranamangalam R. Jagannathan1, Deepiti Upadhay2, Uma Sharma1, Kamini Dangat2, Anita Kilari2, Savita Mehendale2, Sanjay Lalwani3, Sadhana Joshi3
1Department of NMR & MRI Facility, All India Institute of Medical Sciences, New Delhi, Delhi, India; 2Department of Nutritional Medicine, Bharati Vidyapeeth University, Pune, Maharashtra, India; 3Department of Obstetrics and Gynecology, Bharati Vidyapeeth University, Pune, Maharashtra, India; 4Department of Pediatrics, Bharati Vidyapeeth University, Pune, Maharashtra, India

1989. Metabolic Perturbations of Rat Spleen Due to Chronic Cold Stress: 1H NMR Based Metabolomic Study
SONIA GANDHI1, HEMANTH KUMAR B S2, SUNIL KOUNDAL1, SHUBHRA CHATURVEDI3, RAJENDRA P. TRIPATHI2, SUBASH KHUSHU2
1NMR Research Centre, INMAS, DELHI, India; 2Division and Cyclotron & Radiopharmaceutical Sciences, INMAS, DELHI, India

1990. Proton NMR-Based Metabolomic Profiling in Pulmonary Tuberculosis Patients
Savita Singh1, Sujeet Mewar1, Deepiti Upadhay2, Uma Sharma1, Anand Jaiswal1, Rohit Sarin2, Naranamangalam R. Jagannathan1, H K. Prasad3
1Department of Biotechnology, All India Institute of Medical Sciences, New Delhi, Delhi, India; 2Department of NMR and MRI Facility, All India Institute of Medical Sciences, New Delhi, Delhi, India; 3Department of TB and Respiratory Diseases, National Institute of Tuberculosis and Respiratory Diseases, New Delhi, Delhi, India

1991. Elevated Levels of Acetate in 1H NMR of Urine Could Have Diagnostic Utility in Pediatric Urinary Tract Infection
Omkar B. Ijare1, Tedros Bezabeh1, 2, Tom Blydt-Hansen3, Martin Reed1, Ian C.P. Smith1
1Chemistry, University of Winnipeg, Winnipeg, MB, Canada; 2Human Nutritional Sciences, University of Manitoba, Winnipeg, MB, Canada; 3Pediatrics, University of British Columbia, Vancouver, BC, Canada; 4Radiology, University of Manitoba, Winnipeg, MB, Canada

1992. Ex Vivo Quality-Related Changes in Fish Muscle and Fish Eggs During Storage by High-Resolution 1H Magnetic Resonance Spectroscopy Via Spatial Encoding Intermolecular Single-Quantum Coherence
Xiaohong Cui1, Yali Jin1, Honghao Cui2, Yulan Lin2, Zhong Chen1
1Department of Electronic Science, Fujian Provincial Key Laboratory of Plasma and Magnetic Resonance, Xiamen University, Xiamen, Fujian, China
1993. **High Resolution Magic Angle Spinning 1H NMR Spectroscopic Investigation of Listeria Brainstem Encephalitis in Small Ruminants: Preliminary Results**  
*Christina Precht*, *Gaëlle Diserens*, *Martina Vermathen*, *Anna Oevermann*, *Torsten Seuberlich*, *Jasiane Lauper*, *Daniela Gorgas*, *Chris Boesch*, *Peter Vermathen*  
*1Dept. of Clinical Veterinary Medicine, University Bern, Bern, Switzerland; 2Depts. Radiology and Clinical Research, University Bern, Bern, Switzerland; 3Dept. of Chemistry and Biochemistry, University Bern, Bern, Switzerland; 4Dept. of Clinical Research and Veterinary Public Health, University Bern, Bern, Switzerland*

1994. **Metabonomics Study of Urine in Patients with Celiac Disease Using In-Vitro Proton MR Spectroscopy**  
*Naranamangalam R. Jagannathan*, *Deepthi Upadhyay*, *Uma Sharma*, *Prasenjit Das*, *Siddharth Dutta Gupta*, *Govind K. Makharia*  
*1Department of NMR and MRI Facility, All India Institute of Medical Sciences, New Delhi, Delhi, India; 2Department of Pathology, All India Institute of Medical Sciences, New Delhi, Delhi, India; 3Department of Gastroenterology & Human Nutrition, All India Institute of Medical Sciences, New Delhi, Delhi, India*

1995. **A High-Resolution 2D J-Resolved NMR Method for Intact Biological Samples**  
*Yuqing Huang*, *Chunhua Tan*, *Shuhui Cai*, *Zhong Chen*  
*1Electronic Science, Xiamen University, Xiamen, Fujian, China*

---

### Traditional Poster

**Non Proton MRI**  
Exhibition Hall Wednesday 10:00-12:00

1996. **B0 Insensitive Biexponentially Weighted 23Na Imaging**  
*Nadia Benkhedah*, *Armin M. Nagel*  
*1Medical Physics in Radiology, German Cancer Research Center (DKFZ), Heidelberg, Germany*

1997. **Assessing Water Influx and Retention in the Brain of AQP4 Knockout Mice by 17O-MRI**  
*Yifan Zhang*, *Bernadette O. Erokwu*, *Yuchi Liu*, *George W. Farr*, *Walter F. Boron*, *Chris A. Flask*, *Xin Yu*  
*1Biomedical Engineering, Case Western Reserve University, Cleveland, OH, United States; 2Radiology, Case Western Reserve University, Cleveland, OH, United States; 3Aeromics, LLC, Cleveland, OH, United States; 4Physiology and Biophysics, Case Western Reserve University, Cleveland, OH, United States; 5Biomedical Engineering and Radiology, Case Western Reserve University, Cleveland, OH, United States; 6Pediatrics, Case Western Reserve University, Cleveland, OH, United States*

1998. **Sodium (23Na) and UTE MRI for Detection of Nerve Cell Injuries in Concussed Patients: Preliminary Study**  
*Yongxian Qian*, *Luke C. Henry*  
*1Qian's Lab for MRI, General Labs Cloud LLC, Pittsburgh, PA, United States; 2Department of Orthopaedic Surgery, University of Pittsburgh, Pittsburgh, PA, United States*

1999. **Prediction of Treatment Response in Pancreatic Cancer Using EPR Oxygen Imaging**  
*Shingo Matsumoto*, *Keita Saito*, *Jeeva P. Munasinghe*, *Nallathamby Devasahayam*, *James B. Mitchell*, *Robert J. Gillies*, *Murali C. Krishna*  
*1Radiation Biology Branch, National Cancer Institute, NIH, Bethesda, MD, United States; 2Hokkaido University, Sapporo, Hokkaido, Japan; 3Mouse Imaging Facility, NINDS, NIH, Bethesda, MD, United States; 4Imaging and Metabolism, H. Lee Moffitt Cancer Center and Research Institute, Tampa, FL, United States*

2000. **In Vivo Chloride Quantification with Partial Volume Corrected 35Cl-MRI**  
*Sebastian C. Niesporek*, *Aaron S. Kujawa*, *Nadia Benkhedah*, *Armin M. Nagel*  
*1Medical Physics in Radiology, German Cancer Research Center (DKFZ), Heidelberg, Germany*
**2001. 3D-DLCS Reconstruction of Asymmetrically Undersampled Radial $^{23}$Na-MRI**  
Nicolas G. R. Behl$^1$, Christine Gnahm$^1$, Peter Bacher$^1$, Armin M. Nagel$^1$  
$^1$Medical Physics in Radiology, German Cancer Research Center (DKFZ), Heidelberg, Germany

**Traditional Poster**

**MRS Neurological Diseases**  
Exhibition Hall  
Wednesday 10:00-12:00

---

**2002. Reduced NAA and Glutamate in Healthy Military Subjects Compared to Civilian Controls**  
Huijun Liao$^1$, Kristin Heaton$^2$, Praveen Merugumala$^1$, Jessica Saurman$^2$, Xi Long$^2$, Irina Orlovska$^2$, Sai Merugumala$^1$, Kelly Rudolph$^1$, Nicole Murphy$^2$, Benjamin Rowland$^2$, Alexander P. Lin$^1$  
$^1$Center for Clinical Spectroscopy, Brigham and Women's Hospital, Boston, MA, United States; $^2$Military Performance Division, US Army Research Institute of Environmental Medicine, Natick, MA, United States

---

Bijaya Thapa$^1$, Marjanna Dahl$^2$, Deborah Frank$^2$, Phillip Burch$^3$, Eun-Kee Jeong$^1$, 4  
$^1$FMRIB Centre, Nuffield Department of Clinical Neuroscience, University of Oxford, Oxford, Oxfordshire, United Kingdom; $^2$McLean Hospital, Belmont, MA, United States; $^3$Medical Physics in Radiology, German Cancer Research Center (DKFZ), Heidelberg, Germany; $^4$Exhibition Hall Wednesday 10:00-12:00

---

**2004. In Vivo Quadrupolar Splitting of Potassium ($^{39}$K) MR Spectra in Human Thigh Muscle**  
Manuela B. Rösler$^1$, Nadia Benkhedah$^2$, Armin M. Nagel$^2$, Tanja Platt$^2$, Peter Bacher$^2$, Reiner Umathum$^2$  
$^1$Medical Physics in Radiology, German Cancer Research Center (DKFZ), Heidelberg, Germany; $^2$Medical Physics in Radiology, German Cancer Research Center (DKFZ), Heidelberg, Germany

---

**2005. Detection of GABA Concentration in ACC and OCC by MEGA-PRESS**  
Darong Zhu$^1$, Song Chen$^2$, Xu Yan$^1$, Linfei Wen$^1$, Congyu Liao$^2$, Meng Chen$^2$, Keith Heberlein$^1$, Jianhui Zhong$^2$  
$^1$Hangzhou First People's Hospital, Hangzhou, Zhejiang, China; $^2$Center for Brain Imaging Science and Technology, Department of Biomedical Engineering, Zhejiang University, Hangzhou, Zhejiang, China; $^3$MR Collaboration NE Asia, Siemens Healthcare, Shanghai, China; $^4$Siemens Medical Solutions USA, Inc, Malvern, PA, United States

---

**2006. Evaluation of Glutamatergic Metabolism and Its Role in Neurovascular Coupling by Combined Proton Magnetic Resonance Spectroscopy and Pseudo-Continuous Arterial Spin Labeling in Aging**  
Pui Wai Chi$^1$, Peiying Liu$^1$, Queenie Chan$^1$, Raymond Chuen Chung Chang$^1$, Leung Wing Chu$^1$, Hanzhang Lu$^1$, Henry Ka Fung Mak$^1$  
$^1$Diagnostic Radiology, The University of Hong Kong, Hong Kong, Hong Kong; $^2$Advanced Imaging Research Center, University of Texas Southwestern Medical Center, TX, United States; $^3$Philips Healthcare, Hong Kong, Hong Kong; $^4$Laboratory of Neurodegenerative Disease, Department of Anatomy, The University of Hong Kong, Hong Kong, Hong Kong; $^5$Division of Geriatric Medicine, Department of Medicine, Queen Mary Hospital, Hong Kong, Hong Kong

---

John Jensen$^1$, 2, Stephanie Licata$^1$, 2, Lisa Nickerson$^1$, 2, Marisa Silveri$^1$, 2, Carolyn Caine$^2$, Kristina Wang$^2$, Rosemond Villefuerte$^2$, Kevin Hill$^1$, 2, David Olson$^1$, 2  
$^1$Harvard Medical School, Boston, MA, United States; $^2$McLean Hospital, Belmont, MA, United States

---

**2008. Decreased Glutamate in the Periaqueductal Gray Associates with Neuropathic Pain**  
Yazhuo Kong$^1$, Uzay Emir$^1$, George Tackley$^1$, Lucy Matthews, Charlotte Stagg$^1$, Irene Tracey$^1$, Jacqueline Palace  
$^1$FMRIB Centre, Nuffield Department of Clinical Neuroscience, University of Oxford, Oxford, Oxfordshire, United Kingdom
2009. **Comparison of the Effects of Integrase Inhibitors and Efaverenz on Brain Biochemistry**

*Praveen Dev Merugumala*¹, *April Long*¹, *Huijun Liao*¹, *Yvonne Robles*², *Nina Lin*³, *Alexander P. Lin*¹

¹Center for Clinical Spectroscopy, Brigham and Women's Hospital, Boston, MA, United States; ²Infectious Disease Clinic, Brigham and Women's Hospital, Boston, MA, United States; ³Infectious Disease Clinical Research Unit, Boston University School of Medicine, Boston, MA, United States


*Brenda Bartnik-Olson*¹, *Daniel Ding*², *John Howe*², *Amul Shah*², *Travis Losey*³

¹Radiology, Loma Linda University Medical Center, Loma Linda, CA, United States; ²School of Medicine, Loma Linda University, Loma Linda, CA, United States; ³Neurology, Loma Linda University Medical Center, Loma Linda, CA, United States

2011. **Neurometabolic Changes Observed in the Anterior Cingulate Cortex and the Thalamus in Schizophrenia and in Unipolar Mood Disorder Relative to Healthy Controls at 7T**

*Reggie Taylor*¹, ², *Betsy Schaefer*³, *Elizabeth Osuch*³, ², *Maria Densmore*³, *Negalingam Rajakumar*³, *Jean Theherge*¹, ², *Peter Williamson* ²

¹Medical Biophysics, Western University, London, ON, Canada; ²Imaging, Lawson Health Research Institute, London, ON, Canada; ³Psychiatry, Western University, London, ON, Canada

2012. **Proton MRS Shows Cerebral Lipid Accumulation in Chanarin-Dorfman Syndrome**

*Marinette van der Graaf*¹, *Marleen CDG Huigen*¹, *Eva Morava*¹, ², *A Carin M Dassel*¹, *Maurice AM van Steensel*¹, ³, *Marianne MB Seyger*¹, *Ron A. Wevers*¹, ², *Michel A. Willemsen*¹

¹ Radboud University Medical Center, Nijmegen, Netherlands; ² Tulane University Medical School, New Orleans, LA, United States; ³ Deventer Hospital, Deventer, Netherlands; ⁴ Maastricht University Medical Center, Maastricht, Netherlands; ⁵ Institute of Medical Biology, Immunos, Singapore

2013. **7T MRS in Patients with 1.5T Normal Medically-Refractory Temporal Lobe Epilepsy**

*Simona Nikolova*¹, *Jorge Burneo*², *Robert Bartha*³

¹Robarts Research Institute, London, ON, Canada; ²Schulich School of Medicine and Dentistry, University of Western Ontario, London, Canada; ³Medical Biophysics, University of Western Ontario, London, Ontario, Canada

2014. **T2 Measurements of Childhood Brain Tumours and Metabolite Concentration Correction**

*Dominic Carlin*¹, ², *Ben Babourina-Brooks*¹, ², *Martin Wilson*¹, ², *Andrew C. Peel*¹, ²

¹School of Cancer Sciences, University of Birmingham, Birmingham, United Kingdom; ²Birmingham Children's Hospital, Birmingham, United Kingdom

Traditional Poster

**MRSI**

Exhibition Hall Wednesday 10:00-12:00

2015. **Comparison of Radially Sampled FbSSFP Sequences for Direct 31P MRI**

*Kristian Rink*¹, *Nadia Benkhedadd*¹, *Moritz C. Berger*¹, *Peter Bachert*¹, *Armin M. Nagel*¹

¹German Cancer Research Center (DKFZ), Heidelberg, Germany

2016. **Lipid and Macromolecule Suppression by Double Inversion Recovery in Metabolic Mapping of the Brain at 7T**


¹MCRE, Department of Biomedical Imaging and Image-guided Therapy, Medical University of Vienna, Wien, Vienna, Austria; ²MCRE, Department of Biomedical Imaging and Image-guided Therapy, Medical University of Vienna, Wien, Vienna, Austria
Resting state functional organization in the human cervical cord has only been scarcely explored. In this study, we ... organization among segments was detected, which demonstrated the functional network in the human cervical cord.

1Laboratory of Biomedical Imaging and Signal Processing, The University of Hong Kong, Hong Kong, China; 2Department of Electrical and Electronic Engineering, The University of Hong Kong, Hong Kong, China

Human default mode network (DMN) has been fractionated into subcomponents based on their functional connectivity in rats using rs-fMRI and diffusion tensor imaging (DTI), and discuss their potential functional relevancy.

1Neuroimaging Research Branch, National institute on drug abuse, Baltimore, MD, United States; 2Maryland Neuroimaging Center, University of Maryland, MD, United States

Anesthesia is an integral part of most resting-state fMRI mice studies and does not influence the brain as a whole to any significant extent. Compared to several other agents, Global signal regression did not introduce dramatic changes to ReHo in this study.

1Queensland Brain Institute, The University of Queensland, Brisbane, Queensland, Australia; 2Institute for Biomedical Engineering, University of Hong Kong, Hong Kong, China; 3Department of Orthopaedics and Traumatology, The University of Hong Kong, Hong Kong, China

The aural cavity magnetic susceptibility artifact leads to significant echo planar imaging, EPI, signal dropout in rat brain. This allows EPI-based neuroscience and pharmaceutical research in rat brain using fcMRI that was previously not feasible.

1Biophysics, Medical College of Wisconsin, Milwaukee, WI, United States; 2Dermatology, Medical College of Wisconsin, Milwaukee, WI, United States

The purpose of this study was to validate a five dimensional spectroscopic imaging technique (3 spatial and 2 spectral) for oncology patients. The 5D Imaging technique was used to compare the cancerous region with healthy tissue. This technique will continue to be evaluated in a larger number of healthy volunteers and cancer patients.

1Radiological Sciences, University of California - Los Angeles, Los Angeles, CA, United States; 2Urology, University of California - Los Angeles, Los Angeles, CA, United States

Recently, a “relaxation-enhanced” (RE) selective-excitation MRS approach to acquire in vivo localized spectra with flat baselines and very good signal-to-noise ratios (SNR) has been proposed. As RE MRS targets a priori known resonances, MRSI information may be acquired in a faster, more efficient manner. Hereby we present such Relaxation Enhanced and Coherent Saturating Spectroscopic Imaging (RECESS) protocol.

1Chemical Physics Department, Weizmann Institute of Science, Rehovot, Israel; 2Department of Electronic Science, Xiamen University, Xiamen, Fujian, China; 3Champalimaud Neuroscience Programme, Champalimaud Centre for the Unknown, Lisbon, Portugal

Efficient Spectroscopic Imaging by an Optimized Encoding of Pre-Targeted Brain Main Metabolic Resonances

Zhiyong Zhang1, 2, Noam Shemesh1, 3, Lucio Frydman1
1Chemical Physics Department, Weizmann Institute of Science, Rehovot, Israel; 2Department of Electronic Science, Xiamen University, Xiamen, Fujian, China; 3Champalimaud Neuroscience Programme, Champalimaud Centre for the Unknown, Lisbon, Portugal

Accelerated TE-Averaged Echo-Planar 3D Spectroscopic Imaging: Pilot Validation in Human Brain

Zohaib Iqbal1, Neil E. Wilson1, Brian L. Burns1, Margaret A. Keller1, Michael Albert Thomas1
1University of California - Los Angeles, Los Angeles, CA, United States

Semi-Laser 5D Echo-Planar J-Resolved Spectroscopic Imaging: Pilot Validation in Prostate Cancer

Zohaib Iqbal1, Neil E. Wilson1, Rajakumar Nagarajan1, Daniel A. Margolis1, Robert E. Reiter2, Steven S. Raman1, Michael Albert Thomas1
1Radiological Sciences, University of California - Los Angeles, Los Angeles, CA, United States; 2Urology, University of California - Los Angeles, Los Angeles, CA, United States
2026. Changes in Resting State Networks and Biochemistry in a Mouse Model of Inflammatory Pain
Robert Becker1, Anke Tappe-Theodor1, Ainhoa Bilbao2, Rainer Spanagel3, Wolfgang Weber-Fahr4
1Research group Translational Imaging, Department of Neuroimaging, Central Institute of Mental Health, Medical Faculty Mannheim / Heidelberg University, Mannheim, BW, Germany; 2Pharmacological institute, Heidelberg University, Heidelberg, BW, Germany; 3Department of Psychopharmacology, Central Institute of Mental Health, Medical Faculty Mannheim / Heidelberg University, Mannheim, BW, Germany

2027. The Relationship Between States of Consciousness and Brain Connectivity: A Potential Biomarker for Discriminable States of Consciousness
Christina Hamilton1, Yuncong Ma1, Pablo Perez1
1Pennsylvania State University, State College, PA, United States

2028. Network Modeling of Mouse Brain fMRI Under the Effect of Different Anesthetics
Qasim Bukhari1, Aileen Schröter1, Markus Rudin1, 2
1Institute of Biomedical Engineering, ETH and University of Zürich, Zürich, Switzerland; 2Institute of Pharmacology and Toxicology, University of Zürich, Zürich, Switzerland

2029. Contributions of Spiking Activity to the fMRI Response in the Rat Olfactory Bulb
Alexander John Poplawsky1, Mitshiro Fukuda1, Seong-Gi Kim1, 2
1Radiology, University of Pittsburgh, Pittsburgh, PA, United States; 2Center for Neuroscience Imaging Research, Institute for Basic Science (IBS), Suwon, Korea; 3Biomedical Engineering and Biological Sciences, Sungkyunkwan University (SKKU), Suwon, Korea

2030. Near-Physiological Mouse fMRI of Nociception
Henning Matthias Reimann1, Jaroslav Marek1, Jan Hentschel1, Till Huelnhagen1, Andreas Pohlmann1, Thoralf Niendorf1, 2
1Berlin Ultrahigh Field Facility (B.U.F.F.), Max Delbrueck Center for Molecular Medicine, Berlin-Buch, Berlin, Germany; 2Experimental and Clinical Research Center, Charite-Universitätsmedizin, Berlin, Germany

2031. Determination of Sources for Evoked BOLD Response Under Hyperbaric Oxygen
Damon Philip Cardenas1, 2, Eric R. Muir1, 3, Shiliang Huang1, Timothy Q. Duong1, 3
1University of Texas Health Science Center at San Antonio, San Antonio, TX, United States; 2Institute for integration of Medicine & science and South Texas Veterans Health Care System, University of Texas Health Science Center, San Antonio, TX, United States

2032. Etomidate: A Novel Anesthetic of Choice for Functional Magnetic Resonance Imaging in Mice
Georges Hankov4, 5, Marija M. Petrovovic4, 5, Aileen Schroeter6, Andreas Bruns4, Markus Rudin4, 5, Markus von Kienlin4, Basil Künnecke1, Thomas Mueggler4
1Neuroscience Discovery, F. Hoffmann-La Roche Pharmaceuticals Ltd, Basel, Basel-City, Switzerland; 2Institute for Biomedical Engineering, University of Texas Health Science Center at San Antonio, San Antonio, TX, United States; 3Department of Medicine, University of Texas Health Science Center, San Antonio, TX, United States; 4Institute for integration of Medicine & science and South Texas Veterans Health Care System, University of Texas Health Science Center, San Antonio, TX, United States

2033. MEMRI and BOLD Analyses of the Olfactory Perception System in Response to Odorant Stimuli in Mice
Hirotugu Funatsu1, Sosuke Yoshinaga1, Haruna Goto1, Makoto Hirakane1, Shigeto Iwamoto2, Hiroaki Terasawa1
1Department of Structural Bioimaging, Faculty of Life Sciences, Kumamoto University, Kumamoto, Japan

2034. Functional MRI of the Main and Accessory Olfactory System in the Whole Rodent Brain
Eric R. Muir1, Linlin Cong1, KC Biju1, William E. Rogers1, Robert A. Clark2, Timothy Q. Duong1
1Research Imaging Institute, University of Texas Health Science Center, San Antonio, TX, United States; 2Department of Medicine, University of Texas Health Science Center, San Antonio, TX, United States; 3Institute for integration of Medicine & science and South Texas Veterans Health Care System, University of Texas Health Science Center, San Antonio, TX, United States
2035. A Reproducible Experimental Protocol for Longitudinal Rat fMRI Studies: Electrical Mystacial Pad Stimulation Under Isoflurane Anesthesia
Shin-Lei Peng1, Ling-Yi Huang1, Sheng-Min Huang1, Yi-Chun Wu2, Han Zhang2, Fu-Chan Wei3, Chih-Jen Wen4, Hui-Yu Cheng5, Chih-Hung Lin5, Fu-Nien Wang6
1Department of Biomedical Engineering and Environmental Sciences, National Tsing Hua University, Hsinchu, Taiwan; 2Advanced Imaging Research Center, University of Texas Southwestern Medical Center, Dallas, TX, United States; 3Molecular Imaging Center, Chang Gung Memorial Hospital, Taoyuan, Taiwan; 4Department of Plastic and Reconstructive Surgery, Chang Gung Memorial Hospital, Taoyuan, Taiwan

2036. Mapping the Visual Pathway in the Mouse Brain Using Snapshot fMRI
Arun Niranjan1, Jack A. Wells1, Mark F. Lythgoe1
1Centre for Advanced Biomedical Imaging, University College London, London, United Kingdom

2037. How Specific Is Specific? Stimulus-Evoked fMRI in Rats and Mice
Giovanna Diletta Ielacqua1, Aileen Schroeter1, Mark Augath1, Felix Schlegel1, Markus Rudin1, 2
1Institute for Biomedical Engineering, ETH and University of Zurich, Zurich, Switzerland; 2Institute of Pharmacology and Toxicology, University of Zurich, Zurich, Switzerland

2038. Functional Imaging at 14.1T Using High-Resolution Pass Band BSSFP
Klaus Scheffler1, Philipp Ehses1, Yi He1, Helmut Merkle1, Xin Yu1
1MRC department, Max Planck Institute for Biocytogenetics, Tubingen, Germany, Tubingen, Germany

2039. T2 Weighted High-Resolution fMRI in Human Visual Cortex at 9.4 T Using 3D-GRASE
Valentin G. Kemper1, Federico De Martino1, 2, Desmond H. Y. Tse3, 4, Benedikt A. Poser1, Essa Yacoub5, Rainer Goebel1
1Cognitive Neuroscience FPN, Maastricht University, Maastricht, Limburg, Netherlands; 2Center for Magnetic Resonance Research, CMRR, Radiology, University of Minnesota, Minneapolis, MN, United States; 3Neuropsychology and Psychopharmacology, FPN, Maastricht University, Maastricht, Limburg, Netherlands; 4Radiology, University Medical Centre, Maastricht University, Limburg, Netherlands

2040. BOLD-Signal Representation of Incisional and Inflammatory Pain in Rat Brain After Noxious Electrical and Noxious Mechanical Stimulation
Saeedeh Amirmohseni1, Daniel Segelcke2, Esther Pogatzki-Zahn2, Cornelius Faber1
1Department of Clinical Radiology, University Hospital Muenster, Muenster, Germany; 2Department of Anaesthesiology, Intensive Care and Pain Medicine, University Hospital Muenster, Muenster, Germany

Traditional Poster
fMRI Methods
Exhibition Hall Wednesday 10:00-12:00

2041. Identify the “single Unit” of Neurovascular Coupling by Single-Vessel fMRI and Optogenetics
Maosen Wang1, 2, Yi He1, Yaohui Tang1, Helmut Merkle1, Xin Yu1, 2
1Research Group of Translational Neuroimaging and Neural Control, High Field Magnetic Resonance, Max Planck Institute for Biological Cybernetics, Tuebingen, Baden-Wuerttemberg, Germany; 2Graduate School of Neural & Behavioural Sciences International Max Planck Research School, University of Tuebingen, Tuebingen, Baden-Wuerttemberg, Germany; 3Laboratory of Functional and Molecular Imaging, National Institute of Neurological Disorders and Str, National Institutes of Health, Bethesda, MD, United States

2042. Combined Optogenetic fMRI and Optical Ca2+-Recordings for Functional Mapping of Thalamo-Cortical Circuits in Rat
Lydia Wachsmuth1, Florian Schmid1, Miriam Schwalm1, Albrecht Stroh1, 2, Cornelius Faber1
1MRC department, Max Planck Institute for Biocytogenetics, Tuebingen, Baden-Wuerttemberg, Germany; 2Laboratory of Functional and Molecular Imaging, National Institute of Neurological Disorders and Str, National Institutes of Health, Bethesda, MD, United States
2043. Impact of Anesthesia on Optogenetically Activated Medical Prefrontal Functional Network in Rats
Zhifeng Liang1, 2, Glenn D.R. Wastson3, 4, Kevin D. Alloway3, 4, Gangchea Lee3, Thomas Neuberger3, Nanyin Zhang, 4*
1Dept. of Biomedical Engineering, Pennsylvania State University, University Park, PA, United States; 2Center for Neural Engineering, The Huck Institutes of Life Sciences, Pennsylvania State University, University Park, PA, United States; 3Neural and Behavioral Sciences, College of Medicine, Pennsylvania State University, Hershey, PA, United States; 4Center for Neural Engineering, The Huck Institutes of Life Sciences, Pennsylvania State University, University Park, PA, United States; 5Dept. of Biomedical Engineering, Pennsylvania State University, University Park, PA, United States

2044. Selective Optogenetic Stimulation of VTA Dopaminergic Neurons Enhances the Neuronal Representation of Sensory Input
Heather K. Decot1, 2, Wei Gao1, 4, Joshua H. Jennings1, 2, Pranish A. Kantak2, Yu-Chieh Jill Kao3, 5, Manasmita Das3, 5, Ilana B. Witten1, Karl Deisseroth1, Yen-Yu Ian Shih2, 3, Garret D. Stuber1, 2
1Curriculum in Neurobiology, University of North Carolina at Chapel Hill, Chapel Hill, NC, United States; 2Departments of Psychiatry & Cell and Molecular Physiology, University of North Carolina at Chapel Hill, Chapel Hill, NC, United States; 3Department of Radiology, University of North Carolina at Chapel Hill, Chapel Hill, NC, United States; 4Biomedical Research Imaging Center, University of North Carolina at Chapel Hill, Chapel Hill, NC, United States; 5Department of Neurology, University of North Carolina at Chapel Hill, Chapel Hill, NC, United States; 6Princeton Neuroscience Institute & Department of Psychology, Princeton University, Princeton, NJ, United States; 7Department of Bioengineering, Stanford University, Stanford, CA, United States

2045. Multiband Multiecho 2D-EPI: Maximizing BOLD CNR for fMRI at 3T
E. Daniel P. Gomez1, Jenni Schulz1, Rasim Boyacioglu1, David G. Norris1, 2, Benedikt A. Poser3
1Faculty of Psychology and Neuroscience, Department of Cognitive Neuroscience, Maastricht University, Maastricht, Netherlands; 2046. Reduction of Susceptibility Artifacts and Enhancement of BOLD Contrast in Functional MRI Using Multi-Band Multi-Echo GE-EPI
Tae Kim1, Tiejun Zhao2, Yoojin Lee3, Kyongtae Ty Bae1
1Department of Radiology, University of Pittsburgh, Pittsburgh, PA, United States; 2Siemens Medical Solution USA, Siemens MediCare USA, PA, United States

2047. Whole-Brain, Sub-Second Data Collection for Task-Evoked fMRI Studies Using Simultaneous Multi-Slice/multiband Acquisition
Stephanie McMains1, R Matthew Hutchison1, 2, Ross W. Mair3, 4
1Center for Brain Science, Harvard University, Cambridge, MA, United States; 2Department of Psychology, Harvard University, Cambridge, MA, United States; 3AA Martins Center for Biomedical Imaging, Massachusetts General Hospital, Charlestown, MA, United States

2048. Evaluation of Multi-Echo Multi-Band EPI with ME-ICA Denoising at 7T
Sascha Brunheim1, 2, Helen C. Lückmann1, Prantik Kundu1, Rainer Goebel1, 2, Benedikt A. Poser1
1Faculty of Psychology and Neuroscience, Department of Cognitive Neuroscience, Maastricht University, Maastricht, Netherlands; 2Brain Innovation B.V., Maastricht, Netherlands; 3Section on Functional Imaging Methods, Laboratory of Brain and Cognition, National Institutes of Health, Bethesda, MD, United States

2049. Comparing Resting State fMRI Cleaning Approaches Using Multi- And Single-Echo Acquisitions in Healthy Controls and Patients with ADHD
Ottavia Dipasquale1, 2, Arjun Sethi1, Maria Marcella Lagana2, Francesca Baglio2, Prantik Kundu1, Giuseppe Baselli1, Neil A. Harrison1, Maria Cercignani3
1Politecnico di Milano, Milan, MI, Italy; 2IRCCS, Don Gnocchi Foundation, Milan, MI, Italy; 3Clinical Imaging Sciences Centre, Brighton and Sussex Medical School, Brighton, United Kingdom; 4Section on Advanced Functional Neuroimaging, Brain Imaging Center, Icahn School of Medicine at Mount Sinai, New York, NY, United States
2050. **Fast, Focused fMRI at High Spatial Resolution: 3D-EPI-CAIPI with Cylindrical Excitation**  
*Wieteska van der Zwaag*, *Mayur Naru*, *Marzia Restuccia*, *Olivier Reynaud*, *Daniel Galitchian*, *Jose P. Marques*  
1CIBM, EPFL, Lausanne, VD, Switzerland; 2LIFMET, EPFL, Lausanne, VD, Switzerland; 3Department of Radiology, Bernard and Irene Schwartz Center for Biomedical Imaging, NYU School of Medicine, New York, NY, United States

2051. **Evaluation of 2D Multiband EPI Imaging for High Resolution, Whole Brain fMRI Studies at 3T: Sensitivity and Slice Leakage Artifacts**  
*Nick Todd*, *Steen Moeller*, *Edward J. Auerbach*, *Essa Yacoub*, *Guillaume Flandin*, *nikolaus weiskopf*  
1Wellcome Trust Centre for Neuroimaging, University College London, London, United Kingdom; 2Center for Magnetic Resonance Research, University of Minnesota, MN, United States

2052. **High Temporal Resolution BOLD fMRI Based on Partial Separability Model with L2 Norm Constraint**  
*caiyun shi*, *xiaoyong zhang*, *guoxi xie*, *lijuan zhang*, *chunxiang jiang*, *xin liu*  
1Shenzhen Key Lab for MRI, Shenzhen Institutes of Advanced Technology, Chinese Academy of Sciences, Shenzhen, guangdong, China; 2Shenzhen Key Lab for MRI, Shenzhen Institutes of Advanced Technology, Chinese Academy of Sciences, shenzhen, guangdong, China; 3Centers for Biomedical Engineering, College of Information Science and Technology, University of Science and Technology of China, Hefei, China

2053. **Multi-Echo Independent Component Analysis (ME-ICA) of High Frequency Resting-State fMRI Data**  
*valur olafsson*, *pranit kundu*, *thomas liu*  
1Neuroscience Imaging Center, University of Pittsburgh, Pittsburgh, PA, United States; 2Dept. of Radiology, Icahn School of Medicine at Mount Sinai, New York, NY, United States; 3Center for functional MRI, UCSD, La Jolla, CA, United States

2054. **Simultaneous Multislice Acquisition to Avoid Motion Artifacts in Challenging Patient Populations**  
*Andrew S. Nencka*, *Andrew M. Huettner*, *L. Tugan Muftuler*, *Kevin M. Koch*, *Rasmus Birn*  
1Departments of Biophysics and Radiology, Medical College of Wisconsin, Milwaukee, WI, United States; 2Department of Biophysics, Medical College of Wisconsin, Milwaukee, WI, United States; 3Department of Neurosurgery, Medical College of Wisconsin, Milwaukee, WI, United States; 4Department of Psychiatry, University of Wisconsin, Madison, WI, United States

2055. **Nonlinear Trajectories in Real-Time fMRI Using Target Volumes**  
*bruno riemenschnieder*, *pierre levan*, *marco reisert*, *jürgen hennig*  
1University Medical Center Freiburg, Freiburg, Germany

2056. **The Magnitude Point Spread Function Is an Inadequate Measure of $T_2^*$-Blurring in EPI**  
1Max Planck Institute for Human Cognitive & Brain Sciences, Leipzig, Germany; 2University of Glasgow, United Kingdom

2057. **nMapping: High Speed, High SNR fMRI Using Direct Mapping of Functional Networks**  
*eric wong*  
1Radiology/Psychiatry, UC San Diego, La Jolla, CA, United States

2058. **Assessment of Prospective Motion Correction Using Optical Tracking System for Reduction of Stimulus-Correlated False Positive Activations in High Spatial Resolution Functional Magnetic Resonance Imaging**  
*Ikuhiro Kida*, *Takashi Ueguchi*, *Yuichiro Matsuoka*, *Maxim Zaitsev*  
1Center for Information and Neural Networks, National Institute of Information and Communications Technology, Suita, Osaka, Japan; 2Graduate School of Frontier Biosciences, Osaka University, Suita, Osaka, Japan; 3University Medical Centre Freiburg, Freiburg, Germany
2059. **Robust ACS Acquisition for 3D Echo Planar Imaging**

*Dimo Ivanov*, Markus Barth, Kämil Uluda & Benedikt A. Poser

1Department of Cognitive Neuroscience, Maastricht University, Maastricht, Netherlands; 2University of Queensland, Brisbane, Australia

2060. **Matched-Filter Acquisition of High-Resolution Single-Shot Spirals**

Lars Kasper, Maximilian Haeberlin, Saskia Bollmann, S. Johanna Vannesjo, Bertram J. Wilm, Benjamin E. Dietrich, Simon Gross, Klaas E. Stephan, Klaas P. Pruessmann

1Institute for Biomedical Engineering, University of Zurich and ETH Zurich, Zurich, Switzerland; 2Translational Neuromodeling Unit, Institute for Biomedical Engineering, University of Zurich and ETH Zurich, Zurich, Switzerland

2061. **Interactions Between Physiological Noise Correction and GRAPPA Reconstruction in EPI Data**

R. Allen Waggoner, Zentao Zuo, Yan Zhuo, Topi Tanskanen, Kenichi Ueno, Keiji Tanaka, Kang Cheng

1Laboratory for Cognitive Brain Mapping, RIKEN - Brain Science Institute, Wako-shi, Saitama, Japan; 2State Key Laboratory of Brain and Cognitive Science, Beijing MRI Center for Brain Research, Institute of Biophysics, Chinese Academy of Sciences, Beijing, China; 3RRC, RIKEN - Brain Science Institute, Wako-shi, Saitama, Japan

2062. **The Effects of Coil Compression on Simultaneous Multislice and Conventional fMRI**

Alan Chu, Douglas Noll

1Biomedical Engineering, University of Michigan, Ann Arbor, MI, United States

2063. **T2 Prepared RUFIS: A New Imaging Paradigm for 3D Whole-Brain, Silent and Distortion-Free BOLD fMRI**

Ana Beatriz Solana Sánchez, Anne Menini, Laura Sacolick, Nicolas Hehn, Florian Wiesinger

1GE Global Research, Garching bei Muenchen, Bayern, Germany

2064. **Poisson-Like Property of Spontaneous Event Trains and Its Relationship to Scale-Free Dynamics**

Jingyuan Chen, Gary Glover

1Electrical Engineering, Stanford University, Stanford, CA, United States

2065. **Improvement of Task-Based and Resting-State fMRI Using GRAPPA Accelerated EPI with a FLASH Based Reference Scan**

Siyuan Liu, Lalith Talagala, Souheil Inati, Yisheng Xu, Ho Ming Chow, Gang Chen, Allen Braun

1NIDCD, National Institutes of Health, Bethesda, MD, United States; 2NMRF/NINDS, National Institutes of Health, Bethesda, MD, United States; 3FMRIF/NIMH, National Institutes of Health, Bethesda, MD, United States; 4SSCC/NIMH, National Institutes of Health, Bethesda, MD, United States

2066. **Novel Heterogeneity Analysis of Resting-State Fluctuations in First-Fit Seizures and New-Onset Epilepsy**


1Philips India Ltd., Bangalore, Karnataka, India; 2Dept of Neurology, Maastricht University Medical Center, Maastricht, Netherlands; 3Epilepsy Center Kempenhaeghe, Heeze, Netherlands; 4Department of Radiology, Maastricht University Medical Center, Maastricht, Netherlands

2067. **Vascular Autocalibration of fMRI (VasA fMRI) Improves Sensitivity of Population Studies**

Samira M. Kazan, Siawoosh Mohammadi, Martina F. Callaghan, Guillaume Flandin, Robert Leech, Aneurin Kennerley, Christian Windschiberg, Nikolaus Weiskopf

1Wellcome Trust Centre for Neuroimaging, UCL Institute of Neurology, London, United Kingdom; 2Wellcome Trust Centre for Neuroimaging, UCL Institute of Neurology, London, United Kingdom; 3Cognitive, Clinical and Computational Neuroimaging Lab, University of London, Imperial College, London, United Kingdom; 4Department of Psychology, University of Sheffield, Sheffield,
This study attempted to demonstrate the extent of the task load-dependent augmentation of brain activation and the change of functional connectivity during the TSP. Twenty healthy young adults (mean age: 22.80 ± 1.34 years) participated. The TSP consisted of two phases: a baseline (phase 1) and an activation (phase 2) phase. Phase 2 lasted for 120 seconds and was followed by an equal delay of 120 seconds. The TSP was repeated 20 times in total. The main finding of the study is that the activation of brain areas involved in the TSP increased significantly during phase 2 compared to phase 1. The strongest augmentation of activation was observed in the parietal and prefrontal regions. The results suggest that the TSP task load increases the activation of brain areas involved in the task, which may be due to an increased demand for attention and cognitive control. The study also showed that the functional connectivity between brain regions involved in the TSP changed during the task, indicating a dynamic reorganization of neural networks. The results of this study provide insights into the brain mechanisms underlying task load-dependent changes in brain activation and functional connectivity.
2076. **High-Resolution Functional Imaging in the Human Brain Using Passband BSSFP at 9.4T**

*Klaus Scheffler*, 1, 2, *Philipp Ehses* 1, 2

1Dept. of Biomedical Magnetic Resonance, University of Tübingen, Tübingen, Germany; 2High-Field MR Center, Max Planck Institute for Biological Cybernetics, Tübingen, Germany

2077. **Automated and Individualized fMRI Processing for Pre-Surgical Mapping: Comparison with MEG and Cortical Stimulation.**

*Tynan Stevens*, 1, *Tim Bardouille* 1, 2, *Gerhard Stroink*, 1, 3, *David Clarke*, 1, 4, *Ryan D'Arcy*, 1, 5, *Steven Beyea*, 1, 6

1Dalhousie University, Halifax, Nova Scotia, Canada; 2BIOTIC, Halifax, Nova Scotia, Canada; 3IWK Hospital, Halifax, Nova Scotia, Canada; 4Simon Fraser University, Burnaby, British Columbia, Canada

**Traditional Poster**

**Functional Connectivity Method & Applications**

**Exhibition Hall** Wednesday 10:00-12:00

2078. **Disrupted Resting State Brain Connectivity in Fetal Complex Congenital Heart Disease**


1Radiology, University of Pittsburgh, Pittsburgh, PA, United States; 2Radiology, Children's Hospital of Pittsburgh, Pittsburgh, PA, United States; 3Cardiology, Children's Hospital of Pittsburgh, PA, United States; 4Cardiology, Children's Hospital of Los Angeles, CA, United States; 5Children's Hospital of Los Angeles, CA, United States

2079. **Investigation of Optimal Echo Time for Resting-State fMRI Acquisition in Newborn Infants**


1Centre for the Developing Brain, King's College London, London, United Kingdom; 2Department of Clinical Neurosciences, Oxford University, Oxford, United Kingdom; 3Department of Bioengineering, Imperial College, London, United Kingdom; 4Institute of Psychiatry, King's College London, London, United Kingdom; 5Division of Imaging Sciences and Biomedical, King's College London, London, United Kingdom; 6Biomedical Image Analysis Group, Department of Computing, Imperial College, London, United Kingdom

2080. **Resting State Functional Connectivity Predicts Changes in Interoceptive Awareness Following Mindfulness Training**


1Center for Functional MRI, University of California San Diego, La Jolla, CA, United States; 2Department of Psychiatry, University of California San Diego, La Jolla, CA, United States

2081. **The Relationship Between Level of Consciousness and Variability of Brain Connectivity**

*Christina Hamilton*, 1, *Yuncong Ma*, 1, *Pablo Perez* 1

1Pennsylvania State University, State College, PA, United States

2082. **Modulation of Functional Connectivity During Finger Tapping and Resting State in Patients with MS**


1The Cleveland Clinic, Cleveland, OH, United States

2083. **Reduced Brain Functional Network Dynamics in Propofol Sedation Characterized by Modularity and Time Delayed Network Mutual Information Analysis**

*Guangyu Chen*, 1, *Xiaolin Liu*, 1, 2, *Anthony G. Hudetz*, 1, *Shi-Jiang Li* 1

1Biophysics, Medical College of Wisconsin, Milwaukee, WI - Wisconsin, United States; 2Department of Anesthesiology, Medical College of Wisconsin, Milwaukee, WI - Wisconsin, United States
2084. Increased Variability Across Time Accounts for Reduced Connectivity Within the Default Mode Network in Autism: A Dynamic FC-MRI Study
Maryam Falahpour1, Wesley K. Thompson2, Angela E. Abbott3, Mark E. Mulvey3, Michael Datko3, Ralph-Axel Müller3, Thomas T. Liu
1Center for Functional MRI, University of California San Diego, La Jolla, CA, United States; 2Department of Psychiatry, University of California San Diego, La Jolla, CA, United States; 3Brain Development Imaging Lab, Department of Psychology, San Diego State University, CA, United States

2085. Validation of In Vivo Structural Template of Human Brainstem Nuclei by fMRI at 7 Tesla
Marta Bianciardi1, Nicola Toschi1, 2, Cornelius Eichner1, Kavin Setsompop1, Jonathan R. Polimeni1, Bruce R. Rosen1, Lawrence L. Wald2
1Department of Radiology, A.A. Martinos Center for Biomedical Imaging, MGH and Harvard Medical School, Boston, MA, United States; 2Medical Physics Section, Department of Biomedicine and Prevention, Faculty of Medicine, University of Rome "Tor Vergata"; Rome, Italy

2086. Functional Connectivity Analysis: Performance Comparison of Gradient and Spin Echo EPI Simultaneously Acquired
Brice Fernandez1, Victor Spoormaker2, Philipp Sämann2, Michael Czisch2
1Applications & Workflow, GE Healthcare, Munich, Germany; 2Neuroimaging Unit, Max Planck Institute of Psychiatry, Munich, Germany

2087. Slice-Dynamic Shimming for Simultaneous Brain and Spinal Cord fMRI
Christine Law1, Haisam Islam1, Gary Glover1, Sean Mackey1
1Stanford University, Stanford, CA, United States

2088. T2*-Weighted Inner-Field-Of-View Echo-Planar Imaging of the Spinal Cord
Jürgen Finsterbusch1, 2
1Department of Systems Neuroscience, University Medical Center Hamburg-Eppendorf, Hamburg, Germany; 2Neuroimage Nord, University Medical Centers Hamburg-Kiel-Lübeck, Hamburg-Kiel-Lübeck, Germany

2089. The Interaction of Physiological Noise Correction with Multi and Single Echo ICA Denoising
Jennifer Evans1, Prantik Kundu2, Peter Bandettini1
1NIH, Bethesda, MD, United States; 2Mount Sinai, NY, United States

2090. Neural Activity Associated with Spontaneous Eye Opening and Closure in the Awake Macaque
Catie Chang1, David A. Leopold2, Hendrik Mandelkow1, Marieke L. Schölvinck3, Jeff H. Dunn1
1Advanced fMRI Section, Laboratory of Functional and Molecular Imaging, NINDS, NIH, Bethesda, MD, United States; 2Section on Cognitive Neurophysiology and Imaging, Laboratory of Neuropsychology, NIMH, NIH, Bethesda, MD, United States; 3Ernst Strüngmann Institute (ESI) for Neuroscience in Cooperation with Max Planck Society, Frankfurt am Main, Germany

2091. Propofol-Induced Reduction of Functional Connectivity in Large-Scale Brain Networks Defined at Fine Spatial Scales
Xiaolin Liu1, Kathryn K. Lau2, B. Douglas Ward1, Jeffrey R. Binder1, Shi-Jiang Li1, Anthony G. Hudetz2
1Biophysics, Medical College of Wisconsin, Milwaukee, WI, United States; 2Anesthesiology, Medical College of Wisconsin, Milwaukee, WI, United States; 3Neurology, Medical College of Wisconsin, Milwaukee, WI, United States

2092. Trends, Seasonality, and Persistence of Resting-State fMRI Over 185 Weeks
Ann Sunah Choe1, 2, Craig K. Jones3, 4, Suresh E. Joel3, 4, John Muschelli1, Visar Belegu6, 7, Martin A. Lindquist6, 7, Brian S. Caffo1, 2, Peter CM van Zijl1, 2, James J. Pekar1, 4
1Radiology and radiological sciences, Johns Hopkins University School of Medicine, Baltimore, MD, United States; 2F. M. Kirby Research Center for Functional Brain Imaging, Kennedy Krieger Institute, Baltimore, MD, United States; 3Radiology and radiological sciences, Johns Hopkins School of Medicine, MD, United States; 4F. M. Kirby Research Center for Functional Brain Imaging,
2093. Magnetic Vestibular Stimulation (MVS) Influences fMRI Resting-State Fluctuations:
The Modulation of the Default-Mode Network as an Exemplary Case
Rainer Boegle1, 2, Thomas Stephan1, 3, Matthias Ertl1, 4, Marianne Dieterich1, 3
1German Center for Vertigo and Balance Disorders, DSGZ IFB-LMU, Munich, Bavaria, Germany; 2Graduate School of Systemic Neurosciences, LMU, Munich, Bavaria, Germany; 3Department of Neurology, LMU, Munich, Bavaria, Germany; 4Center for Sensorimotor Research, LMU, Munich, Bavaria, Germany

2094. Inter-Hemispheric Connectivity (Functional Homotopy) Is Reduced in Pediatric Epileptic Patients with Corpus Callosotomy
Peter S. LaViolette1, 2, Sean Lew3, Scott D. Rand1, Manoj Raghavan1, Kurt Hecox3, Mohit Maheshwari1
1Radiology, Medical College of Wisconsin, Milwaukee, WI, United States; 2Neurosurgery, Medical College of Wisconsin, Milwaukee, WI, United States; 3Neurology, Medical College of Wisconsin, Milwaukee, WI, United States

2095. Functional Relevance of Spatial ICA and K-Means Clustering
Jun Young Jeong1, Julia Druzhickib, Kan-Han Lu1, Haiguang Wen1, Zhongming Liu1, 2
1Electrical and computer engineering, Purdue University, West Lafayette, IN, United States; 2Department of statistics, Purdue University, IN, United States; 3Weldon school of biomedical engineering, Purdue University, IN, United States

2096. Analysis of High Frequency Resting State Networks in the Human Brain
Cameron William Trapp1, Kishore Vakamundi2, Stefan Posse3
1Physics, UNM, Corrales, NM, United States; 2DEPARTMENT OF PHYSICS AND ASTRONOMY, UNIVERSITY OF NEW MEXICO, ALBUQUERQUE, NM, United States; 3DEPARTMENT OF NEUROLOGY, UNIVERSITY OF NEW MEXICO, NM, United States

2097. Identification of State Transitions and Durations in Resting-State Functional Connectivity
Sadia Shakil1, Chin-Hui Lee1, Shella Keilholz, 12
1Georgia Institute of Technology, Atlanta, GA, United States; 2Emory University, Atlanta, GA, United States

2098. Subcortical Structures in Resting State fMRI: Uncovering Functional Networks Involving Deep-Brain Structures Using Non-Local Mean Denoising at 1.5T
Michael Bernier1, Maxime Chamberland2, Stephen Cunnane3, Kevin Whittingstall3
1Nuclear medicine and radiobiology, Université de Sherbrooke, Sherbrooke, QC, Canada; 2Institut universitaire de géiatrie de Sherbrooke, Université de Sherbrooke, Sherbrooke, QC, Canada; 3Diagnostic radiology, Université de Sherbrooke, Sherbrooke, QC, Canada

2099. Spin-Locked Oscillatory Excitation (SLOE): Towards In-Vivo Detection of Oscillating Neuronal Currents
Jingwei Sheng1, Yuhui Chai1, Bing Wu2, Weinan Tang3, Jia-Hong Gao1
1Center for MRI Research, Peking University, Beijing, China; 2GE Healthcare MR Research China, Beijing, China

2100. SEEP Contrast Highlights Different Functional Connectivity Networks Compared to BOLD Resting State fMRI
Venkatagiri Krishnamurthy1, Romeo S. Cabanban2, Kaundinya S. Gopinath1
1Dept. of Radiology and Imaging Sciences, Emory University, Atlanta, GA, United States; 2Center for Systems Imaging, Emory University, Atlanta, GA, United States

2101. Automated Subject-Specific Seed Optimization Improves Detection of Resting-State fMRI Connectivity
KISHORE VAKAMUDI1, 2, ELENA ACKLEY3, STEFAN POSSE4
12
Traditional Poster

2102. Resting State Network Detection with Searchlight on Functional MRI
Shiyang Chen1, 2, Hasan Ertan Cetinoglu2, Xiaoping Hu2, 3, Mariappan S. Nadar2
1The Wallace H. Coulter Department of Biomedical Engineering, Georgia Institute of Technology and Emory University, Atlanta, GA, United States; 2Imaging and Computer Vision, Siemens Corporation, Corporate Technology, Princeton, NJ, United States; 3Biomedical Imaging Technology Center, Emory University, Atlanta, GA, United States

2103. Mapping Effective Connectivity in the Mouse Brain Using Granger Causality
Md Taufiq Nasseef1, 2, Adam Liska1, 2, Stefano Panzeri1, Alessandro Gozzi1
1Center for Neuroscience and Cognitive Systems @UniTn, Istituto Italiano di Tecnologia, Rovereto, TN, Italy; 2Center for Mind/Brain Sciences, University of Trento, Rovereto, TN, Italy

2104. Retrospective Nonlinear Spin History Motion Artifact Modeling and Correction with SLOMOCO
Erik Beall1, Mark Lowe1
1Imaging Institute, Cleveland Clinic, Cleveland, OH, United States

2105. SLOMOCO-Derived Slicewise Head Motion Produces Physiologic Signals and Reveals That Motion Is Hard to Characterize
Erik Beall1, Mark Lowe1
1Imaging Institute, Cleveland Clinic, Cleveland, OH, United States

Traditional Poster
fMRI:Bold Physiology & Multimodal Imaging
Exhibition Hall Wednesday 10:00-12:00

2106. Modification of a Standard MR-Compatible EEG Cap for Improved EEG Neurofeedback with Simultaneous fMRI
Vadim Zotev1, Ahmad Mayeli1, 2, Jerzy Bodurka1, 3
1Laureate Institute for Brain Research, Tulsa, OK, United States; 2Neuroradiology, University of New Mexico, Albuquerque, NM, United States; 3College of Engineering, University of Oklahoma, Tulsa, OK, United States

2107. Contribution of a Brain-State Specific Neurophysiological Event to Large-Scale fMRI Signal Fluctuations
Xiao Liu1, Toru Yanagawa2, David A. Leopold3, Marieke Schölvinck4, Catie Chang1, Hiroaki Ishida5, Naotaka Fujii2, Jeff H. Duyn1
1AMRI, LFMI, NINDS, NIH, Bethesda, MD, United States; 2BSI, RIKEN, Saitama, Japan; 3Laboratory of Neuropsychology, NIMH, NIH, Bethesda, MD, United States; 4Ernst Strüngmann Institute for Neuroscience, Frankfurt, Hessen, Germany; 5Tokyo Metropolitan Institute of Medical Science, Tokyo, Japan

2108. EEG-fMRI Integration for the Study of Physiological Response to Intermittent Photic Stimulation
Eleonora Maggioni1, 2, Claudio Zucca1, Gianluigi Rem1, Fabio Maria Triulzi4, Anna Maria Bianchi2, Filippo Arrigoni1
1Scientific Institute IRCCS E.Medei, Bosisio Parini, LC, Italy; 2Department of Electronics Information and Bioengineering, Politecnico di Milano, Milano, MI, Italy; 3Neuroradiology Unit, Fondazione IRCCS Ca Granda, Ospedale Maggiore Policlinico, Milano, MI, Italy

2109. Metabolic Basis for the "rest" Condition in fMRI: Comparison of Eyes Open Vs. Closed States Reveals Constancy of Glucose Metabolism Across Networks
Garth John Thompson1, Valentin Riedl2, 3, Timo Grimmer, 4, Alexander Drzezga5, Peter Herman1, Fahmeed Hyder1, 6
1Diagnostic Radiology, Magnetic Resonance Research Center, Yale University, New Haven, CT, United States; 2Neuroradiology, Nuclear Medicine, Universität München, München, Germany; 3Technische, Universität München - Neuroimaging Center, München, Germany; 4Biomedical Imaging Technology Center, Emory University, Atlanta, GA, United States; 5Laboratory of Neuropsychology, NIMH, NIH, Bethesda, MD, United States; 6EMPIR, UM, Munich, Germany

316
2110. Simultaneous Acquisition of Structural and Resting State Functional Connectivity Data Using a Volumetric Navigated Diffusion Sequence

Mwape Mofya1, Alkatafi Ali Alhamud1, Paul A. Taylor2,3, André J. W. van der Kouwe1, Ernesta M. Meintjes1
1MRC/UCT Medical Imaging Research Unit, Department of Human Biology, University of Cape Town, Cape Town, South Africa; 2African Institute for Mathematical Sciences (AIMS), South Africa; 3Massachusetts General Hospital, Boston, MA, United States

2111. Local Intrinsic Connectivity Measures Relate to GABA/Glx Levels

Katarzyna Bienkowska1, Valentin Riedl1
1Neuroradiology, Technische Universität München, Munich, Germany

2112. Mapping Epileptic Networks Using Simultaneous EEG-MRI at Ultra-High Field

Frédéric Grouiller1, João Jorge2,3, Francesca Pittau4, Pascal Martelli5, Vietske van der Zwaag2, Christoph M. Michel1, Serge Vulliémoz2, Maria Isabel Vargas1, François Lazeyras1
1Department of Radiology and Medical Informatics, Geneva University Hospital, Geneva, Switzerland; 2Department of Bioengineering, Institute for Systems and Robotics, University of Lisbon, Lisbon, Portugal; 3Laboratory for Functional and Metabolic Imaging, École Polytechnique Fédérale de Lausanne, Lausanne, Switzerland; 4EEG and Epilepsy Unit, Department of Neurology, Geneva University Hospital, Geneva, Switzerland; 5Biomedical Imaging Research Center (CIBM), École Polytechnique Fédérale de Lausanne, Lausanne, Switzerland; 6Functional Brain Mapping Laboratory, University of Geneva, Geneva, Switzerland

2113. BOLD Correlate of Spontaneous Cortical and Thalamic Slow Oscillations

Florian Schmid1, Miriam Schwalm2, Lydia Wachsmuth1, Cornelius Faber1, Albrecht Stroh2
1Department of Clinical Radiology, University of Münster, Münster, Germany; 2Institute of Microscopic Anatomy and Neurobiology, Johannes Gutenberg-University Mainz, Mainz, Germany

2114. Micro- And Macrovascular Contributions to Layer-Dependent Blood Volume FMRI: A Multi-Modal, Multi-Species Comparison

Laurentius Huber1, Jozien Goense2, Aneurin Kennerley3, Maria Guidi4, Robert Trampel1, Robert Turner1, Harald E. Möller1
1Max Planck Institute for Human Cognitive & Brain Sciences, Leipzig, Germany; 2University of Glasgow, United Kingdom; 3University of Sheffield, United Kingdom

2115. Simultaneous Electroencephalography and Pseudo-Continuous Arterial Spin Labelling Measurements: Feasibility Study

Qingfei Luo1, Chung-Ki Wong1, Han Yuan1, Vadim Zotev2, Wen-Ming Luh2, Jerzy Bodurka3,4
1Laureate Institute for Brain Research, Tulsa, OK, United States; 2Cornell MRI Facility, Cornell University, Ithaca, NY, United States; 3College of Engineering, Center for Biomedical Engineering, University of Oklahoma, Norman, OK, United States

2116. Differences in the Resting-State fMRI Global Signal Amplitude Between the Eyes Open and Eyes Closed States Are Related to Changes in EEG Vigilance

Chi Wah Wong1, Thomas Liu2
1Center for Functional MRI, University of California San Diego, La Jolla, CA, United States; 2Center for Functional MRI, University of California San Diego, La Jolla, CA, United States

2117. Map the Light-Driven fMRI Signal in Combination with In Vivo Recording

Maosen Wang1, Yi He1, Yaohui Tang1, Dávid Zsolt Balla2, Chunqi Qian3, Xin Yu1
1Research Group of Translational Neuroimaging and Neural Control, High Field Magnetic Resonance, Max Planck Institute for Biological Cybernetics, Tuebingen, Baden-Württemberg, Germany; 2Department of Physiology of Cognitive Processes, Max Planck Institute for Biological Cybernetics, Tuebingen, Baden-Württemberg, Germany; 3Laboratory of Functional and Molecular Imaging, National Institute of Neurological Disorders and Stroke, National Institutes of Health, Bethesda, MD, United States
2118. Investigating the Role of Interictal Activity During a Natural Stimulus Presentation in Children with Epilepsy
Elhum A. Shamshiri1, María Centeno2, Tim Tierney1, Kelly St Pier2, Ronit Pressler1, Sueyen Perani1, 3, Helen J. Cross4, David W. Carmichael1
1Developmental Imaging and Biophysics Section, UCL Institute of Child Health, London, United Kingdom; 2Epilepsy Unit, Great Ormond Street Hospital, London, United Kingdom; 3Department of Basic and Clinical Neurosciences, Institute of Psychiatry, Psychology, and neuroscience, London, United Kingdom; 4Neurosciences Unit, University College London, London, United Kingdom

2119. On the Feasibility and Specificity of Simultaneous EEG and ASL MRI at 3T
Elise Bannier1, 2, Masrel Mano1, 3, Robert Stroemer2, Isabelle Corouge2, Lorraine Perronnet2, 3, Jussi T. Lindgren3, Anatole Lecuyer4, Christian Bariloi5
1Radiology, University Hospital of Rennes, Rennes, France; 2Unité VISAGES U746 INSERM-INRIA, IRISA UMR CNRS 6074, University of Rennes, Rennes, France; 3Unité HYBRID INRIA, IRISA UMR CNRS 6074, Rennes, France; 4Brainproducts GmbH, Gilching, Germany

2120. Bold Oxygen Level Dependant (BOLD) Quantitative Susceptibility Mapping (QSM) at Different Head Orientations
M Ethan MacDonald1, 2, Avery Berman1, 23, Rebecca J. Williams1, 2, Erin L. Mazerolle1, 2, G Bruce Pike1, 2
1Radiology and Clinical Neurosciences, University of Calgary, Calgary, Alberta, Canada; 2Hotchkiss Brain Institute, Foothills Medical Centre, Alberta Health Services, Calgary, Alberta, Canada; 3Biomedical Engineering, McGill University, Montreal, Quebec, Canada

2121. Assessment of the Reproducibility of BOLD Signal-Based Hemodynamic MRI
Toshihiko Aso1, Hidenao Fukuyama2
1Human Brain Research Center, Kyoto University Graduate School of Medicine, Kyoto, Japan

2122. Brain Atrophy Accounts for Age-Related Differences in Hemodynamic Impulse Response Function from Auditory Cortex
Raphael T. Gerraty1, David B. Parker2, Alayar Kangarlu3, Qolamreza R. Razlighi, 24
1Psychology, Columbia University, New York, NY, United States; 2Biomedical Engineering, Columbia University, NY, United States; 3Psychiatry, Columbia University, NY, United States; 4Neurology, Columbia University, New York, NY, United States

2123. Hemodynamic Response Pattern Upon Noxious Electrical Stimulation in Rat Models of Pain
Saeedeh Amirnour1, Daniel Segelcke2, Esther Pogatzki-Zahn3, Cornelius Faber1
1Department of Clinical Radiology, University Hospital Muenster, Muenster, Germany; 2Department of Anaesthesiology, Intensive Care and Pain Medicine, University Hospital Muenster, Muenster, Germany

2124. Underestimation of Functional Connectivity with Impaired Cerebrovascular Reserve : A Working Model of Moyamoya Disease
Tzu-chen Yeh1, 2, Chou-ming Cheng3, Jin-jie Hong1, Sheng-che Hung1, Muh-Li Liang1, Jen-chuen Hsieh2, 3
1Department of Radiology, Taipei Veterans General Hospital, Taipei, Taiwan, Taiwan; 2Institute of Brain Science, National Yang-Ming University, Taipei, Taiwan, Taiwan; 3Department of Medical Research, Taipei Veterans General Hospital, Taipei, Taiwan, Taiwan; 4Neurosurgery Neurological Institute, Taipei Veterans General Hospital, Taipei, Taiwan, Taiwan

2125. The Impact of Echo Time on the Calibration Parameter M
Hannah Hare1, Daniel Bulit1
1FMRIB, University of Oxford, Oxford, Oxon, United Kingdom

2126. Age-Related Differences in CBF, CVR, M, OEF and CMRO2 Using MRI QUO2 and Dual-Echo PCASL
Isabelle Lajoie1, Kenneth S. Dyson2, Scott Nugent2, Felipe D. Tancredi1, 3, Richard D. Hoge2
1Centre de recherche de l’UQGM, Université de Montréal, Montreal, Quebec, Canada; 2McConnell Brain Imaging Centre, Montreal Neurological Institute, McGill University, Montreal, Quebec, Canada; 3Albert Einstein Jewish Hospital, Brazil
2127. Investigating the Effect of Hyperoxia and Hypercapnia on T2* and S0 Calculated from Multi-Echo BOLD Data at 7T.
Alex A. Bhogal1, Jeroen C.W. Siero1, Marielle E. Philippens1, Ebshen T. Petersen1, Martijn Froeling1, Jeroen Hendriks1, Manus J. Donahue1, Hans Hoogland1
1University Medical Center, Utrecht, Netherlands; 2Vanderbilt University School of Medicine, TN, United States

2128. Physiological Modulators of Resting-State MRI Functional Connectivity
Powell Pui Wai Chu1, 2, Ali M. Golestani1, Jonathan B. Kwinta1, 2, Yasha B. Khatamian1, Jean J. Chen1, 2, Joseph Whittaker1, Ian Driver1, Molly Bright1, Kevin Murphy1
1Cardiff University, Cardiff, Wales, United Kingdom; 2School of Psychology, Cardiff University, Cardiff, United Kingdom

2129. Test-Retest Reproducibility of the BOLD Response to a Hypercapnic Challenge
Bryon A. Mueller1, Nicholas Evanoff2, Kara L. Marlat2, Justin R. Geijer3, Kelvin O. Lim1, Donald R. Dengel2
1Department of Psychiatry, University of Minnesota, Minneapolis, MN, United States; 2School of Kinesiology, University of Minnesota, Minneapolis, MN, United States; 3Department of Health, Exercise and Rehabilitative Sciences, Winona State University, Winona, MN, United States

2130. The Susceptibility of Dissolved Oxygen
Avery J.L. Berman1, 2, Yuhan Ma1, Richard D. Hoge1, 2, G. Bruce Pike, 12
1Montreal Neurological Institute, McGill University, Montreal, Quebec, Canada; 2Department of Radiology/Hotchkiss Brain Institute, University of Calgary, Calgary, Alberta, Canada; 3Unité de neuroimagerie fonctionnelle, Centre de recherche de l'institut de gériatrie de Montréal, Montreal, Quebec, Canada

2131. A Bayesian Framework for the Estimation of OEF by Calibrated MRI
Michael Germuska1, Alberto Merola1, Alan Stone2, Kevin Murphy1, Richard Wise1
1Cardiff University, Cardiff, Wales, United Kingdom; 2Oxford University, Oxfordshire, United Kingdom

2132. Linear Dependence of Neuronal Oscillations on Hypercapnia Level: Implications for CO2 Calibrated fMRI
Ian D. Driver1, Joseph Whittaker1, Molly G. Bright1, Suresh D. Muthukumaraswamy1, 2, Kevin Murphy3
1CUBRIC, School of Psychology, Cardiff University, Cardiff, United Kingdom; 2Schools of Pharmacy and Psychology, Auckland University, Auckland, New Zealand

Alberto Merola1, Kevin Murphy1, Alan J. Stone1, Michael A. Germuska1, Valerie E. M. Griffith2, Nicholas P. Blockley3, Richard B. Buxton4, 5, Richard G. Wise1
1CUBRIC, School of Psychology, Cardiff University, Cardiff, United Kingdom; 2Department of Bioengineering and Medical Scientist Training Program, University of California San Diego, La Jolla, CA, United States; 3Center for Functional Magnetic Resonance Imaging, Department of Radiology, University of California San Diego, La Jolla, CA, United States; 4Kavli Institute for Brain and Mind, University of California San Diego, La Jolla, CA, United States

2134. Changes in CBF/CMRO2 Coupling with Graded Visual Stimuli Are Modulated by Baseline Perfusion
Joseph Whittaker1, Ian Driver1, Molly Bright1, Kevin Murphy1
1CUBRIC, School of Psychology, Cardiff University, Cardiff, United Kingdom

2135. An Optimised Respiratory Paradigm for the Bayesian Estimation of OEF by Calibrated MRI
Michael Germuska1, Alberto Merola1, Kevin Murphy1, Richard Wise1
1Cardiff University, Cardiff, Wales, United Kingdom
2136. **Investigation of Neurovascular Coupling Within Brain by Simultaneous Recordings of LFP and Fiber-Optic Hemodynamic Signals**
*Wen-Ju Pan, Jacob Billings, Sheela Keilholz*
1Biomedical Engineering, Emory University/ Georgia Institute of Technology, Atlanta, GA, United States

2137. **Simultaneous Voxel-Wise Mapping of Oxygen Extraction Fraction, Blood Flow and Cerebral Metabolic Rate of Oxygen**
*Yongxia Zhou, Zachary B. Rodgers, Felix W. Wehrli*
1Radiology, University of Pennsylvania, Philadelphia, PA, United States

2138. **Effect of Noise Regression on ASL Based Functional Connectivity**
*Kay Jann, Edgar A. Rios Piedra, Robert X. Smith, Danny JJ Wang*
1Department of Neurology, University of California Los Angeles, Los Angeles, CA, United States

2139. **MR Perfusion Imaging Using High-Temporal-Resolution Resting-State Functional Magnetic Resonance Imaging**
*Tianyi Qian, Yinyan Wang, Tao Jiang*
1MR Collaborations NE Asia, Siemens Healthcare, Beijing, China; 2Beijing Neurosurgical Institute, Beijing, China; 3Beijing Tiantan Hospital, Capital Medical University, Beijing, China

**Traditional Poster**

**Stroke & Neurovascular: Animal Studies**

**Exhibition Hall** Wednesday 13:30-15:30

2140. **Time-Dependent Influence of Hypoxic Ischemic Encephalopathy in Cerebral Metabolite Changes in Neonatal Rats Detected by In Vivo 1H MR Spectroscopy at 9.4 T**
*Do-Wan Lee, Dong-Cheol Woo, Minyoung Lee, Chul-Woong Woo, Sang-Tae Kim, Choong Gon Choi, Bo-Young Choe, Byong Sop Lee*
1Department of Biomedical Engineering, and Research Institute of Biomedical Engineering, The Catholic University of Korea College of Medicine, Seoul, Korea; 2Asan Institute for Life Sciences, Asan Medical Center, Seoul, Korea; 3Department of Pediatrics, Asan Medical Center, University of Ulsan College of Medicine, Seoul, Korea; 4Department of Radiology, Asan Medical Center, University of Ulsan College of Medicine, Seoul, Korea

2141. **Marked Perturbations in CBF and CO2 Reactivity in Subarachnoid Hemorrhage**
*Yuhao Sun, Qiang Shen, Shiliang Huang, Timothy Q. Duong*
1Research Imaging Institute, University of Texas Health Science Center at San Antonio, San Antonio, TX, United States; 2Department of Neurosurgery, Ruijin Hospital, Shanghai Jiao Tong University School of Medicine, Shanghai, China

2142. **Chronic Cerebral Hypoperfusion Induces Cerebral Hemodynamics and Angiogenesis**
*Shi Chang-Zheng, Jing Zhen, Ruan Yiwen, Huang Li, an*
1Jinan University , Guangzhou, Guangdong, China; 2Jinan University, Guangzhou, Guangdong, China

2143. **Time-To-Peak of T2*-Weighted Signal Change of Oxygen Challenge Improves the Identification of Penumbra in Ischemic Stroke**
*Qiang Shen, Shiliang Huang, Timothy Q. Duong*
1Research Imaging Institute, The University of Texas Health Science Center at San Antonio, San Antonio, TX, United States

2144. **Diffusion-Weighted Spatiotemporal Encoding Schemes in the Assessment of SPIO-Labeled Cell Therapy for Ischemic Stroke**
*Jens T. Rosenberg, Avigdor Leftin, Eddy Solomon, Lucio Frydman, Samuel C. Grant*
320
2145. Detection of Subtle Hypoxic-Ischemic Injury by Oscillating Gradient Diffusion MRI in Neonatal Mouse Brain

Dan Wu1, Frances J. Northington1, Lee J. Martin1, Jiangliang Cheng1, Yong Zhang1

1Biomedical Engineering, Johns Hopkins University School of Medicine, BALTIMORE, MD, United States; 2Pediatrics, Johns Hopkins University School of Medicine, MD, United States

2146. Assessment of Blood Brain Barrier Permeability in the Rat Brain with Ischemic Occlusion Using DSC-MRI

Ramesh Paudyal1, Silun Wang1, Yonggang Li2, Byron D. Ford2, Xiaodong Zhang2

1Yerkes Imaging Center, Yerkes National Primate Research Center, Emory University, Atlanta, GA, United States; 2Neurobiology, Neurosciences Institute, Morehouse School of Medicine, Atlanta, GA, United States

2147. Combine Diffusion Tensor Imaging and RGMa Immunohistochemical Analysis to Evaluate the Crossed Cerebellar Diachisis in Rats After Middle Cerebral Artery Occlusion

Yong Zhang1, Jiangliang Cheng1, Yanan Lin1, Lu Yang1, Shanshan Zhao1, Dandan Zheng2

1Dept. of MRI, The First Affiliated Hospital of Zhengzhou University, Zhengzhou, Henan, China; 2GE Healthcare, China, Beijing, China

2148. The Role of Collateral Circulation in Perfusion and Diffusion MRI After Stroke

Yu-Chieh Jill Kao1, Esteban A. Oyarzabal2, Hua Zhang3, James E. Faber4, Yen-Yu Ian Shih1

1Neurology and BRIC, University of North Carolina, Chapel Hill, NC, United States; 2Imaging Research Center, Taipei Medical University, Taipei, Taiwan; 3Neurology and BRIC, University of North Carolina, Chapel Hill, NC, United States; 4Department of Cell Biology and Physiology, University of North Carolina, Chapel Hill, NC, United States

2149. Monitoring Response to Neuregulin-1 in a Rat Model of Stroke Using Perfusion- And Diffusion Weighted MRI

Ramesh Paudyal1, Yonggang Li2, Silun Wang1, Byron D. Ford2, Xiaodong Zhang2

1Yerkes Imaging Center, Yerkes National Primate Research Center, Emory University, Atlanta, GA, United States; 2Neurobiology, Neurosciences Institute, Morehouse School of Medicine, Atlanta, GA, United States

2150. Absolute T1 and T2 Relaxation Times; Proxies for Onset Time and Tissue Status Assessment in Acute Ischaemic Stroke

Harriet J. Rogers1, Bryony L. McGarry1, Kimmo T. Jokivarsi1, Michael J. Knight1, Alejandra Sierra Lopez2, Olli HJ Gröhn2, Risto A. Kauppinen2

1School of Experimental Psychology and CRIC, University of Bristol, Bristol, United Kingdom; 2Department of Neurobiology, University of Eastern Finland, Kuopio, Finland

2151. Effect of Motor Cortex Lesions on Brain Connectivity of Rhesus Monkeys

Bang-Bon Koo1, Mary Orczykowski1,2, Kevin Arndt1, Yansong Zhao1, Tara Moore1, Ron J. Killiany1

1Anatomy and Neurobiology, Boston University School of Medicine, Boston, MA, United States; 2Boston University School of Medicine, MA, United States; 3Philips Healthcare, Cleveland, OH, United States

2152. Chronic Methylene Blue Treatment Decreases Ischemic Stroke Volume and Improves Functional Behavioral Recovery

Pavel Rodriguez1, Jiang (John) Zhao1,2, Timothy Q. Duong1

1Research Imaging Institute, The University of Texas Health Science Center, San Antonio, TX, United States; 2Department of Anatomy and Embryology, Peking University Health Science Center, Beijing, United States
2153. ADC Correlates of CBF and Tissue PO2 in Global Cerebral Ischemia
Yash Vardhan Twari1,2, Timothy Duong3
1Research Imaging Institute, UT Health Science Center, San Antonio, TX, United States; 2Biomedical Engineering, UT, San Antonio, TX, United States; 3Research Imaging Institute, UT Health Science Center, San Antonio, TX, United States

2154. Assessment of Experimental Stroke Lesion Size Using 1T Benchtop MRI
Jed Wingrove1*, Daniel Stickeys1*, Valerie Taylor1, Thomas Roberts1, Rajiv Ramasawmy1, Bernard Siow1*, Mark Lythgoe1*,
1Centre for Advanced Biomedical Imaging, Department of Medicine, University College London, London, United Kingdom

2155. Age Dependent Differences in Photothrombotic Ischemic Injury Detected Using Quantitative MR Imaging
Ursula Tuo1, Min Qiao, Manasi Sule, Qinbo Deng, Melissa Morganov, David Rushforth, Tadeusz Fonik1
1Physiology and Pharmacology, CI Neurosciences and Radiology, University of Calgary, Calgary, AB, Canada

2156. Cerebrovascular Damage After Stroke in Type Two Diabetic Rats Measured by MRI
Guangliang Ding1, Tao Yan1, Jieli Chen1, Michael Chopp1,2, Lian Li1, Qingjiang Li1, Chengcheng Cui1, Ruizhuo Ning1, Quan Jiang1
1Neurology, Henry Ford Hospital, Detroit, MI, United States; 2Physics, Oakland University, Rochester, MI, United States

2157. Development of a Porcine Middle Cerebral Artery Occlusion Stroke Model and Stroke Characterization with Quantitative MRI Techniques.
Shannon P. Holmes1, Simon R. Platt1, Liya Wang1, Vivian Lau1, Grace Harrison1, Hui Mao1, Franklin West1
1Veterinary Biosciences & Diagnostic Imaging, University of Georgia, Athens, GA, United States; 2University of Georgia, GA, United States; 3Emory University, GA, United States

2158. Assessment of Neuroprotective Effects of Neuregulin-1 on in Acute Stroke Using Diffusion MRI
Silun Wang1, Yonggang Li2, Ramesh Paudyal1, Byron D. Ford1, Xiaodong Zhang1,2
1YERKES IMAGING CENTER, Emory University, Atlanta, GA, United States; 2Division of Neurobiology, Morehouse School of Medicine, GA, United States; 3Division of Neuropharmacology and Neurologic Diseases, Emory University, GA, United States

2159. Assessment of Pharmacologically Induced Hypothermia in a Rodent Model of Focal Cerebral Ischemia Using Diffusion Tensor Imaging
Silun Wang1, Xiaohuan Gu1, Ramesh Paudyal1, Shan Ping Yu1, Xiaodong Zhang1,2
1YERKES IMAGING CENTER, Emory University, Atlanta, GA, United States; 2Department of Anesthesiology and Department of Neurology, Emory University School of Medicine, GA, United States; 3Division of Neuropharmacology and Neurologic Diseases, Yerkes National Primate Research Center, GA, United States

2160. Identification of 4-Vessel Occlusion in Rat Using MR Angiography and 1H MRS at 14.1T
Mario G. Lepore1, Corina Berset1, Rolf Gruetter2,3, Hongxia Lei1
1AIIT, Center for Biomedical Imaging (CIBM), Ecole Polytechnique Fédérale de Lausanne, Lausanne, Vaud, Switzerland; 2Laboratory for Functional and Metabolic Imaging, Ecole Polytechnique Fédérale de Lausanne, Lausanne, Vaud, Switzerland; 3University of Lausanne, Lausanne, Vaud, Switzerland; 4AIIT, Center for Biomedical Imaging (CIBM), Ecole Polytechnique Fédérale de Lausanne, Lausanne, Vaud, Switzerland; 5University of Geneva, Geneva, Switzerland

2161. Absolute and Relative Blood Volume Measurements by Dual T1 and T2 MRI Acquisitions with Single Contrast Agent in Acute Phase of Ischemic Brain
Ji-Yeon Suh1, Hoesu Jung1, Hyung Joon Cho2, Young Ro Kim1, Jeong Kon Kim1, Gyungoo Cho1
1Magnetic Resonance Research, Korea Basic Science Institute, Cheongju, Chungbuk, Korea; 2Nanobioscience and Chemical Engineering, Ulsan National Institute of Science & Technology (UNIST), Ulsan, Korea; 3Martinos Center for Biomedical Imaging, Massachusetts General Hospital, MA, United States; 4Asan Medical Center University of Ulsan college of Medicine, Seoul, Korea
2162. MRI of a Distal MCAO Ischemic Stroke Lesion Model in Mice
Tom Dresselaers1, Annelies Quaegebeur2, Kristof Govaerts1, Inmaculada Segura2, Robin Lemmens, Peter Carmeliet2, Uwe Himmelreich1
1Dept. of Imaging and Pathology, KU Leuven, Leuven, Belgium; 2Vesalius Research Center, VIB, Belgium

2163. Characterization of the Ischemic Penumbra Using Diffusion Tensor MR Imaging in a Rat Model of Ischemic Stroke Treated with Neuregulin-1
Silun Wang1, Yonggang Li2, Ramesh Paudyal2, Byron D. Ford2, Xiaodong Zhang2
1YERKES IMAGING CENTER, Emory University, Atlanta, GA, United States; 2Department of Neurobiology, Morehouse School of Medicine, GA, United States

2164. Identifying Infarct Lesion Using Diffusion Kurtosis Model with Multi-Band EPI Sequence in Acute Ischemic Stroke Patients
Huan He1, Tianyi Qian2, Ni Liu3, Xingli Liu4, Zhongyan Wang1, Lu Su1, Peiyi Gao2
1Radiology, Beijing Tiantan Hospital, Capital Medical University, Beijing, China; 2MR Collaborations NE Asia, Siemens Healthcare, Beijing, China

2165. Fast and Robust Lesion Detection and Assessment in Acute Ischaemic Stroke Patients from ADC and Quantitative T2 Mapping
Michael John Knight1, Bryony McGarry1, Harriet Rogers1, Joanne Robson2, Rose Bosnell3, Philip Clatworthy1, Risto Kauppinen1
1School of experimental psychology, University of Bristol, Bristol, avon, United Kingdom; 2Southmead Hospital, Bristol, avon, United Kingdom; 3School of clinical sciences, University of bristol, Bristol, avon, United Kingdom

2166. Can Diffusion Weighted MR Spectroscopy Be Used in Differentiating Acute MELAS and Acute Stroke?
Dandan Zheng1, Bing Wu1, Jiangxi Xiao2, Zhenghua Liu2, Zhenyu Zhou1
1GE Healthcare China, Beijing, China; 2Radiology Department, Peking University First Hospital, Beijing, China

2167. Optimal T1-Weighted MR Plaque Imaging for Cervical Carotid Artery Stenosis in Predicting Development of Microembolic Signals During Carotid Dissection in Endarterectomy.
Yuiko Sato1, Kuniaki Ogasawara1, Shinsuke Narumi2, Makoto Sasaki3, Ayumi Saito2, Takamasa Namba1, Masakazu Kobayashi1, Kenji Yoshida1, Yasuo Terayama2, Akira Ogawa3
1Department of Neurosurgery, Iwate Medical University, Morioka, Iwate, Japan; 2Department of Neurology and Gerontology, Iwate Medical University, Morioka, Iwate, Japan; 3Division of Ultra-High Field MRI and Department of Radiology, Iwate Medical University, Morioka, Iwate, Japan

2168. Regional Quantifying Normal-Appearing White Matter Perfusion in Mild to Moderate Hypertension Using 3D Pseudo-Continuous Arterial Spin Labeling
Ting Wang1, Yanhua Li2, Xinhong Guo2, Diandian Huang1, Lin Ma1, Xin Lou1
1Department of Radiology, Chinese PLA General Hospital, Beijing, China; 2Department of Cardiology, Chinese PLA General Hospital, Beijing, China

2169. Small Network Property Changes in MCI with Lacunar Infraction
Wu Wenbo1, Yin Zhenyu2, Zhang Xin2, Zhou Fei2, Liu Renyuan4, Wang Huiting2, Zhu Bin2, Zhang Bing2, Xu Yun1
1Neurology, The Affiliated Drum Tower Hospital of Nanjing University Medical School, Nanjing, Jiangsu, China; 2Radiology, The Affiliated Drum Tower Hospital of Nanjing University Medical School, Jiangsu, China
2170. Validity of Three Dimensional Pseudo-Continuous Arterial Spin Labeling in Leptomeningeal Collaterals Assessement for Patients with Unilateral Middle Cerebral Artery Stenosis
Jinhao Lyu¹, Ning Ma², Zhongrong Miao², Lin Ma¹, Xin Lou¹
¹Department of Radiology, Chinese PLA General Hospital, Beijing, China; ²Department of Interventional Neuroradiology, Beijing Tianan Hospital, Capital Medical University, Beijing, China

2171. Interstudy and Intraobserver Reproducibility of High-Resolution MRI in Evaluating Basilar Atherosclerotic Plaque at 3Tesla
Luguang Chen¹, Xia Tian¹, Qi Liu¹, Chao Ma¹, Qian Zhan¹, Xuefeng Zhang¹, Yuanliang Jiang¹, Jianping Lu¹
¹Department of Radiology, Beijing Hospital of Shanghai, The Second Military Medical University, Shanghai, China

2172. Plaque Characteristics, Burden and Distribution Assessment with High-Resolution Intracranial Vessel Wall Imaging at 3 Tesla MRI
Nikki Dieleman¹, Wenjie Yang¹, Jill Abrigo³, Ka Lok Lee³, Chiu Wing Chu³, Anja G. van der Kolk¹, Jeroen C.W. Siero¹, Ka Sing Wong², Jeroen Hendriks², Xiang Yan Chen²
¹Department of Radiology, University Medical Center Utrecht, Utrecht, Netherlands; ²Department of Medicine, Chinese University of Hong Kong, Shatin, Hong Kong, China; ³Department of Imaging and Interventional Radiology, Chinese University of Hong Kong, Shatin, Hong Kong, China

2173. Prevalence of Cerebrovascular Reserve Impairment in Patients with Severe Intracranial Arterial Stenosis
Alexandre Krainik¹, Olivier Heck², Arnaud Attyé², Nalit Boudiaf³, Florence Tahan³, Kamel Boubagra³, Olivier Detante²
¹Neuroradiology and MRI, University Hospital of Grenoble, Grenoble, France; ²University hospital of Grenoble, France; ³LPNC, France

2174. Reduced Visual Cortex Perfusion Without Volume Loss in Mild to Moderate Hypertension
Diandian Huang¹, Xin Lou¹, Lin Ma¹, Zhengyu Zhou²
¹radiology, Chinese PLA General Hospital, Beijing, China; ²MR Research Center, GE Health care, Beijing, China

2175. Cerebral Hemodynamics After Reduction of Blood Pressure in Hypertension Measured with 3D PCASL
Xin Lou¹, Ning Ma¹, Yanhua Li³, Diandian Huang¹, Ting Wang², Zhenyu Zhou², Bing Wu², Lin Ma¹
¹Department of Radiology, Chinese PLA General Hospital, Beijing, China; ²Department of Interventional Neuroradiology, Beijing Tianan Hospital, Beijing, China; ³Department of Cardiology, Chinese PLA General Hospital, Beijing, China; ⁴MR Research Center, GE Healthcare, Beijing, China

2176. Quantifying the Effects of Lesions with the Tractography-Based Lesion Assessment Standard (TractLAS)
Christopher J. Steele¹, Leonie Lampe¹, Alexander Schaefer², ³, Alfred Anwander³, Bernhard Sehm³, Arno Villringer¹
¹Max Planck Institute for Human Cognitive and Brain Sciences, Leipzig, Sachsen, Germany; ²Department of Electrical and Computer Engineering, Clinical Imaging Research Centre & Singapore Insitu, Singapore, Singapore

2177. Identification of Neurovascular Changes in Cerebral Amyloid Angiopathy by Modeling Subject-Specific Hemodynamic Response Functions
Rebecca J. Williams¹, Bradley Goodyear¹, Stefano Peca³, Cheryl R. McCready¹, ², Richard Frayne¹, ², Eric E. Smith¹, ², G Bruce Pike¹, ²
¹Radiology and Clinical Neurosciences, Hotchkiss Brain Institute, University of Calgary, Calgary, Alberta, Canada; ²Seaman Family MR Research Centre, Alberta Health Services, Calgary, Alberta, Canada; ³Tom Baker Cancer Centre, University of Calgary, Calgary, Alberta, Canada

2178. Identifying Perfusion Deficits with Simultaneous Multi Slice Acceleration EPI Technique: A Non-Invasive Method
Tianyi Qian¹, Zhigang Qi², Mo Zhang², Kun Zhou¹, Kuncheng Li²
2179. Quantitative Evaluation of Collateral Perfusion Using Multi-Delay 3D PCASL in Patients with Middle Cerebral Artery Stenosis

Xin Lou¹, Ning Ma¹, Jinghao Lyu¹, Yang Xu¹, Zhenyu Zhou¹, Bing Wu¹, Lin Ma¹
¹Department of Radiology, Chinese PLA General Hospital, Beijing, China; ²Department of Interventional Neuroradiology, Beijing Tiantan Hospital, Beijing, China; ³MR Research Center, GE Healthcare, Beijing, China

2180. Monitoring pH and Energy Metabolism in Subacute Stroke Using 31P and 1H MRSI

Ulrich Pitatus¹, Johann-Philipp Zöller², Elke Hattingen¹, Oliver Singer²
¹Neuroradiology, Goethe-University Frankfurt, Frankfurt, Germany; ²Neurology, Goethe-University Frankfurt, Germany

2181. Assessments of Oxygen Extraction Fraction in Canines with Internal Carotid Arteries Ligated on Both Sides

Peng Wu¹, Feiyan Chang², Sheng Xie², Hua Guo¹
¹Center for Biomedical Imaging Research, Department of Biomedical Engineering, School of Medicine, Tsinghua University, Beijing, China; ²Department of Radiology, China–Japan Friendship Hospital, Beijing, China

2182. Utility of Bi- And Stretched-Exponential Diffusion-Weighted MR Imaging Models Using High B-Values in Assessment of Stroke

Shiteng Suo¹, Zengai Chen¹, Jianrong Xu¹
¹Department of Radiology, Ren Ji Hospital, School of Medicine, Shanghai Jiao Tong University, Shanghai, China, China

2183. Prediction of the Onset Day Using by T2*-Weighted Magnetic Resonance Imaging in Patients with Subarachnoid Hemorrhage

Takashi Inoue¹, Miki Fujimura², Kuniyasu Nizuma², Teiji Tominaga²
¹Neurosurgery, Sendai Medical Center, Sendai, Miyagi, Japan; ²Neurosurgery, Tohoku University Graduate School of Medicine, Sendai, Miyagi, Japan

2184. DKI Manifestation in Patients with Acute Ischemic Stroke

Gang Guo¹, Liuhong Zhu¹
¹Radiology, Xiamen Second Hospital, Xiamen, Fujian, China

2185. The Influence of Clinical Confounders on Imaging Biomarkers of Lesion Age in Acute Stroke

Vince I. Madai¹, Carla N. Wood¹, Ivaana Galinovic¹, Ulrike Grittner¹, Gajanan S. Revankar³, Steve Z. Martin¹, Olivier Zaro Weber², Walter Möller-Hartmann³, Federico C. von Samson-Himmelstjerna¹, ⁴, Wolf-Dieter Heiss², Martin Ebinger³, Jochen B. Fiebach¹, Jan Sobesky¹
¹Center for Stroke Research, Berlin, Charité Universitätsmedizin Berlin, Berlin, Germany; ²Max Planck Institute for Metabolism Research, Cologne, Germany; ³Department of Radiology, Ludwig-Maximilians-University, Munich, Germany; ⁴Fraunhofer MEVIS, Bremen, Germany; ⁵Centre for Stroke Research Berlin, Charité Universitätsmedizin Berlin, Berlin, Germany

2186. Quantification of the Local Dynamic of the Cerebrovascular Autoregulation

Marco Piccirelli¹, Bas van Niftrik², Oliver Bozinov², Athina Pangali³, Antonios Valavanis¹, Luca Regli², Jorn Fierstra²
¹Neuroradiology University Hospital, Zurich, ZH, Switzerland; ²Neurology University Hospital, Zurich, ZH, Switzerland

2187. Comparison of PWI, DWI, and Clinical Outcome for Suspected Stroke

Neil Chatterjee¹, Shyam Prabhakaran², Sameer Ansari¹, Timiothy Carroll¹
¹Radiology, Northwestern University, Chicago, IL, United States; ²Neurology, Northwestern University, Chicago, IL, United States
2188. Susceptibility-Weighted Imaging of Acute Ischemic Stroke: Quantification of Hypoperfusion
Hsueh-Hui Tsai1, Chih-Chieh Huang1, Yu-Chuan Chang1, Ching-Po Lin1, Chien-Yuan Eddy Lin1, Chuan-Yen Lin1, Dehe Weng1, Jing An1, Zhentao Zuo1, Bo Wang1, Qingle Kong1, Ning Wei1, 2, Yan Zhuo1, Xiaohong Suheyla Cetin1, Berkin Bilgic2, Audrey Peiwen Fan3, Kawin Setsompop2, Gozde Unal1, Tianyi Qian1, Zhongyan Wang2, Peiyi Gao2
1MR Collaborations NE Asia, Siemens Healthcare, Beijing, China; 2Radiology, Beijing Tiantan Hospital, Capital Medical University, Beijing, China

2189. Longitudinal Quantitative MRI Provides Quality Assurance Measures in Patients with Ischemic Stroke Treated with Autologous Bone Marrow Derived Mononuclear Cells.
Muhammad E. Haque1, Khader M. Hasan1, Benjamin A. Schatz2, Sarah M. Lund3, Farhaan S. Vahidy4, Sean I. Savitz4
1Neurology, University of Texas Health Science Center at Houston, Houston, TX, United States; 2Diagnostic and Interventional Imaging, University of Texas Health Science Center at Houston, Houston, TX, United States; 3University of Texas Health Science Center at Houston, TX, United States; 4Neurology, University of Texas Health Science Center at Houston, TX, United States

2190. Amide Proton Transfer in Detecting Intracerebral Hemorrhage
Xiao Ma1, Panli Zuo1, Benjamin Schmitt3, Daoying Shi1, Jinyuan Zhou1, Meiyun Wang4
1Radiology, Zhengzhou University People’s Hospital, Zhengzhou, Henan, China; 2Siemens Healthcare, MR Collaboration NE Asia, Beijing, China; 3Siemens Ltd Australia, Healthcare Sector, Macquarie Park, Australia; 4Radiology, Henan Provincial People’s Hospital, Zhengzhou, Henan, China

2191. Characteristics of the Carotid Atherosclerotic Plaque Classified by NIHSS in Ischemic Stroke
Xiao Gao1, Shengzhang Ji1, Jinyu Song1, Xihai Zhao2, Haiman Bian2, Yu Zhang2, Yingxin Meng2, Shengli Chen1
1The 4th center hospital of TianJin, TianJin, China; 2Tsinghua University School of Medicine, Beijing, China; 3Philips Healthcare, Beijing, China

2192. An Automated Post-Processing Pipeline for the Separation of Intracranial and Extracranial Vessels in 7T TOF-MRA
Zihao Zhang1, 2, Dehe Weng1, Jing An1, Zhentao Zuo1, Bo Wang1, Qingle Kong1, Ning Wei1, 2, Yan Zhuo1, Xiaohong Joe Zhou1, Rong Xue1
1State Key Lab of Brain and Cognitive Science, Beijing MR Center for Brain Research, Institute of Biophysics, Chinese Academy of Sciences, Beijing, China; 2Graduate School, University of Chinese Academy of Sciences, Beijing, China; 3Siemens Shenzhen Magnetic Resonance Ltd., Shenzhen, Guangdong, China; 4Dept. of Radiology, Center for MR Research, University of Illinois, Chicago, IL, United States

2193. Semi-Automated Visualization and Segmentation of Cerebral Veins from QSM
Sahayla Cetin1, Berkin Bilgic2, Audrey Peiwen Fan3, Kawin Setsompop2, Gozde Unal1
1Faculty of Natural Sciences and Engineering, Sabanci University, Istanbul, Turkey; 2Radiology, Athinoulia A. Martinos Center for Biomedical Imaging, Charlestown, MA, United States; 3Department of Radiology, Stanford University, CA, United States

2194. EPT - Measurement of Brain Conductivity for Non-Oncologic Applications
Monika Huhndorf1, Christian Stehning2, Axel Rohr3, Michael Helle4, Thomas Stehle3, Ulrich Katscher2, Olav Jansen1
1Clinic for Radiology and Neuroradiology, Kiel, Germany; 2Philips Research Europe, Hamburg, Germany

2195. Measuring the Timing Information of Blood Flow in Acute Stroke with the "Background Noise" of BOLD Signal
Tianyi Qian1, Zhongyan Wang2, Peiwen Fan2
1MR Collaborations NE Asia, Siemens Healthcare, Beijing, China; 2Radiology, Beijing Tiantan Hospital, Capital Medical University, Beijing, China
2196. High-Resolution Neurite Orientation Dispersion and Density Imaging in the Substantia Nigra of De Novo Parkinson Disease
Koji Kamagata, Masaaki Hori, Akira Nishikori, Kohei Tsuruta, Ayami Okazumi, Taka Hatano, Kouhei Kamiya, Nobutaka Hattori, Shigeaki Aoki
1Department of Radiology, Juntendo University, Tokyo, Bunkyo-ku, Japan; 2Department of Radiological Sciences, Tokyo Metropolitan University, Tokyo, Hachiouji-shi, Japan; 3Department of Neurology, Juntendo University, Tokyo, Bunkyo-ku, Japan; 4Department of Radiology, the University of Tokyo, Tokyo, Bunkyo-ku, Japan

2197. Brain Iron Accumulation in Wilson Disease: A Pilot 7T MR-Histopathology Correlation Study
Petr Dusek, Erik Bahn, Tomas Litwin, Christiane Wegner, Vince Isvan Madai, Matthias Dieringer, Till Huehnagen, Michael Knauth, Thoralf Niendorf, Jan Sobesky, Anna Czlonkowska, Wolfgang Brueck, Friedemann Paul, Susanne A. Schneider, Jens Wuerfel
1Institute of Neuroradiology, University Medicine Goettingen, Goettingen, Germany; 2Department of Radiology and Center of Clinical Neuroscience, 1st Faculty of Medicine and General University Hospital in Prague, Prague, Czech Republic; 3Institute of Neuropathology, University Medicine Goettingen, Goettingen, Germany; 42nd Department of Neurology, Institute Psychiatry and Neurology, Warsaw, Poland; 5Department of Neurology and Center for Stroke Research Berlin (CSB), Charité-Universitaetsmedizin, Berlin, Germany; 6Berlin Ultrahigh Field Facility (B.U.F.F.), Max-Delbrueck Center for Molecular Medicine, Berlin, Germany; 7Experimental and Clinical Research Center (ECRC), Charité-Universitaetsmedizin and Max Delbrueck Center for Molecular Medicine (MDC), Berlin, Germany; 8Department of Experimental and Clinical Pharmacology, Medical University, Warsaw, Poland; 9NeuroCure Clinical Research Center, Charité-Universitaetsmedizin, Berlin, Germany; 10Neurology Department, University of Kiel, Kiel, Germany

2198. Diffusion Kurtosis Imaging Detects Microstructural Alterations in Brain of α-Synuclein Overexpressing Transgenic Mouse Model of Parkinson’s Disease: A Pilot Study
Peter Latta, Amit Khairnar, Eva Drazanava, Jana Kacerova, Anas Arab, Birgit Hutter-Paier, Daniel Havas, Manfred Windisch, Zenon Starcuk Jr., Boguslaw Tomanek, Irena Rlovakova
1Central European Institute of Technology, Masaryk University, Brno, Czech Republic; 2Institute of Scientific Instruments, Academy of Sciences of the Czech Republic, Brno, Czech Republic; 3QPS Austria GmbH, Graz, Austria; 4NeuroScios GmbH, Graz, Austria; 5University of Alberta, Edmonton, Alberta, Canada

2199. Application of GluCEST MRI in Detection of Epileptogenic Foci in Temporal Lobe Epilepsy
1Radiology, University of Pennsylvania Health Systems, Philadelphia, PA, United States; 2Neurology, University of Pennsylvania, Philadelphia, PA, United States; 3Penn Image Computing & Science Lab, University of Pennsylvania, Philadelphia, PA, United States; 4Neurosurgery, University of Pennsylvania, Philadelphia, PA, United States

2200. Reduced Neurite Density in Pre-Manifest Huntington’s Disease Population Detected by NODDI
Jiaying Zhang, Rachael I. Scabilll, Alexandra Durr, Blair Leavitt, Raymund Roos, Sarah J. Tabrizi, Hui Zhang
1Department of Computer Science and Centre for Medical Image Computing, UCL, London, United Kingdom; 2Institute of Neurology, UCL, London, United Kingdom; 3Department of Genetics and Cytogenetics, INSERM UMR S679, APHP Hôpital de la Salpêtrière, Paris, France; 4Department of Medical Genetics, University of British Columbia, British Columbia, Canada; 5Department of Neurology, Leiden University Medical Centre, Leiden, Netherlands

2201. The Abnormality of Functional Connectivity in Parkinson’s in Dopaminergic Regions
Yue Xing, Stefan Schwarz, Nin Bajaj, Penny Gowland, Dorothee Auer
1Sir Peter Mansfield Imaging Centre, School of Medicine, University of Nottingham, Nottingham, Nottinghamshire, United Kingdom; 2Division of Neurology, Nottingham University Hospitals NHS Trust, Nottingham, Nottinghamshire, United Kingdom; 3Sir Peter Mansfield Imaging Centre, School of Physics and Astronomy, University of Nottingham, Nottingham, Nottinghamshire, United Kingdom
2202. Diffusion Changes in the Medulla Oblongata in Parkinson Disease

Nadya Pyatigorskaya1, 2, Romain Valabregue13, Cyril Poupon4, Marie Vidailhet5, 35, Stephane Lehericy1, 2

1Centre de Neuroradiologie de Recherche – CENIR, Institut du Cerveau et de la Moelle épinière – ICM, Paris, France; 2Department of Neuroradiology, Hôpital Pitie-Salpêtrière, Paris, France; 3Université Pierre et Marie Curie and Inserm UMR-S127; CNRS, UMR 7225, Institut du Cerveau et de la Moelle épinière – ICM, Paris, France; 4NeuroSpin, CEA, Saclay, France; 5Fédération de Neurologie, Hôpital Pitie-Salpêtrière, Paris, France

2203. Odor-Related Functional Deficits in the Primary Olfactory Cortex in Early-Stage Parkinson’s Disease

Jianli Wang1, Thiyagarajan Subramanian2, 3, Zachary Mosher1, Jeffrey Vesek1, Qhng X. Yang4

1Radiology, Penn State College of Medicine, Hershey, PA, United States; 2Neurology, Penn State College of Medicine, Hershey, PA, United States; 3Neural & Behavioral Sciences, Penn State College of Medicine, Hershey, PA, United States; 4Neurosurgery, Penn State College of Medicine, Hershey, PA, United States

2204. Abnormalities in the Visual System of Streptozotocin-Induced Type 1 Diabetic Rats-A Diffusion Tensor Imaging Study

Lifeng Gao1, Mingming Huang2, Fuchun Lin1, Hao Lei1

1State Key Laboratory of Magnetic Resonance and Atomic and Molecular Physics, Wuhan Institute of Physics and Mathematics, Chinese Academy of Sciences, Wuhan, Hubei, China; 2Department of Radiology Affiliated Hospital of Guizhou Medical University, Guiyang, Guizhou, China

2205. Diffusion MRI of the Spinal Cord Allows In Vivo Early Detection and Monitoring of GM and WM Degeneration in a Murine ALS Model

Ileana Zucca1, Matteo Figini1, Alessandro Scotti1, Stefania Marcuzzo1, Silvia Bonanno2, Victoria Moreno Manzano3, José Manuel Garcia Verdugo4, Pia Bernasconi5, Renato Montegazza6, Maria Grazia Bruzzone7

1Scientific Direction, Fondazione IRCCS Istituto Neurologico “Carlo Besta”, Milan, Italy; 2Neurology IV - Neuromuscular Diseases and Neuroimmunology Unit, Fondazione IRCCS Istituto Neurologico “Carlo Besta”, Milan, Italy; 3Neuronal and Tissue Regeneration laboratory, Centro de Investigación Príncipe Felipe, Valencia, Spain; 4Unidad de Neurobiología comparada, Universidad de Valencia, Valencia, Spain; 5Neuroradiology Unit, Fondazione IRCCS Istituto Neurologico “Carlo Besta”, Milan, Italy

2206. Imaging Dopamine Autoreceptor Activity Using Functional MRI as a Novel Technique in Parkinson’s Disease

Chiao-Chi V. Chen1, Yi-Hua Hsu1, Chien-Yuan E. Lin2, 3, Chen Chang1

1Medicine, University of British Columbia, Vancouver, BC, Canada; 2Radiology, University of British Columbia, Vancouver, BC, Canada; 3Pathology & Laboratory Medicine, University of British Columbia, Vancouver, BC, Canada; 4Physics and Astronomy, University of British Columbia, Vancouver, BC, Canada

2207. Microstructural Changes of Short Association Fibers in Parkinson's Disease and Normal Aging Assessed by Diffusion Tensor Imaging

Jan Sedlacek1, Jan-Rüdiger Schüre1, 2, Kai Boelmans3, Jens Fiehler1

1University Medical Center Hamburg-Eppendorf, Hamburg, Germany; 2Technical University of Ilmenau, Thüringen, Germany; 3University Hospital of Würzburg, Bavaria, Germany

2208. Pathological Differences in Neuromyelitis Optica Reflected Differently by Two Myelin Water Imaging Techniques

Shannon Kolind1, Praveena Manogaran1, Irene Vavassour2, Brett Russell-Schulz3, Katrina McMullen1, Jing Zhang4, Cornelie Laude5, Alexander MacKay6, Alexander Rauscher7, David Li2, Anthony Traboulsi6

1Medicine, University of British Columbia, Vancouver, BC, Canada; 2Radiology, University of British Columbia, Vancouver, BC, Canada; 3Pathology & Laboratory Medicine, University of British Columbia, Vancouver, BC, Canada; 4Physics and Astronomy, University of British Columbia, Vancouver, BC, Canada

2209. MRS of Basal-Ganglia in Parkinson’s Disease Reveals Higher GABA Levels

Shalmali Dharmadhikari1, 2, Ruoyuan Ma2, Chien- Lin Yeh2, 3, Sandy Snyder1, S. E. Zauber1, Ulrike Dydak1, 2

1School of Health Sciences, Purdue University, W Lafayette, IN, United States; 2Department of Radiology and Imaging Sciences, Indiana University School of Medicine, Indianapolis, IN, United States; 3Department of Neurology, Indiana University School of Medicine, Indianapolis, IN, United States

328
2210. Comparative Study of Anatomical Connectivity of Prelemniscal Radiations in Healthy Subjects and Parkinson’s Disease Patients

María Guadalupe García-Gomar1, Francisco Velasco2, Luis Concha1
1Universidad Nacional Autonoma de Mexico, Santiago de Queretaro, Queretaro, Mexico; 2Hospital General de Mexico, Distrito Federal, Mexico

2211. High Resolution MR Elastography Reveals Retrograde Thalamic Tissue Degradation in Neuromyelitis Optica

Kaspar-Josche Streitberger1,2, Andreas Fehlner1, Friedemann Paul1,4, Jens Würfel1,3, Jing Guo1, Jürgen Braun1, Ingolf Sack1
1Department of Radiology, Charité - Universitätsmedizin Berlin, Berlin, Germany; 2Department of Neurology with experimental Neurology, Charité - Universitätsmedizin Berlin, Berlin, Germany; 3Clinical and Experimental Multiple Sclerosis Research Center, Department of Neurology, Charité - Universitätsmedizin Berlin, Berlin, Germany; 4Institute of Neuroradiology, Universitätsmedizin Göttingen, Göttingen, Germany; 5Institute of Medical Informatics, Charité - Universitätsmedizin Berlin, Berlin, Germany

2212. Maximizing Tissue Contrast for MRI Evaluation of Parkinson’s Disease

Silvia Mangia1, Philip Burton1, Igor Nestrailler, Mikko Nissi2, Alejandro Sierra2, Karin Shmueli4, Michael Howells1, Paul Tuite1, Shalom Michaeli1
1CMRR, University of Minnesota, Minneapolis, MN, United States; 2University of Oulu, Oulu, Finland; 3A. I. Virtanen Institute for Molecular Sciences, University of Eastern Finland, Kuopio, Finland; 4University College London, London, United Kingdom; 5Department of Neurology, University of Minnesota, Minneapolis, MN, United States

2213. Decreased Apparent Fibre Density in the Optic Pathways Correlates with Glaucoma Disease Severity

David Raffelt1, Farnoosh Sadeghian1, Heather Connor2, Alan Connelly1,3
1Florey Institute of Neuroscience and Mental Health, Melbourne, VIC, Australia; 2Department of Optometry, Deakin University, Melbourne, VIC, Australia; 3The Florey Department of Neuroscience and Mental Health, University of Melbourne, Melbourne, VIC, Australia

2214. Whole-Brain Metabolic Profiling of Patients with Parkinson's Disease Using High-Resolution MR Spectroscopic Imaging

Mohammad Sabati, PhD1, Sasha Raju, MBBS2
1Radiology, University of Miami, Miami, FL, United States; 2Public Health Program, University of Miami, Miami, FL, United States

Traditional Poster
Alzheimer’s Disease
Exhibition Hall Wednesday 13:30-15:30

2215. Gadolinium-Enhanced Magnetic Susceptibility Contrast Is Reduced in the Corpus Callosum of a Mouse Model of Tauopathy

James O’Callaghan1, Holly Holmes1, Nicholas Powell1, Ozama Ismail1, Niall Colgan1, Jack Wells1, Bernard Siow1, Michael O'Neills, Emily Collins1, Karin Shmueli1, Mark Lythgoe1
1Centre for Advanced Biomedical Imaging, University College London, London, Greater London, United Kingdom; 2Eli Lilly & Co. Ltd, Windlesham, Surrey, United Kingdom; 3Eli Lilly and Company, Indianapolis, United States; 4Department of Medical Physics and Biomedical Engineering, University College London, London, United Kingdom

2216. Longitudinal Whole-Brain Atrophy Measurement in a Mouse Model of Tauopathy Using the Generalised Boundary Shift Integral

Nick M. Powell1,2, Da Ma1,2, Ferran Prados1, Marc Modat1, Jorge Cardoso1, Holly E. Holmes2, Ozama Ismail2, Niall Colgan1, Michael O’Neill1, Emily Collins1, Mark F. Lythgoe1, Sebastien Ourselin1
1Centre for Medical Image Computing, University College London, London, England, United Kingdom; 2Centre for Advanced Biomedical Imaging, University College London, London, United Kingdom; 3Eli Lilly & Co. Ltd, Windlesham, Surrey, United Kingdom; 4Eli Lilly and Company, Indianapolis, IN, United States
2217. Quantitative Magnetization Transfer Characteristics of White Matter Tracts Correlates with DTI Indices in Predicting the Conversion from Mild Cognitive Impairment to Alzheimer's Disease

Elena Makovac¹, Barbara Spano², Giovanni Giuliatti³, Laura Serra³, Carlo Caltagirone⁴, Marco Bozzali⁴, Mara Cerignani³,⁴
¹Neuroimaging laboratory, IRCCS Santa Lucia Foundation, Roma, Italy; ²Department of Clinical and Behavioural Neurology, IRCCS Santa Lucia Foundation, Roma, Italy, Italy; ³Department of Neuroscience, University of Rome "Tor Vergata", Roma, Italy, Italy; ⁴Clinical Imaging Sciences Centre, Brighton and Sussex Medical School, Brighton, Sussex, United Kingdom

2218. Divergent Episodic Memory Networks Among APOE Alleles in Cognitively Normal Elderly

Hao Shu¹,², Yongmei Shi¹, Gang Chen¹, Zan Wang¹, Duan Liu¹, Chunxian Yue¹, B. Douglas Ward³, Wenjun Li³, Zhan Xu³, Guangyu Chen³, Qihao Guo³, Jun Xu³, Shi-Jiang Li³, Zhijun Zhang³
¹Department of Neurology, Affiliated ZhongDa Hospital, Neuropsychiatric Institute and Medical School of Southeast University, Nanjing, Jiangsu, China; ²Department of Biophysics, Medical College of Wisconsin, Milwaukee, WI, United States; ³Department of Neurology, Huashan Hospital, Fudan University, Shanghai, China; ⁴Department of Neurology, Northern Jiangsu People's Hospital, Yangzhou, Jiangsu, China

2219. Evaluation of Two Susceptibility-Weighted Sequences for Detection of Cerebral Microbleeds

Cheryl R. McCready¹,², M Louis Lauzon¹,², Saima Batoool¹,², Eric E. Smith¹,², Richard Franey¹,²
¹Radiology and Clinical Neurosciences, Hotchkiss Brain Institute, University of Calgary, Calgary, Alberta, Canada; ²Mann Family MR Centre, Foothills Medical Centre, Calgary, Alberta, Canada


Francesco Barban¹, Laura Serra, Roberta Perri², Roberta Annicchiarico¹, Giovanni Augusto Carlesimo³,⁴, Matteo Mancini¹, Fulvia Adriano¹, Claudia Ricci², Maria Giovanna Lombardi³, Mara Cerignani³, Lucia Fadda³, Marco Caltagirone³,⁴, Marco Bozzali³
¹Clinical and Behavioral Neurology Laboratory; Neuroimaging Laboratory, IRCCS S Lucia Foundation, Rome, Italy; ²Clinical and Behavioral Neurology Laboratory, IRCCS S Lucia Foundation, Rome, Italy; ³Department of Neuroscience, University of Rome “Tor Vergata”, Rome, Italy; ⁴Department of Engineering, University of Rome “Roma Tre”, Rome, Italy; ⁵Brighton & Sussex Medical School, Clinical Imaging Sciences Centre, University of Sussex, Brighton, Sussex, United Kingdom

2221. A Multi-Scale MRI Approach to Investigate Novel Drug Treatment Strategies in Mouse Models of Alzheimer’s Disease

Holly Elizabeth Holmes¹, Niall Colgan², Ozama Ismail³, Da Ma³, Jack Wells⁴, Nicholas Powell⁴,², James O’Callaghan¹, Ian Harrison¹, Manuel Jorge Cardoso³, Marc Modat, Elizabeth MC Fisher⁵, Sebastian Ourselin⁵, Michael O’Neill⁵, Emily Catherine Collins⁵, Mark F. Lythgoe⁵
¹Centre for Advanced Biomedical Imaging, University College London, London, London, Greater London, United Kingdom; ²Centre for Medical Image Computing, University College London, London, Greater London, United Kingdom; ³Department of Neurodegenerative Diseases, University College London, London, Greater London, United Kingdom; ⁴Eli Lilly & Co. Ltd, Windlesham, Surrey, United Kingdom; ⁵Eli Lilly & Company, Indianapolis, United States

2222. For Measuring Hippocampal Atrophy Rates the Boundary Shift Integral Algorithm Is Substantially More Accurate Than FreeSurfer, Manual, AdaBoost and FSL/First

Keith S. Cover¹, Ronald A. van Schijndel¹, Adriaan Versteeg¹, Kelvin K. Leung², Emma R. Mulder², Remko A. de Jong¹, Peter J. Visser¹, Alberto Redolfi³, Jerome Revillard⁴, Baptiste Grenier⁴, David Manset⁴, Soheil Damangir⁵, Hugo Vrenken¹, Bob W. van Dijk¹, Nick C. Fox⁵, Giovanni Frissoni⁵, Frederik Barkhof¹
¹VU University Medical Center, Amsterdam, North Holland, Netherlands; ²University College London, London, United Kingdom; ³IRCCS San Giovanni di Dio Fatebenefratelli, Italy; ⁴MAAT, Archamps, France; ⁵Karolinska Institutet, Sweden

2223. Statistical Phase Noise Elimination for Amyloid Plaque Detection

Tetsuya Yoneda¹, Koji Hashimoto¹, Akihiko Kuniyasu¹, Toshinori Hirai¹, Mika Kitajima¹, Mamoru Hashimoto¹, Nan Kurehana¹, Michiya Iwata¹, Motohiro Mio¹, Sosuke Yoshinaga¹, Hiroaki Terasawa¹, Manabu Ikeda¹, Yasuyuki Yamashita¹
¹Kumamoto University, Kumamoto, Japan; ²Sojo University, Kumamoto, Japan; ³Fukuoka University Chikushi Hospital, Fukuoka, Japan
2224. Ex-Vivo Brain MR Morphometric-Pathologic Investigation in a Community Cohort of Older Adults.
Junxia Yu1, Aikaterini Kotrotsou1, Arnold M. Evia1, Julie A. Schneider2, Sue E. Leurgans2, David A. Bennett2, Konstantinos Arfanakis2
1Department of Biomedical Engineering, Illinois Institute of Technology, Chicago, IL, United States; 2Rush Alzheimer's Disease Center, Rush University Medical Center, Chicago, IL, United States

2225. Is the Superficial White Matter Important in Alzheimer’s Disease?
Owen R. Phillips1, 2, Shantanu H. Joshi1, Fabrizio Piras3, Maria D. Orfei1, Mariangela Iorio1, Katherine L. Narr4, David W. Shattuck1, Carlo Caltagirone1, 2, Gianfranco Spalletta4, Margherita Di Paola5
1Clinical and Behavioural Neurology, IRCCS Santa Lucia Foundation, roma, Lazio, Italy; 2Neuroscience, University of Rome “Tor Vergata” Rome, Roma, Italy; 3Neurology, Ahmanson Lovelace Brain Mapping Center, Los Angeles, CA, United States; 4Neuropsychiatry Laboratory, Clinical and Behavioural Neurology, IRCCS Santa Lucia Foundation, Rome, Roma, Italy; 5Human Studies, LUMSA University, Rome, Italy

2226. Nano-Antioxidants Improve Axonal Transport Deficits in a Mouse Model of Alzheimer’s Disease
Kelly Ann Moore1, Errol Loïc Samuel2, James Tour3, Robia G. Pautler4
1Molecular Physiology and Biophysics, Baylor College of Medicine, Houston, TX, United States; 2Department of Chemistry, Rice University, Houston, TX, United States

2227. Comparison of Relaxation, Magnetization Transfer, and Diffusion Tensor Measurements in the Hippocampal Formation Between APP, PS1, and Control Mice
Sheryl L. Herrera1, Heather Whittaker2, Shenghua Zhu3, Vanessa L. Palmer4, Richard Buist5, Xin-Min Li6, Jonathan D. Thiesen7, 8, Melanie Martin9,10
1Physics & Astronomy, University of Manitoba, Winnipeg, Manitoba, Canada; 2Biopsychology program, University of Winnipeg, Winnipeg, Manitoba, Canada; 3Pharmacology & Therapeutics, University of Manitoba, Winnipeg, Manitoba, Canada; 4Biomedical Engineering, University of Manitoba, Winnipeg, Manitoba, Canada; 5Radiology, University of Manitoba, Winnipeg, Manitoba, Canada; 6Psychiatry, University of Alberta, Edmonton, Alberta, Canada; 7Imaging Program, Lawson Health Research Institute, London, Ontario, Canada; 8Medical Biophysics, Western University, London, Ontario, Canada; 9Physics, University of Winnipeg, Winnipeg, Manitoba, Canada; 10Biomedical Engineering, Physics &Astronomy, Pharmacology &Therapeutics, Radiology, University of Manitoba, Winnipeg, Manitoba, Canada

2228. Improved Correlation of Iron to R2 and R2* in Alzheimer’s Disease-Affected White Matter
Christos Michaelides1, David J. Lythgoe2, Harold G. Parkes3, Claire Troakes4, Istvan Bodt5, Tina Geraki6, Amy H. Herlihy7, Po-Wah So6
1IOPPN, King's College London, London, United Kingdom; 2CR-UK Clinical MR Research Group, Institute of Cancer Research, Sutton, London, United Kingdom; 3MRC London Neurodegenerative Diseases Brain Bank, Department of Clinical Neuroscience, IOPPP, King's College London, London, United Kingdom; 4Clinical Neuropathology & London Neurodegenerative Diseases Brain Bank, King's College London, London, United Kingdom; 5Diamond Light Source, Harwell Science and Innovation Campus, Didcot, Oxfordshire, United Kingdom; 6Agilent Technologies, Yarnton, Oxfordshire, United Kingdom

2229. Inter and Intra Network Connectivity Predicts the Evolution of MCI Over Time and the Conversion from MCI to AD
Elena Makova1, Laura Serra1, Chiara Mastropasqua1, Mario Torso2, Barbara Spano3, Giovanni Giulietti1, Carlo Caltagirone2, 3, Mara Cercignani4, Marco Bozzali4
1Neuroimaging laboratory, IRCCS Santa Lucia Foundation, Rome, Italy, Italy; 2Department of Clinical and Behavioural Neurology, IRCCS Santa Lucia Foundation, Roma, Italy, Italy; 3Department of Neuroscience, University of Rome ‘Tor Vergata’, Rome, Italy, Italy; 4Clinical Imaging Sciences Centre, Brighton and Sussex Medical School, Brighton, Sussex, United Kingdom

2230. The Background Brain Network Plays a Compensatory Role in Patients with Amnestic Mild Cognitive Impairment
Wutao Lou1, Lin Shi2, Defeng Wang3, Winnie CW Chu2, Vincent CT Mok2, Sheung-Tak Cheng1, 2, Linda CW Lam1
1Department of Imaging and Interventional Radiology, The Chinese University of Hong Kong, Shatin, NT, Hong Kong; 2Department of Medicine and Therapeutics, The Chinese University of Hong Kong, Shatin, NT, Hong Kong; 3Department of Psychological
Traditional Poster

Studies, Hong Kong Institute of Education, Shatin, Hong Kong; 3Center for Psychosocial Health and Aging, Hong Kong Institute of Education, Shatin, Hong Kong; 4Department of Psychiatry, The Chinese University of Hong Kong, Shatin, NT, Hong Kong

2231. Simultaneous ASL/FDG-PET Imaging of Frontotemporal Dementia
Jing Zhang1, 2, Elizabeth Finger1, 2, Udunna Anazodo, 23, Julia Mackinley1, John Butler2, Frank Prato, 23, Keith St Lawrence, 23
1Department of Clinical Neurological Sciences, University of Western Ontario, London, Ontario, Canada; 2Lawson Health Research Institute, London, Ontario, Canada; 3Department of Medical Biophysics, University of Western Ontario, London, Ontario, Canada

2232. Whole-Brain Correlation Between Microstructural Alterations and Cognitive Performance of Alzheimer Disease Studied by Diffusion Kurtosis Imaging
Hongyan Ni1, Lixiang Yuan2, Yuanyuan Chen1, Man Sun2, Jianzhong Yin1, Xu Yan3
1Tianjin First Central Hospital, Tianjin, China; 2First Central Clinical College, Tianjin Medical University, Tianjin, China; 3Tianjin University, Tianjin, China; 4MR Collaboration NE Asia, Siemens Healthcare, Shanghai, China

2233. Effect of Antiepileptic Treatment on Hippocampal Activity in Alzheimer’s Disease Measured by ASL
Weiying Dai1, David C. Alsop1, Daniel Z. Press1
1Radiology, Beth Israel Deaconess Medical Center & Harvard Medical School, Boston, MA, United States; 2Neurology, Beth Israel Deaconess Medical Center & Harvard Medical School, Boston, MA, United States

2234. Tensor-Based Morphometry Reveals Structural Differences Between Down Syndrome and Alzheimer’s Disease Mouse Model Brains
Nick M. Powell1, 2, Holly E. Holmes2, Da Ma1, 2, Marc Modat1, Jorge Cardoso1, Frances K. Wiseman1, Victor LJ Tybulewicz1, Elizabeth MC Fisher2, Mark F. Lythgoe2, Sebastien Ourselin1
1Centre for Medical Image Computing, University College London, London, England, United Kingdom; 2Centre for Advanced Biomedical Imaging, University College London, London, United Kingdom; 3Department of Neurodegenerative Disease, Institute of Neurology, University College London, London, United Kingdom; 4MRC National Institute for Medical Research, London, United Kingdom

Traditional Poster

Brain Tumour Spectroscopy
Exhibition Hall Wednesday 13:30-15:30

Katharina Johanna Wenger1, Oliver Bähr1, Elke Hattingen2, Ulrich Pilatus2
1Neurooncology, Goethe-University Frankfurt, Frankfurt, Hessen, Germany; 2Neuroradiology, Goethe-University Frankfurt, Frankfurt, Hessen, Germany

2236. The Improved Detection of 2-Hydroxyglutarate in Gliomas at 7 T Using High-Bandwidth Adiabatic Refocusing Pulses
Uzay E. Emir1, Sarah Larkin2, Nick de Pennington2, Natalie Voets1, Puneet Plaha2, Richard Stacey3, James McCullagh1, Stuart Clare1, Peter Jezzard1, Christopher Schofield2, Olaf Ansorge2, Tom Caudox-Hudson2
1FMRIB Centre, University of Oxford, Oxford, Oxfordshire, United Kingdom; 2Nuffield Department of Clinical Neurosciences, University of Oxford, Oxford, Oxfordshire, United Kingdom; 3Department of Neurosurgery, John Radcliffe Hospital, Oxford University Hospitals NHS Trust, Oxford, Oxfordshire, United Kingdom; 4Department of Chemistry, University of Oxford, Oxford, Oxfordshire, United Kingdom

2237. Characterizing Regional Heterogeneity of Glioblastoma: Regions Representing Metabolic Aggression in Enhancing and Non-Enhancing Components
Natalie Rosella Boonzaier1, 2, Timothy J. Larkin, 23, Sarah Leir3, Laila A. Mohsen4, Adam Young3, Victoria C. Lupson2, Stephen J. Price, 23
1Department of Clinical Neurosciences, University of Cambridge, Cambridge, Cambridgeshire, United Kingdom; 2Wolfson Brain Imaging Centre, Addenbrooke's Hospital, Cambridge, Cambridgeshire, United Kingdom; 3Division of Neurosurgery, University of
2238. Longitudinal MRS Imaging of 2-Hydroxyglutarate in Brain Tumors In Vivo
Sandeep Ganji1, Zhongxu An1, Dianne Mendelsohn1, Marco Pinho1, Edward Pan1, Kevin Choe1, Elizabeth Maher1, Changho Choi2
1University of Texas Southwestern Medical Center, Dallas, TX, United States; 2Department of Preventive Medicine, Keck School of Medicine, University of Southern California, CA, United States

2239. Volumetric MRSI as a Tool to Guide and Monitor Radiotherapy Treatment in Patients with Glioma
Anouk Marsman1, Sulaiman Sheriff2, Doris D. Lin3, Andrew A. Maudsley2, Lawrence Kleinberg4, Peter B. Barker1
1Russell H. Morgan Department of Radiology and Radiological Science, Johns Hopkins University School of Medicine, Baltimore, MD, United States; 2Department of Radiation Oncology & Molecular Radiation Sciences, Johns Hopkins University School of Medicine, Baltimore, MD, United States; 3Children's Hospital Los Angeles/USC, Los Angeles, CA, United States; 4Children's Hospital of Pittsburgh, Pittsburgh, PA, United States

2240. Pilocytic Astrocytoma: NAA Is Not NAA
Benita Tamrazi1, Ashok Panigrahy2, Stefan Bluml1, 3
1Children's Hospital Los Angeles/USC, Los Angeles, CA, United States; 2Children's Hospital of Pittsburgh, Pittsburgh, PA, United States; 3Rudi Schulte Research Institute, Santa Barbara, CA, United States

2241. Molecular Subgroups of Medulloblastoma Identification by MR Spectroscopy
Stefan Bluml1, 2, Ashley Margol3, 4, Ashok Panigrahy1, Richard Sposto1, 6, Rebekah Kennedy1, Marvin D. Nelson1, Shahab Asgharzadeh1, 4
1Children's Hospital Los Angeles/USC, Los Angeles, CA, United States; 2Rudi Schulte Research Institute, Santa Barbara, CA, United States; 3Children's Hospital Los Angeles and Saban Research Institute, Los Angeles, CA, United States; 4Department of Pediatrics, Keck School of Medicine, University of Southern California, CA, United States; 5Children's Hospital of Pittsburgh, Pittsburgh, PA, United States; 6Department of Preventive Medicine, Keck School of Medicine, University of Southern California, CA, United States

2242. Early Tumor Response to Radiochemotherapy Using 1D PRESS and 2D Correlated Spectroscopy
Xi Long1, 2, Daniel Ramirez-Gordillo1, Huijun Liao1, Ben Rowland2, Jong-Woo Lee3, Nils Arvold4, Patrick Wen1, Srinivasan Mukundan5, Raymond Huang1, Alexander P. Lin1
1Center for Clinical Spectroscopy, Brigham and Women’s Hospital, Boston, MA, United States; 2Radiology Department, Union Hospital, Tongji Medical School, Huazhong University of Science and Technology, Wuhan, Hubei, China; 3Department of Neurology, Brigham and Women’s Hospital, Boston, MA, United States; 4Division of Neuro-Oncology, Brigham and Women’s Hospital, Boston, MA, United States

2243. MRS Changes in Diffuse Intrinsic Pontine Gliomas Correlate with Survival
Stefan Bluml1, 2, Ashok Panigrahy1
1Children's Hospital Los Angeles/USC, Los Angeles, CA, United States; 2Rudi Schulte Research Institute, Santa Barbara, CA, United States

2244. Glycine Is a Potential Biomarker for Malignant Transformation in Brain Tumors
Changho Choi1, Sandeep Ganji1, Zhongxu An1, Dianne Mendelsohn1, Marco Pinho1, Edward Pan1, Kevin Choe1, Elizabeth Maher1
1University of Texas Southwestern Medical Center, Dallas, TX, United States

2245. Evaluating Brain Metabolites in Patients with Glioma Using Short and Long TE MRSI at 3T and 7T
Yan Li1, Marisa Lafontaine1, Susan Chang2, Sarah J. Nelson1, 2
1Department of Radiology and Biomedical Imaging, University of California, San Francisco, CA, United States; 2Department of Neurological Surgery, University of California, San Francisco, CA, United States; 3Department of Bioengineering and Therapeutic Sciences, University of California, San Francisco, CA, United States
Glioblastomas are one of the most lethal cancers to affect humans. The efficacy of surgical resection and radiotherapy, ... cell presence extend up to 3 centimeters beyond the conventionally determined and subsequently treated tumor margins.

Glioblastoma Multiforme (GBM) is the most lethal and common brain cancer in adult. Our goal is to quantitatively extract ... The proposed algorithm can robustly segment different components of the tumor including low Gd-enhancement region.

We evaluated the feasibility of automatic computer assisted RANO classification of glioblastoma response to therapy. We ... patients. This graphical user interface and the validation of the criteria could pave the way for clinical translation.

We investigated whether MR parameters measured post-surgery prior to chemoradiotherapy could predict progression free ... -free survival interval. Blood products may prevent DSC from being clinically significant at this scan interval.

Simultaneous 18FFECho PET and Dynamic Susceptibility Contrast MRI and FluoroEthyl Choline-PET Using Simultaneous PET/MR

We explored the imaging features of PCNSL using APT imaging of endogenous mobile proteins and peptides at 3 Tesla. ... HGG core. APT imaging could provide additional diagnostic information to differentiate PCNSL from HGG non-invasively.

The purpose of this study was to compare the metabolite profiles that were acquired using conventional long echo time ... to examine heterogeneity in T2 but the acquisition is limited in terms of tumor coverage compared to MRSI at 3T.

Exhibition Hall Wednesday 13:30-15:30

Traditional Poster

Brain Tumour Multiparametric Assessment

2246. Molecular MRI Differentiation Between Primary Central Nervous System Lymphoma (PCNSL) and High-Grade Glioma (HGG) Using Endogenous Protein-Based Amide Proton Transfer (APT) Signals
Shanshan Jiang1, Hao Yu1, Xianlong Wang1, Shilong Lu1, Yi Zhang2, Doon-Hoon Lee2, Hye-Young Heo2, Jinyuan Zhou2, Zhibo Wen1
1Department of Radiology, Zhujiang Hospital of Southern Medical University, Guangzhou, Guangdong, China; 2Department of Radiology, Johns Hopkins University School of Medicine, Baltimore, MD, United States

2247. Dual-Modality Evaluation of Tumour Vasculature, Morphology and Metabolism Via Dynamic Susceptibility Contrast MRI and FluoroEthyl Choline-PET Using Simultaneous PET/MR
Maria Liljeroth1, Kjell Erlendsson1, Francesco Fraioli1, David Thomas2, Enrico De Vita2, Brian Hutton1, Anna Barnes3, Simon Arridge3, Sebastien Ourselin4, David Atkinson7
1Institute of Nuclear Medicine, Metabolism & Experimental Therapeutics, London, United Kingdom; 2Institute of Neurology, Faculty of Brain Sciences, Brain Repair & Rehabilitation, London, United Kingdom; 3National Hospital for Neurology and Neurosurgery, Lysolm Department of Neuroradiology, London, United Kingdom; 4Institute of Nuclear Medicine, Clinical Physics, London, United Kingdom; 5University Department of Radiology, University of Cambridge, Cambridge, United Kingdom; 6Department of Medical Sciences, Div of Medicine, London, United Kingdom

2248. Prediction of Progression Free Survival at 6 Months in High Grade Gliomas Using Pre-Chemoradiotherapy MRI
Lawrence Kenning1, Martin Lowry1, Martin Pickles1, Chris Rowland-Hill1, Shailendra Achawal1, Chittoor Rajaraman2, Lindsay Turnbull1
1Centre for MR Investigations, Hull York Medical School at University of Hull, Hull, United Kingdom; 2Hull and East Yorkshire Hospitals NHS Trust, United Kingdom

2249. Validation of the RANO Criteria for Quantifying Therapeutic Response of Human Brain Tumors Using Computer Assisted Medical Diagnosis (CAMD) Technology
Simon Salinas1, Steve Lau1, Kate Drummond1, Christen Barras2, Pramit Phal1, 2, Patricia Desmond1, 2, Bradford Moffat3
1The University of Melbourne, Melbourne, Victoria, Australia; 2Radiology, Royal Melbourne Hospital, Melbourne, Victoria, Australia; 3Neurosurgery, The University of Melbourne, Melbourne, Victoria, Australia

2250. Novel Method for Automatic Segmentation of Infiltrative Glioblastoma
Kelvin Wong1, 2, Stephen Wong1, 2
1Department of Systems Medicine and Bioengineering, Houston Methodist Research Institute, Houston, TX, United States; 2Department of Radiology, Weill Cornell Medical College, New York, NY, United States

2251. Characterising the Transition Zone from Tumor to Normal Brain in Glioblastomas Using Multimodal MRI
Sarah A. Leir1, Timothy J. Larkin1, 2, Natalie R. Boonzaier, 23, Victoria Lupson1, Lalita A. Mohsen1, Adam Young1, Stephen J. Price1, 6
1Division of Neurosurgery, Addenbrooke's Hospital, Cambridge, Cambridgeshire, United Kingdom; 2Wolfson Brain Imaging Centre, Addenbrooke's Hospital, Cambridge, Cambridgeshire, United Kingdom; 3Department of Clinical Neurosciences, University of Cambridge, Cambridge, Cambridgeshire, United Kingdom; 4Wolfson Brain Imaging Centre, Addenbrooke's Hospital, Cambridge, Cambridgeshire, United Kingdom; 5Division of Neurosurgery, Addenbrooke's Hospital, Cambridge, Cambridgeshire, United Kingdom

2252. Metabolic Activity of the Invasive Microenvironment of Glioblastomas Determines Time to Progression: A Multimodal MR Study
Stephen J. Price1, 2, Adam MH Young1, William J. Scotton1, Natalie R. Boonzaier1, Victoria C. Lupson1, Mary A. McLean1, Timothy J. Larkin1, 2
2253. **Tumour Relapse Prediction Using Multi-Parametric MR Data Recorded During Follow-Up of GBM Patients**

Adrian Ion-Margineanu1, 2, Sofie Van Cauter3, Diana M. Sima1, 2, Frederik Maes, 2 2, Stefaan W. Van Gool1, Stefaan Sunaert1, Uwe Himmelreich6, Sabine Van Huffel1, 2

1Academic Neurosurgery Division, Dept. Clinical Neurosciences, University of Cambridge, Cambridge, United Kingdom; 2Wolfson Brain Imaging Centre, University of Cambridge, Cambridge, United Kingdom; 3Cancer Research UK Cambridge Institute, University of Cambridge, Cambridge, United Kingdom

The purpose of this study was to determine whether DTI and DSC MRI can help in differentiating true progression (TP) from pseudo-progression (PsP). DTI and DSC may be helpful in differentiating PsP from TP (PsP+mixed) consisted of FA, CL and rCBVmax (AUC 0.905). DTI and DSC may be helpful in differentiating PsP from TP.

2254. **Quantitative Brain Tumor Mapping Using Magnetic Resonance Fingerprinting**

Chaitra Badve1, Matthew Rogers1, Alice Yu1, Dan Ma1, Shivani Pahwa1, Andrew Sloan1, Jeffrey Sunshine1, 4, Vikas Gulani1, 4, Mark Griswold4, 6

1Radiology, University Hospitals, Cleveland, OH, United States; 2Department of Radiology, University Hospitals, Cleveland, OH, United States; 3Biomedical Engineering, Case Western Reserve University, Cleveland, OH, United States; 4Radiology, Case Western Reserve University, Cleveland, OH, United States; 5Neurosurgery, University Hospitals, Cleveland, OH, United States; 6Hematology-Oncology, University of Pennsylvania, Philadelphia, PA, United States

Diffusion tensor imaging (DTI) can be used to identify different patterns of tumour invasion in glioblastoma. These patterns can be used for characterizing the margins defined by the different imaging biomarkers. The objective of the study is to characterize the different patterns of invasion using DTI. Using our method we are able to distinguish different patterns of invasion.

2255. **MR-PET Based Diagnosis of Gliomas – a Prospective Comparison of 3D MRSI and 18FET PET**

Jörg Mauler1, Karl-Josef Langen1, Andrew A. Maudsley2, Omid Nikoubashman1, Christian Filss1, Gabriele Staffofofs1, N. Jon Shah1

1Institute of Neuroscience and Medicine, Forschungszentrum Jülich, Jülich, Germany; 2Miller School of Medicine, University of Miami, FL, United States; 3Department of Neuroradiology, RWTH Aachen University, Germany

2256. **Tumor Classification and Prediction Using Robust Multivariate Clustering of Multiparametric MRI**

Alexis Arnaud1, 2, Florence Forbes1, 2, Nicolas Coquery1, 4, Emmanuel L. Barbier2, 4, Benjamin Lemasson1, 2

1INRIA, Grenoble, -, France; 2LJK, University Grenoble Alpes, Grenoble, -, France; 3U836, INSERM, Grenoble, -, France; 4GIN, University Grenoble Alpes, Grenoble, -, France

The association of spatially resolved FET uptake and MRS measures was investigated in high- and low-grade gliomas using a supervised multivariate classification approach. Further investigations on a larger number of subjects are required.

2257. **Advanced MR Image Biomarkers and Updated Genomic Biomarkers for Brain Gliomas: Technical Point and Clinical Application**

Kyung Mi Lee1, Eui Jong Kim1, Ji Hye Jang1, Woo Suk Choi1

1Kyung Hee University Hospital, Seoul, Korea

Multiparametric MRI combined with multidimensional advanced statistical analysis methods may allow a more efficient brain tumor mapping. Using our method we are able to distinguish different patterns of invasion.

Traditional Poster

**Brain Tumour Diffusion**

Exhibition Hall  Wednesday 13:30-15:30

2258. **Characterising Patterns of Tumour Invasion in Glioblastoma**

Timothy J. Larkin1, Natalie R. Boonzaier1, Laila A. Mohsen2, Stephen J. Price1

1Division of Neurosurgery, University of Cambridge, Cambridge, United Kingdom; 2Department of Radiology, University of Cambridge, Cambridge, United Kingdom

The association of spatially resolved FET uptake and MRS measures was investigated in high- and low-grade gliomas using a supervised multivariate classification approach. Further investigations on a larger number of subjects are required.

2259. **Differentiating Tumor Progression from Pseudo-Progression in Patients with Glioblastomas Using DTI and DSC-MRI**

Sumei Wang1, Maria Martinez-Lage2, Yu Sakai1, Sanjeev Chawla1, Sunghyun G. Kim1, Michelle Alonso-Basanta1, Robert A. Lustig2, Steven Brem1, Suyash Mohan1, Ronald L. Wolf1, Arati Desai1, Harish Poptani1

1Radiology, University of Pennsylvania, Philadelphia, PA, United States; 2Pathology and Laboratory Medicine, University of Pennsylvania, Philadelphia, PA, United States; 3Radiology, New York University School of Medicine, New York, NY, United States; 4Radiation Oncology, University of Pennsylvania, Philadelphia, PA, United States; 5Neurosurgery, University of Pennsylvania, Philadelphia, PA, United States; 6Hematology-Oncology, University of Pennsylvania, Philadelphia, PA, United States
2260. IVIM-MRI Reproducibility for Functional Parametric Mapping of Treatment Response in High-Grade Glioma
Jack T. Skinner1, 2, Paul L. Moots3, Adrienne N. Dula1, 2, C Chad Quarles1, 2
1Radiology and Radiological Sciences, Vanderbilt University Medical Center, Nashville, TN, United States; 2Institute of Imaging Science, Vanderbilt University Medical Center, Nashville, TN, United States; 3Neurology, Vanderbilt University Medical Center, Nashville, TN, United States

2261. Differentiation of High-Grade Astrocytomas from Solitary Brain Metastases: Comparing Diffusion Kurtosis Imaging and Diffusion Tensor Imaging
Yan Tan1, Hui Zhang2, Xiao-chun Wang2, Jiang-bo Qin2, Xiao-feng Wu2, Lei Zhang2, Le Wang2
1Department of Radiology, First Clinical Medical College, Shanxi Medical University, Taiyuan, Shanxi, China; 2Department of Radiology, First Clinical Medical College, Shanxi Medical University, Taiyuan 030001., Shanxi, China

Johannes Slotboom1, Nuno Pedrosa de Barros2, Stefan Bauer2, Urs peter Knecht1, Nicole Porz2, Philippe Schucht1, Pica Pica1, Andreas Raabe1, Roland Wiest3, Beate Sick4
1DRNN, Institute of Diagnostic and Interventional Neuroradiology, University Hospital Bern, Bern, Switzerland; 2Institute of Surgical Technology and Biomechanics, University Bern, Bern, Switzerland; 3DKNS-Neurosurgery, University Hospital Bern, Bern, Switzerland; 4DOLS-Radiooncology, University Hospital Bern, Bern, Switzerland; 5IDRNN, Institute of Diagnostic and Interventional Neuroradiology, University Hospital Bern, Bern, Switzerland; 6Division of Biostatistics, ISPM, University Zürich, Zürich, Switzerland

2263. Comparison of Introvoxel Incoherent Motion Diffusion-Weighted MR Imaging and Arterial Spin Labeling MR Imaging in Gliomas
Yuankai Lin1, Jianrui yuan Li2, Zhiqiang Zhang1, Qiang Xu2, Zongjun Zhang3
1Department of Medical Imaging., Jinling Hospital, Medical School of Nanjing University, Nanjing, Jiangsu, China; 2Department of Medical Imaging, Jinling Hospital, Medical School of Nanjing University., Nanjing, Jiangsu, China; 3Department of Medical Imaging, Jinling Hospital, Medical School of Nanjing University., Nanjing, Jiangsu, China

2264. Diffusion Tensor Imaging and Pathologic Correlates of Meningiomas
Sumei Wang1, Sungheon G. Kim2, Maria Martinez-Lage3, Edward B. Lee1, Laurie A. Loewner1, Harish Poptani1, John YK Lee6, Sayush Mohan1
1Radiology, University of Pennsylvania, Philadelphia, PA, United States; 2Radiology, New York University School of Medicine, New York, NY, United States; 3Pathology and Laboratory Medicine, University of Pennsylvania, Philadelphia, PA, United States; 4Neurosurgery, University of Pennsylvania, Philadelphia, PA, United States

2265. Neurite Density and Diffusion Kurtosis Characterization of Brain Tumors with Accelerated DSI
Ek T. Tan1, Robert J. Young2, Xiaofeng Liu3, Marcel Prastawa4, Kyung K. Peck4, 5, Jennifer B. Rubel2, Jonathan I. Sperl1, Luca Marinelli1
1GE Global Research, Niskayuna, NY, United States; 2Radiology, MSKCC, New York, NY, United States; 3Medical Physics, MSKCC, New York, NY, United States; 4GE Global Research, Garching, Munich, Germany

Logan Richard1, 2, Eric Bouffet1, 2, Suzanne Laughlin1, Normand Laperriere1, Kamila Szule1, Douglas Strother4, Juliette Hukin1, Christopher Fryer1, Dina McConnell1, Fang Liu1, Jovanka Skocic1, Alexandra Mogadam1, Donald Mahboub1, 2
1The Hospital for Sick Children, Toronto, Ontario, Canada; 2University of Toronto, Toronto, Ontario, Canada; 3Princess Margaret Hospital, Toronto, Ontario, Canada; 4University of Calgary, Calgary, Alberta, Canada; 5British Columbia Children's Hospital, Vancouver, British Columbia, Canada

2267. An Analysis of Variability in Diffusion Tractography of Language Fascicles
Kesshi Marin Jordan1, Eduardo Caverzasi2, 3, Valentina Panara1, 4, Bagrat Amirbekian1, Anisha Keshavan1, Nico Papinutto2, 5, Mitchel Berger2, Roland Henry2
1Radiology and Radiological Sciences, Vanderbilt University Medical Center, Nashville, TN, United States; 2Institute of Imaging Science, Vanderbilt University Medical Center, Nashville, TN, United States; 3Neurology, Vanderbilt University Medical Center, Nashville, TN, United States; 4Department of Radiology, First Clinical Medical College, Shanxi Medical University, Taiyuan, Shanxi, China; 5Department of Medical Imaging, Jinling Hospital, Medical School of Nanjing University, Nanjing, Jiangsu, China
We investigated the usefulness of preoperative DCE-MRI in predicting three major genetic profiles of glioblastomas. We determined the correlations of DCE-MRI parameters with genetic profiles associated with prognosis, and for determining appropriate treatment strategy in patients with glioblastoma.

Measures of relative cerebral blood volume (rCBV) have shown to be immensely useful in assessing brain tumor vascularity. Reducing minimum sample size requirements for rCBV measures in patient glioblastoma trials may be improved with methods requiring considerably fewer participants to address a given hypothesis.

Glioblastomas are very heterogeneous and diffusely growing brain tumors. They initiate and maintain angiogenesis during glioma growth. This work presents a method for measuring interstitial fluid flow in brain metastases, a potential tool to noninvasively assess glioma microvasculature. The method is based on TOF-MRA and can be used to study the effects of TOF-MRA sequence parameters on the signal intensity in the vicinity of a glioblastoma.

Histopathology remains the gold standard for the diagnosis of brain tumors, even though MR imaging provides invaluable information on the extent of the lesion and its relationship to surrounding structures. Differences in perfusion and diffusion measures, reinforcing the important role of rCBV in glioma characterization.

Here we communicate a method for measuring interstitial fluid flow in brain metastases, a potential tool to noninvasively assess glioma microvasculature. The method is based on TOF-MRA and can be used to study the effects of TOF-MRA sequence parameters on the signal intensity in the vicinity of a glioblastoma.

In this work, we present the initial results of studying imaging differences of cerebral radiation necrosis on Gadolinium enhancement. We investigated the changes in imaging characteristics on “mixed” RN on account of cancer presence in primary and metastatic brain tumors.

In a U251 rat model of cerebral tumor, extracellular volume was measured in the tumor, and in the normal tissue surrounding the tumor. In 18 animals, tumor exudate flux was strongly dependent on compression of peritumoral tissue.
2275. Understanding the Mechanism of Contrast Enhancement in Brain Tumors and Infections Through Dynamic Contrast Enhanced MRI
Mudit Gupta1, Prativa Sahoo2, Ritu Tyagi3, Rana Patir3, Sandeep Vaishya4, Neeraj Prakash4, Indrajit Saha5, Rakesh Kumar Gupta6
1Radiology, Fortis Institute, Gurgaon, Haryana, India; 2Philips Healthcare, Gurgaon, India; 3Neurosurgery, Fortis Institute, Gurgaon, India; 4Pathology, Fortis Institute, Gurgaon, India

2276. Discrepancy Between Arterial Spin Labeling Images and Contrast-Enhanced Images of Brain Tumors
Takashi Abe1, Saho Irahara, Yoichi Otomi, Yuuki Obama, Moriaiki Yamanaaka, Seiji Iwamoto, Sonoka Hisaoka, Mungunkhuyag Majiguren, Delgerdalai Khashbat, Mungunbagana Ganbold, Masafumi Harada
1Institute of Health Biosciences The Tokushima University Graduate School, Tokushima, Japan

2277. The Complementary Value of Arterial Spin Labeling Next to Contrast-Enhanced MRI in the Diagnosis of Brain Tumor Invasion in Mouse Models
Houshang Amiri1, 2, Anna C. Navis3, Tom Peeters1, William P. Leenders3, Arend Heerschap1
1Department of Radiology, Radboud University Medical Center, Nijmegen, Gelderland, Netherlands; 2Department of Cognitive Neuroscience, Radboud University Medical Center, Nijmegen, Gelderland, Netherlands; 3Department of Pathology, Radboud University Medical Center, Nijmegen, Gelderland, Netherlands

2278. Diagnostic Performance of Dynamic Susceptibility Contrast Perfusion in Glioma Grading: Comparison of Cerebral Blood Volume Among Different Analysis Software
Kohsuke Kudo1, Ikako Uwano2, Toshinori Hirai1, Hideo Nakamura4, Noriyuki Fujima1, Fumio Yamashita2, Jonathan Goodwin2, Satomi Higuchi2, Makoto Sasaki2
1Diagnostic and Interventional Radiology, Hokkaido University Hospital, Sapporo, Hokkaido, Japan; 2Ultra-High Field MRI, Iwate Medical University, Morioka, Japan; 3Radiology, Kumamoto University, Kumamoto, Japan; 4Neurosurgery, Kumamoto University, Kumamoto, Japan

Traditional Poster
Brain Tumours & fMRI
Exhibition Hall Wednesday 13:30-15:30

2279. Dynamic Functional Connectivity of Motor Network in Patients with Brain Tumor
Chen Niu1, Pan Lin1, Ming Zhang1, Xiaolong Peng1, MaoDe Wang1, Wei Wang1, Wenfei Li1, Xin Liu2, Rana Netra1
1The First Affiliated Hospital of Medical College, Xi’an Jiaotong university, Xi’an, Shaanxi, China; 2Institute of Biomedical Engineering, Xi’an Jiaotong University, Xi'an, Shaanxi, China

2280. Atlas Based Seed Analysis of Resting State fMRI for Pre-Surgical Brain Mapping
Madalina E. Tivarus1, 2, Alexander Teghipco2, Daniel Cole2, Michael Uitz2, Ali Hussain1
1Department of Imaging Sciences, University of Rochester, Rochester, Rochester, NY, United States; 2Rochester Center for Brain Imaging, University of Rochester, Rochester, NY, United States; 3Department of Psychology, Emory University, GA, United States

2281. Resting State Functional Connectivity of the Hippocampus in Patients Receiving Radiation Therapy for Extra-Axial Tumors
Marc C. Mabray1, Igor J. Barani2, Suresh E. Joel3, Rakesh Mullick1, Soonmee Cha1
1Radiology and Biomedical Imaging, University of California San Francisco, San Francisco, CA, United States; 2Radiation Oncology, University of California San Francisco, San Francisco, CA, United States; 3General Electric Global Research, Bangalore, Karnataka, India

2282. Functional Connectivity Changes in the Presence of Brain Tumors
Noora Pauliina Tuovinen1, Francesco de Pasquale2, Umberto Sabatini1
1Radiology, Santa Lucia Foundation, Rome, Lazio, Italy
Traditional Poster

Novel Brain & Eye

Exhibition Hall  Wednesday 13:30-15:30

2283. Optimization of Sample Preparation for MRI of Formaldehyde-Fixed Brains
Yann Leprince1, 2, Benoit Schmit1, Élodie Chaillou1, Christophe Destrieux1, Laurent Barantin1, Alexandre Vignaud1, Denis Rivière1, Cyril Poupou1
1NeuroSpin, CEA, Saclay, France; 2Université Paris-Sud, Orsay, France; 3INRA, Tours, France; 4Université François-Rabelais, Tours, France

2284. Morphological and Microstructural Changes in the Eye and the Brain in an Experimental Glaucoma Model Induced by Crosslinking Hydrogel Injection
Leon C. Ho1, 2, Ian P. Conner3, 4, Xiao-Ling Yang1, 3, Yolandi van der Merwe, 14, Yu Yu3, Christopher K. Leung6, 7, Ian A. Sigal1, 4, Ed X. Wu1, Seong-Gi Kim1, 8, Gadi Wollstein1, Joel S. Schuman1, 9, Kevin C. Chan1, 2
1Neuroimaging Laboratory, University of Pittsburgh, Pittsburgh, PA, United States; 2Department of Electrical and Electronic Engineering, The University of Hong Kong, Pokfulam, Hong Kong, China; 3Department of Ophthalmology, School of Medicine, University of Pittsburgh, Pittsburgh, PA, United States; 4Department of Bioengineering, Swanson School of Engineering, University of Pittsburgh, Pittsburgh, PA, United States; 5Division of Biomedical Engineering, Hong Kong University of Science and Technology, Clear Water Bay, Hong Kong, China; 6University Eye Center, Hong Kong Eye Hospital, Hong Kong, China; 7Department of Ophthalmology and Visual Sciences, The Chinese University of Hong Kong, Hong Kong, China; 8Center for Neuroscience Imaging Research, Institute for Basic Science, Sungkyunkwan University, Suwon, Korea

2285. Retinal-Choroidal Blood Flow Decreases with Age: An MRI Study
Oscar San Emeterio Nateras1, 2, Joseph M. Harrison3, Eric R. Muir, 23, Yi Zhang2, Qi Peng, 24, Steven Chalfin3, Juan E. Gutierrez4, Daniel A. Johnson2, Jeffrey W. Kiel2, Timothy Q. Duong, 23
1College of Medicine, China Medical University, Taichung, Taiwan; 2Department of Radiology, Taichung Veterans General Hospital, Taichung, Taiwan; 3Department of Radiology, Taichung Veterans General Hospital, Taichung, Taiwan; 4Department of Biomedical Imaging and Radiological Science, China Medical University, Taichung, Taiwan; 5Department of Electrical Engineering, National Taiwan University, Taipei, Taiwan; 6College of Health Care, China Medical University, Taichung, Taiwan

2286. Sources and Mitigation of Physiological Noise in Brainstem fMRI Studied at High Resolution
Laetitia Maëlle Vionnet1, Lars Kasper2, 3, Michael Wyss1, Mike Bruegger1, 4, Klaas Paul Pruessmann1
1Institute for Biomedical Engineering, ETH and University Zurich, Zurich, Switzerland; 2Translational Neuromodeling Unit, ETH and University Zurich, Zurich, Switzerland; 3Center of Dental Medicine, University of Zurich, Zurich, Switzerland; 4Center of Dental Medicine, University of Zurich, Zurich, Switzerland

2287. Automated Vessel Segmentation from Quantitative Susceptibility Maps at 7 Tesla
Pierre-Louis Bazin1, Audrey Fan2, Gabriela Mianowska3, Agnieska Olbrich1, Andreas Schäfer1, Arno Villringer1, Claudine Gauthier2
1Institute for Biomedical Engineering, ETH and University Zurich, Zurich, Switzerland; 2Translational Neuromodeling Unit, ETH and University Zurich, Zurich, Switzerland; 3Center of Dental Medicine, University of Zurich, Zurich, Switzerland

2288. Effectively Improving Accuracy and Reliability in Intracranial Volume Change for MR Intracranial Pressure Measurement
Yi-Hsin Tsai1, Hung-Chieh Chen2, Hsin Tung3, Da-Chuan Cheng4, Clayton Chi-Chang Chen2, Jyh-Wen Chai2, 2, Hsiao-Wen Chung2, Wu-Chung Shen6
1College of Medicine, China Medical University, Taichung, Taiwan; 2Department of Radiology, Taichung Veterans General Hospital, Taichung, Taiwan; 3Neurological Institute, Taichung Veterans General Hospital, Taiwan, Taiwan; 4Department of Biomedical Imaging and Radiological Science, China Medical University, Taichung, Taiwan; 5Department of Electrical Engineering, National Taiwan University, Taipei, Taiwan; 6College of Health Care, China Medical University, Taichung, Taiwan
2289. Slab-Wise Pulse Design Enhances the Performance of Dual Source Parallel RF Transmission at 3T
Xiaoping Wu1, Dingxin Wang1,2, Jinfeng Tian1, Sebastian Schmitter1, Vibhas Deshpande3, Tommy Vaughan1, Kamil Uğurbil4, Pierre-Francois Van de Moortele1
1CMRR, Radiology, University of Minnesota, Minneapolis, MN, United States; 2Siemens Medical Solutions USA, Inc., Minneapolis, MN, United States; 3Siemens Medical Solutions USA, Inc., Austin, TX, United States

2290. Sound Synchronization and Motion Compensated Reconstruction for Speech Cine MRI.
Pierre-André Vuissoz1,2, Freddy Odille1, Yves Laprie1, Emmanuel Vincent1, Jacques Felblinger2,3
1Imagerie Adaptative Diagnostique et Intervenionnelle, Université de Lorraine, Nancy, France; 2U947, INSERM, Nancy, France; 3LORIA, Université de Lorraine, Nancy, France

2291. Diffusion Tensor Imaging of the Auditory Nerve in Patients with Long-Term Single-Sided Deafness
Sjoerd B. Vos1, Wieke Hautkama1, Huib Versnel1, Martijn Froeling1, Lucienne Speleman1, Pieter Dik2, Max A. Viergever1, Alexander Leemans3, Wilko Grolman1
1Department of Otorhinolaryngology and Head & Neck Surgery, University Medical Center Utrecht, Utrecht, Netherlands; 2Image Sciences Institute, University Medical Center Utrecht, Utrecht, Netherlands; 3Department of Radiology, University Medical Center Utrecht, Utrecht, Netherlands; 4Department of Forensic Medicine & Comparative Medicine Lab, Aarhus University, Denmark; 5Department of Pediatric Urology, University Children's Hospital UMC Utrecht, Utrecht, Netherlands

2292. Size of Vestibular Endolymph in Patients with Isolated Lateral Semicircular Canal Dysplasia
Shinji Naganawa1, Hitoshi Kawai1, Michihiko Sone1, Mitsuru Ikeda1
1Department of Radiology, Nagoya University Graduate School of Medicine, Nagoya, Japan; 2Department of Otorhinolaryngology, Nagoya University Graduate School of Medicine, Nagoya, Japan; 3Department of Radiological and Medical Laboratory Sciences, Nagoya University Graduate School of Medicine, Nagoya, Japan

2293. MR Elastography of Skull Base Tumors
John Huston III1, Arvin Arani1, Nikoo Fattahi1, Kevin J. Glaser1, David S. Lake1, Armando Manduca1, Joshua D. Hughes2, Jamie J. Van Gompel1, Richard L. Ehman1
1Radiology, Mayo Clinic, Rochester, MN, United States; 2Neurosurgery, Mayo Clinic, Rochester, MN, United States

2294. The Merged Images with Different Central Frequencies Can Reduce Banding Artifact of 3D-SSFP MR Cisternography
Koji Matsumoto1,2, Hajime Yokota3,4, Hiroki Mukai1, Ken Motoori1, Toshiaki Miyachi5, Yoshitada Masuda1, Takashi Uno4
1Department of Radiology, Chiba University Hospital, Chiba, Japan; 2Division of Health Sciences, Kanazawa University, Kanazawa, Ishikawa, Japan; 3Department of Radiology, Kyoto Prefectural University of Medicine, Kyoto, Japan; 4Diagnostic Radiology and Radiation Oncology, Chiba University, Chiba, Japan

2295. T1p Weighted Imaging in Middle Ear Cholesteatoma
Koji Yamashita1, Akio Hiwatashi1, Osamu Togao1, Kazumasa Okiuchi1, Tomoyuki Okauchi1, Nozomu Matsumoto1, Koji Kobayashi1, Hiroshi Honda1
1Clinical Radiology, Graduate School of Medical Science, Kyushu University, Fukuoka, Japan; 2Philips Electronics Japan, Tokyo, Japan; 3Otorhinolaryngology, Kyushu University, Fukuoka, Japan; 4Medical Technology, Kyushu University hospital, Fukuoka, Japan

2296. Surgical Validation of Extracranial Facial Nerve Magnetic Resonance Tractography
Arnaud ATTYE1,2, Alexandre KARKAS3, Irene TROPRES4, Laurent LAMALLE4, Felix RENARD5, Georges BETTEGA6, Christian RIGHINI4, Alexandre KRAINIK5
1Department of Otorhinolaryngology, Kyoto Prefectural University, Kyoto, Japan; 2Department of Neurosurgery, Kyoto Prefectural University, Kyoto, Japan; 3Department of Radiology, Kyoto Prefectural University, Kyoto, Japan; 4Department of Radiology, Kyoto Prefectural University, Kyoto, Japan; 5Department of Neurosurgery, Kyoto Prefectural University, Kyoto, Japan; 6Clinical Radiology, Graduate School of Medical Science, Kyushu University, Fukuoka, Japan
2297. A Study of MS Based on a Fusion Quantitative Analysis Model of DTI
Heather Ting Ma1,2, Pengfei Yang1, Chenfei Ye1, Jun Wu2, Xiaohui Chen1, Jinbo Ma1
1Department of Electronic and Information Engineering, Harbin Institute of Technology Shenzhen Graduate School, Shenzhen, Guangdong, China; 2Radiology Department, Johns Hopkins University, Baltimore, MD, United States.

2298. A Noise Suppression Approach in the Quantitative Analysis of DCE Images
Renjie He1, Yao Ding2, Clifton Fuller2, Qi Liu3, Weiguo Zhang1
1United Imaging Healthcare America, Houston, TX, United States; 2MDACC, TX, United States; 3United Imaging Healthcare, Shanghai, China

2299. Application of Two-Compartmental Pharmacokinetic Analysis with and Without Vascular Term for Differentiating Benign and Malignant Spinal Tumors Measured by DCE-MRI
Ning Lang1, Hong J. Yu2, Huishu Yuan1, Min-Ying Su1
1Department of Radiology, Peking University Third Hospital, Beijing, China; 2Tu&Yuen Center for Functional Onco-Imaging, University of California, Irvine, CA, United States

2300. Accurate Classification of Parotid Tumors Based on Histogram Analysis of ADC-Maps
Sanam Assili1,2, Anahita Fathi Kazerooni1,2, Mahnaz Nabil3, Leila Agha Ghazvini1, Mojtaba Safari1, Hamidreza Salighed Rad1
1Quantitative MR Imaging and Spectroscopy Group, Research Center for Molecular and Cellular Imaging, Tehran University of Medical Sciences, Tehran, Iran; 2Department of Medical Physics, School of Medicine, Tabriz University of Medical Sciences, Tabriz, Iran; 3Department of Medical Physics and Biomedical Engineering, School of Medicine, Tehran University of Medical Sciences, Tehran, Iran; 4Department of Statistics, Tarbiat Modares University, Tehran, Iran; 5Department of Radiology, School of Medicine, Tehran University of Medical Sciences, Tehran, Iran

2301. Clinical Evaluation of ZTE Skull Segmentation
Gaspar Delso1, Mohammad Mehdi Khalighi1, Florian Wiesinger2, Patrick Veit-Habich1
1GE Healthcare, Waukesha, WI, United States; 2GE Global Research, Germany; 3University Hospital of Zurich, Switzerland

2302. K-T BLAST/k-T FOCUSS in Real Time Imaging of the Soft Palate During Speech
Marzena Wylezinska1, Andrea Freitas2,3, Malcolm Birch1, Marc Miquel4,5
1Clinical Physics, Barts Health NHS Trust, London, United Kingdom; 2William Harvey Research Institute, Queen Mary University of London, London, United Kingdom

2303. Frequency-Dependent Neural Activity in Patients with Unilateral Vascular Pulsatile Tinnitus
Han Lv1, Zhenchang Wang1, Zhaohui Liu2, Fei Yan3, Pengfei Zhao1, Ting Li2
1Beijing Friendship Hospital, Beijing, China; 2Beijing Tongren Hospital, Beijing, China

2304. Extra-Occular Muscle Fat Fraction in Thyroid Eye Disease
Tilak Das1, Andrew J. Patterson2, Paul Meyer3, Rachna Murthy3, Martin J. Graves4
1Department of Radiology, Cambridge University Hospitals NHS Foundation Trust, Cambridge, United Kingdom; 2Dept of Ophthalmology, Cambridge University Hospitals NHS Foundation Trust, Cambridge, United Kingdom

2305. Accelerated Multi-Shot Diffusion Imaging in Optic Nerve
Jr-yuan George Chiou1, Bruno Madore2, Stephan E. Maier1
2306. The Effects of Dorzolamide on Retinal and Choroidal Blood Flow in a Mouse Glaucoma Model

Saurav B. Chandra, Kaiwalya S. Deo, Eric R. Muir, Jeffrey W. Kiel, Timothy Q. Duong

1Research Imaging Institute, UT Health Sc. Center, San Antonio, San Antonio, TX, United States; 2Ophthalmology, UT Health Sc. Center, San Antonio, San Antonio, TX, United States

2307. High Resolution DWI for Orbital Tumors: 3D Turbo Field Echo with Diffusion-Sensitized Driven-Equilibrium (DSDE-TFE) Preparation Technique

Akio Hiwatashi, Osamu Togao, Koji Yamashita, Kazu filtered Kikuchi, Makoto Obara, Hiroshi Honda

1Radiology, Kyushu University, Fukuoka, Japan; 2Philips Electronics Japan, Tokyo, Japan

2308. Reduced Field-Of-View Imaging with 3D Variable Flip Angle Fast Spin Echo-Feasibility in MRI of Orbits

Suchandrima Banerjee, Misun Han, Weitian Chen, Christopher P. Hess, Roland Krug, Ajit Shankaranarayanan, Yuval Zur

1Global Applied Science Laboratory, GE Healthcare, Menlo Park, CA, United States; 2Radiology and Biomedical Imaging, University of California San Francisco, San Francisco, CA, United States; 3GE Healthcare, Tirat Carmel, Israel

2309. T1-W SE-PROPELLER to Overcome Motion and Flow Artifacts in Head and Neck Imaging

Taihra Zadi, Mika Vogel, Magnus Mårtensson, Piotr A. Wielopolski, Aad van der Lugt

1Department of Radiology, Erasmus University Medical Center, Rotterdam, Zuid-Holland, Netherlands; 2Healthcare Systems, General Electric Healthcare, Hoevelaken, Gelderland, Netherlands; 3Applications and Workflow, General Electric Healthcare, Stockholm, Södermanland, Sweden

2310. Metal Artifact Reduction Using MAVRIC in the Presence of Common Orthodontic Appliances

Jeff A. Kohlmeier, Heidi A. Edmonson, Joel P. Felmlee, David W. Stanley, Fred J. Regennitter, John E. Volz

1Department of Orthodontics, Mayo Clinic, Rochester, MN, United States; 2Department of Radiology, Mayo Clinic, Rochester, MN, United States; 3MR R&D, Siemens Healthcare, Malvern, PA, United States

2311. Alterations in Cortical Sensorimotor Connectivity Following Complete Cervical Spinal Cord Injury: Evidence from Resting-State fMRI

Akinwunmi Oni-Orisan, Mayank Kaushal, Wenjun Li, B. Doug Ward, Aditya Vedantam, Benjamin Kalinosky, Dana Seslija, Matthew Budde, Brian Schmitz, Shipt-Jiang Li, Muqeeq Vaishnavi, Shekar Kurpad

1Medical College of Wisconsin, Milwaukee, WI, United States; 2Marquette University, Milwaukee, WI, United States; 3Baylor College of Medicine, Houston, TX, United States

2312. Short-Term Reproducibility of Apparent Diffusion Coefficient and Intravoxel Incoherent Motion Parameters in Normal Head and Neck Tissues: Comparisons of 4b Values, 4b Values with Cardiac Gating, and 17 B Values

KOUNG MI KANG, Seung Hong Choi

1Radiology, Seoul National Univ. Hospital, Seoul, Korea
2314. MiR-155 Ablation Protects Spinal Cord (SC) from Damage in a Mouse Model of Ischemic SC Injury

Anna Bratasz1, Esmerina Tili2, Xiaomei Meng2, Jean-Jacques Michaille3, Lamia Bouhliqah4, Jean-Pierre Popovich5, Cynthia McAllister6, D Michele Basso7, José J. Otero8, Claudia Kirsch9, Richard Burry10, Kimerly A. Powell11, Peter Mohier12, Carlo M. Croce12, Hamdy Mohler12

1Small Animal Imaging Core, The Ohio State University, Columbus, OH, United States; 2Department of Anesthesiology, The Ohio State University, OH, United States; 3Department of Molecular Virology, The Ohio State University, OH, United States; 4Department of Molecular Virology, The Ohio State University, OH, United States; 5Université de Bourgogne, Dijon, France; 6Department of ENT, The Ohio State University, OH, United States; 7Department of Neuroscience, The Ohio State University, OH, United States; 8Nationwide Children Hospital, OH, United States; 9School of Health and Rehabilitation Sciences, The Ohio State University, OH, United States; 10Department of Pathology, The Ohio State University, OH, United States; 11Department of Radiology, The Ohio State University, OH, United States; 12Department of Neuroscience, The Ohio State University, OH, United States; 13Dorothy M. Davis Heart and Lung Research Institute, The Ohio State University, OH, United States

2315. Assessment of Cervical Spinal Cord Injuries with Readout-Segmented Multi-Shot (RESOLVE) Diffusion Tensor Imaging and Fiber Tractography

Chen-Te Wu1, Cheng-Chih Liao2, Chung-Lin Yang2, Jien-Jie Wang1, Ching-Po Lin2, Shih-Tseng Li2

1Department of Medical Imaging and Intervention, Chang Gung Memorial Hospital, Linkou, Taoyuan, Taiwan; 2Departments of Neurosurgery, Chang Gung Memorial Hospital & Chang Gung University, Taiwan; 3Department of Medical Imaging and Radiological Science, Chang Gung University, Taiwan; 4Brain Connectivity Lab, Institute of Neuroscience, National Yang-Ming University, Taipei, Taiwan

2316. Injury Alters the Intrinsic Functional Connectivity Network in Spinal Cord of Monkeys

Li Min Chen1, 2, Arabinda Mishra1, 2, Feng Wang1, 2, Pai-Feng Yang1, 2, John C. Gore1, 2

1Radiology and Radiological Sciences, Vanderbilt University, Nashville, TN, United States; 2Institute of Imaging Science, Vanderbilt University, Nashville, TN, United States

2317. Robust Diffusion-Prepared Neurography of the Complete Brachial Plexus Facilitated by an Optimized Shimming Strategy.

Jos Oudeman1, Bram F. Coolen1, Camiel Verhamme1, Mario Maas1, Andrew Webb1, Gustav J. Strijkers1, Aart J. Nederveen1

1Radiology, Academic Medical Center, Amsterdam, Noord-Holland, Netherlands; 2Neurology, Academic Medical Center, Amsterdam, Noord-Holland, Netherlands; 3Radiology, Leiden University Medical Center, Leiden, Zuid-Holland, Netherlands; 4Biomechanical engineering and physics, Academic Medical Center, Amsterdam, Noord-Holland, Netherlands

2318. Reproducibility of Resting State Spinal Cord Networks at 7 Tesla

Robert L. Barry1, 2, Baxter P. Rogers1, 2, Seth A. Smith1, 2, John C. Gore1, 2

1Vanderbilt University Institute of Imaging Science, Nashville, TN, United States; 2Radiology and Radiological Sciences, Vanderbilt University, Nashville, TN, United States

2319. Endothelial Nitric-Oxide Synthase Overexpression Rescues Cerebral Blood Flow and Cerebrovascular Reactivity in Diabetic Brain

Saurav B. Chandra1, Sumathy Mohan2, Preethi Janardhanan3, Kaivalya S. Deo3, Eric R. Muir1, Timothy Q. Duong1

1Research Imaging Institute, UT Health Science Center, San Antonio, TX, United States; 2Pathology, UT Health Sc. Center, San Antonio, TX, United States

2320. Measuring Brain Lactate with 1H-MRS During Hypoglycemia in Humans; Preliminary Results

Evita C. Wiegers1, Hanne M.M. Rooijackers2, Cees J. Tack2, Arend Heerschap1, Bastiaan E. de Galan2, Marinette van der Graaf3

1Radiology and Nuclear Medicine, Radboud University Medical Center, Nijmegen, Gelderland, Netherlands; 2Internal Medicine, Radboud University Medical Center, Nijmegen, Gelderland, Netherlands; 3Pediatrics, Radboud University Medical Center, Nijmegen, Gelderland, Netherlands

2321. Diffusion Tensor Imaging Analysis of Presbycusis Using Voxel-Based Method

Fei Gao1, Guangbin Wang2, Bin Zhao1, Wen Ma1, Muwei Li2, Fuxin Ren1, Bo Liu1, Weibo Chen4

1Radiology and Nuclear Medicine, Radboud University Medical Center, Nijmegen, Gelderland, Netherlands; 2Department of ENT, University Medical Center, Nijmegen, Gelderland, Netherlands; 3Department of Pediatris, Radboud University Medical Center, Nijmegen, Gelderland, Netherlands; 4Brain Connectivity Lab, Institute of Neuroscience, National Yang-Ming University, Taipei, Taiwan
Traditional Poster

Perfusion & Permeability

Exhibition Hall Wednesday 13:30-15:30

2322. Absolute CBV and AIF from Global Recirculation Approach
    Jeiran Jahani¹, Timothy M. Shepherd¹, Glyn Johnson¹, Valerij G. Kiselev², Dmitry S. Novikov¹
    ¹Department of Radiology, New York University School of Medicine, New York City, NY, United States; ²Department of Radiology, Medical Physics, University Medical Center Freiburg, Freiburg, Germany

2323. Measurement of Local Cerebral Hematocrit with MRI
    Fernando Calamante¹, André Ahlgren², Matthias J.P. van Osch³, Linda Knutsson⁴
    ¹The Florey Institute of Neuroscience and Mental Health, University of Melbourne, Melbourne, Victoria, Australia; ²Department of Medical Radiation Physics, Lund University, Lund, Sweden; ³Department of Radiology, C.J. Gorter Center for high field MRI, Netherlands

2324. Reconstructing the One-Compartment Tracer-Kinetic Field with Diffusion and Convection
    Steven Sourbron¹
    ¹University of Leeds, Leeds, UK, United Kingdom

2325. Arterial Spin Labeling Improvement by Incorporating Local Similarity with Anatomic Images
    Li Zhao¹, Weiying Dai¹, David Alsop¹
    ¹Radiology, Beth Israel Deaconess Medical Center & Harvard Medical School, Boston, MA, United States

2326. On the Use of DSC-MRI for Measuring Vascular Permeability
    Jack T. Skinner¹, ², Paul L. Moots³, C Chad Quarles¹, ²
    ¹Radiology and Radiological Sciences, Vanderbilt University Medical Center, Nashville, TN, United States; ²Institute of Imaging Science, Vanderbilt University Medical Center, Nashville, TN, United States; ³Neurology, Vanderbilt University Medical Center, Nashville, TN, United States

2327. A Simplified Spin and Gradient Echo (SAGE) Approach for Brain Tumor Perfusion Imaging
    Ashley M. Stokes¹, C. Chad Quarles¹
    ¹Institute of Imaging Science, Radiology and Radiological Sciences, Vanderbilt University, Nashville, TN, United States

2328. Cell Size Imaging
    Natenael B. Semmeneh¹, Ashley M. Stokes¹, John C. Gore¹, C Chad Quarles¹
    ¹Institute of Imaging Science, Vanderbilt University, Nashville, TN, United States

2329. Comparative Assessment of SAGE and GRE DSC Perfusion: Initial Assessment in a Stroke Cohort
    Shalini A. Amukotuwa¹, ², Fernando Calamante², Roland Bammer¹
    ¹Department of Radiology, Stanford University, Stanford, CA, United States; ²The Florey Institute of Neuroscience and Mental Health, University of Melbourne, Parkville, VIC, Australia

2330. Improving Look & Locker Readout for PCASL Using a Variable Flip Angle Sweep
    Marco Castellaro¹, Alessandra Bertoldo¹, Denis Peruzzo², Filippo Arrigoni², Matthias Van Osch³
    ¹Department of Information Engineering, University of Padova, Padova, Italy; ²Department of Neuroimaging, Research institute IRCCS “E. Medea”, Bosisio Parini, Lecco, Italy; ³Philips Healthcare, Shanghai, China
2331. Effect of Labelling Plane Angulation on PCASL Labelling Efficiency – Does It Really Matter?
Magdalena Sokolska1, Xavier Golay1, David Thomas1
1UCL Institute of Neurology, London, United Kingdom

2332. Time-Resolved Artery-Selective Angiography Based on Super-Selective Arterial Spin Labeling
Thomas Lindner1, Ulf Jensen-Kondering1, Olav Jansen1, Matthias JP van Osch1, Michael Helle1
1Department of Radiology and Neuroradiology, UKSH, Kiel, Germany; 2Department of Radiology, LUMC, C. J. Gorter Center for High Field MRI, Leiden, Netherlands; 3Philips Research, Hamburg, Germany

2333. The Many Advantages of Arterial Spin Labeling with Long Label Duration
R. Marc Lebel1,2, Ajit Shankaranarayanan1, Eric E. Smith3, Cheryl McCreary3, Richard Frayne2, Weiying Dai3, David C. Alsop4
1GE Healthcare, Calgary, Alberta, Canada; 2Radiology, University of Calgary, Calgary, Alberta, Canada; 3GE Healthcare, Menlo Park, CA, United States; 4Clinical Neurosciences, University of Calgary, Calgary, Alberta, Canada; 5Radiology, Beth Israel Deaconess Medical Center and Harvard Medical School, Boston, MA, United States

2334. Inflow Velocity Density Mapping Using Fourier Analysis of Velocity Selective ASL Images
Tianrui Luo1, Luis Hernandez-Garcia2
1University of Michigan, Ann Arbor, MI, United States; 2FMRI Laboratory, University of Michigan, Ann Arbor, MI, United States

Liliana Lourenco Caldeira1, Seong Dae Yun1, Nuno André da Silva1, Christian Fills1, N. Jon Shah1,2
1Institute of Neuroscience and Medicine (4), Forschungszentrum Juelich, Jülich, Germany; 2RWTH Aachen University, Faculty of Medicine, Department of Neurology, JARA, Aachen, Germany

2336. Robust Inter-Pulse Phase Correction for Brain Perfusion Imaging at Very High Field Using Pseudo-Continuous Arterial Spin Labeling (PCASL)
Lydiane Hirschler1,2, Clément Stéphan Debacker1,2, Jérôme Voiron2, Jan Warnking1,3, Emmanuel Luc Barbier1,3
1Université Grenoble Alpes, Grenoble Institut des Neurosciences, Grenoble, France; 2Bruker Biospin, Ettlingen, Germany; 3Inserm, U836, Grenoble, France

2337. Arterial Input Partial Volume Artifacts Correction Applied for a T1-Weighted 3D Gradient Echo Sequence
Stefan Hindel1, Nico Verbeek2, Anika Sauerbrey1, Lutz Lüdemann1
1Strahlenklinik und Poliklinik, Universitätsklinikum Essen, Essen, North Rhine-Westphalia, Germany; 2Heinrich-Heine-Universität Düsseldorf, Düsseldorf, North Rhine-Westphalia, Germany

Wen-Chau Wu1,2
1National Taiwan University, Taipei, Taiwan; 2Department of Medical Imaging, National Taiwan University Hospital, Taipei, Taiwan

2339. Fully Bayesian Multi-Model Inference for Parameter Estimation in DCE-MRI
Tammo Rukat1, Stefan A. Reinsberg1
1Department of Physics and Astronomy, University of British Columbia, Vancouver, British Columbia, Canada
2340. A Modified Deconvolution Method to Quantify Brain Tumour Haemodynamic Parameters in the Presence of Contrast Agent Extravasation.
Thaís Roque1, Amit Mehndiratta2, Lawrence Kenning3, Martin Lowny4, Michael Chappell5
1Institute of Biomedical Engineering IBME, University of Oxford, Oxford, Oxfordshire, United Kingdom; 2Centre for Biomedical Engineering, Indian Institute of Technology Delhi, New Delhi, India; 3Centre for MR investigations CMRI, University of Hull, Hull, United Kingdom

2341. In Vitro and In Vivo Measurement of Pseudo Continuous Arterial Spin Labeling Efficiency
Adam Michael Bush1, Gregory Lee2, Matt Borzage3, Vincent Schmithorst4, Scott Holland5, John Wood6
1Children's Hospital Los Angeles USC, Los Angeles, CA, United States; 2Pediatric Neuroimaging Research Consortium, Cincinnati Children's Hospital Medical Center, Cincinnati, OH, United States

2342. Experimental Assessment of PCASL Labeling Efficiency in the Peripheral Vasculature
Erin K. Enslund1, Zachary B. Rodgers2, Thomas F. Floyd3, Felix W. Wehrli4
1Department of Radiology, University of Pennsylvania, Philadelphia, PA, United States; 2Department of Radiology, University of Pennsylvania, Philadelphia, PA, United States; 3Department of Anesthesiology, Stony Brook University, Stony Brook, NY, United States

2343. Improving the Reproducibility of Labeling-Efficiency Measurements In Vivo in Pseudo-Continuous Arterial Spin Labeling
Kathrin Lorenz1, 2, Toralf Mildner1, Torsten Schlumm1, Harald E. Möller3, 2
1Max Planck Institute for Human Cognitive & Brain Sciences, Leipzig, Germany; 2Faculty of Physics and Earth Sciences, University of Leipzig, Saxony, Germany

2344. Optimization of Phase-Contrast MRI for the Quantification of Whole-Brain Cerebral Blood Flow
Shin-Li Peng1, Pan Su1, 2, Fu-Nien Wang4, Yan Cao1, Hong Zhang5, Hanzhang Lu1, 3, Peiyang Liu1
1Advanced Imaging Research Center, University of Texas Southwestern Medical Center, Dallas, TX, United States; 2Department of Biomedical Engineering and Environmental Sciences, National Tsing Hua University, Hsinchu, Taiwan; 3Biomedical Engineering Graduate Program, UT Southwestern Medical Center, TX, United States; 4Department of Mathematical Sciences, University of Texas at Dallas, Richardson, TX, United States; 5Institute for Exercise and Environmental Medicine, Texas Health Presbyterian Hospital Dallas, Dallas, TX, United States

2345. Optimal Sampling Design in Quantitative DCE MRI
Ina Nora Kompan1, 2, Matthias Guenther1, 2
1Fraunhofer MEVIS, Bremen, Germany; 2mediri GmbH, Heidelberg, Baden-Württemberg, Germany

2346. Caipirinha Acceleration for Intracranial 3D DCE MRI: Determination of the Optimal Sampling Pattern
Michael Ingrisch1, Michael Pelter1, Birgit Erlt-Wagner, Maximilian F. Reiser, Olaf Dietrich1
1Josef-Lissner-Laboratory for Biomedical Imaging, Institute for Clinical Radiology, Ludwig-Maximilians-University Hospital, München, Germany

2347. The Effect of Dynamic Contrast Enhanced Acquisition Duration on Estimated Pharmacokinetic Parameters: Study of Simulated and Real Data
Moran Artzi1, 2, Gilad Liberman1, 3, Guy Nadav1, 4, Deborah T. Blumenthal1, Orna Aizenstein1, Dafna Ben Bashat6, 1
1Functional Brain Center, Tel Aviv Sourasky Medical Center, Tel Aviv, Israel; 2Sackler Faculty of Medicine, Tel Aviv University, Tel Aviv, Israel; 3Department of Chemical Physics, Weizmann Institute, Rehovot, Israel; 4Functional Brain Center, Tel Aviv University, Tel Aviv, Israel; 5Neuro-Oncology Service, Tel Aviv Sourasky Medical Center, Tel Aviv, Israel; 6Sackler Faculty of Medicine and Sagol School of Neuroscience, Tel Aviv University, Tel Aviv, Israel

2348. Correcting for Bolus Delay and Dispersion in the AIF Using a Constrained Local AIF (LAIF) Model
Chong Duan1, Jesper F. Kallehauge2, Carlos J. Perez-Torres2, Kari Tandrup3, 4, Larry Brethorst5, Joseph JH Ackerman2, 3, Joel R. Garbow1
2349. Validation of Random Vessel-Encoded Arterial Spin Labeling as Territorial Perfusion Imaging by Comparison to Conventional VEASL

**Yi Dang**, **Jia Guo**, **Jue Zhang**, **Eric Che Wong**

1Magnetic Resonance Imaging Research Center, Institution of Psychology, Chinese Academy of Sciences, Beijing, China; 2Department of Bioengineering, University of California San Diego, CA, United States; 3Academy for Advanced Interdisciplinary Studies, Peking University, Beijing, China; 4College of Engineering, Peking University, Beijing, China; 5Department of Radiology and Psychiatry, University of California San Diego, CA, United States

2350. Scan-Rescan Variability in DCE-MRI Comparing Signal Difference and Concentration-Based Methods

**Edward Ashton**, **Jill Fredrickson**

1VirtualScopics, Inc., Rochester, NY, United States; 2Genentech, Inc., South San Francisco, CA, United States

2351. Feasibility of Free-Breathing DCE-MRI: Phantom Studies to Compare VIBE, Radial-VIBE, and CAIPIRINHA-VIBE

**Chang Kyung Lee**, **Bohyun Kim**, **Nieuon Seo**, **Jeong Kon Kim**, **In Seong Kim**, **Berthold Kiefer**, **Kyang Won Kim**

1Radiology, Seoul Asan Medical Center, Seoul, Korea; 2Siemens Healthcare, Seoul, Korea; 3Siemens Healthcare, Erlangen, Germany

2352. Comparison of 3 and 7 Tesla Arterial Spin Labelling Techniques for Simultaneous Functional Perfusion and BOLD MRI Studies

**Dimo Ivanov**, **Anna Gardumi**, **Benedikt A. Poser**, **Josef Pfeuffer**, **Kamil Uludag**

1Department of Cognitive Neuroscience, Maastricht University, Maastricht, Netherlands; 2Application Development, Siemens Healthcare, Erlangen, Germany

2353. Application of Multi-TI Arterial Spin-Labeling MRI in Brain Tumors: Comparison with Dynamic Susceptibility Contrast


1Shandong Medical Imaging Research Institute, Shandong University, Jinan, Shandong, China; 2MR Collaborations NE Asia, Siemens Healthcare, Beijing, China; 3Shandong Medical Imaging Research Institute, Taishan Medical University, Jinan, Shandong, China; 4Neurosurgery, Shandong provincial Hospital Affiliated to Shandong University, Shandong, China; 5Application Development, Siemens Healthcare, Erlangen, Germany

2354. Quantifying Cerebral Blood Flow: A Comparison of Two Non-Invasive Perfusion Imaging Techniques

**Gena Matta**, **Andrew D. Robertson**, **Sandra E. Black**, **Bradley J. MacIntosh**

1Canadian Partnership for Stroke Recovery, Sunnybrook Research Institute, Toronto, Ontario, Canada; 2University of Waterloo, Waterloo, Ontario, Canada; 3University of Toronto, Toronto, Ontario, Canada

2355. Comparison of PASL, PCASL and Background Suppressed 3D PCASL in a Clinical Population

**Sudipto Dolui**, **Marta Vidorreta**, **Ze Wang**, **David A. Wolk**, **John A. Detre**

1Department of Neurology, University of Pennsylvania, Philadelphia, PA, United States; 2Department of Radiology, University of Pennsylvania, Philadelphia, PA, United States; 3Hangzhou Normal University, Hangzhou, Zhejiang, China; 4Department of Psychiatry and Radiology, University of Pennsylvania, PA, United States

2356. An Outlier Rejection Algorithm for ASL Time Series: Validation with ADNI Control Data

**Sudipto Dolui**, **Ze Wang**, **David A. Wolk**, **John A. Detre**

1Department of Neurology, University of Pennsylvania, Philadelphia, PA, United States; 2Department of Radiology, University of Pennsylvania, Philadelphia, PA, United States; 3Hangzhou Normal University, Hangzhou, Zhejiang, China; 4Department of Psychiatry and Radiology, University of Pennsylvania, PA, United States
### 2357. The Impact of Blood Bolus Dispersion on Myocardial Arterial Spin Labeling

*Karsten Sommer¹,², Dominik Bernat¹, Regine Schmidt¹, Laura M. Schreiber²*

¹Department of Radiology, Johannes Gutenberg University Medical Center, Mainz, Rhineland-Palatinate, Germany; ²Max Planck Graduate Center with the Johannes Gutenberg University Mainz, Mainz, Rhineland-Palatinate, Germany

### 2358. Three-Dimensional Stereotactic Surface Projections Applied to Arterial Spin Labeling in a Clinical Population

*Jalal B. Andre¹, Greg Wilson¹, Yoshihisa Anzai¹, Mahmoud Mossa-Basha¹, Michael N. Hoff¹, Satoshi Minoshima¹*

¹Radiology, University of Washington, Seattle, WA, United States

### 2359. Application of Pseudo-Continuous Arterial Spin Labeling for Quantification of Hepatic Perfusion

*Mike-Ely Cohen¹,², Isabelle Lajoie², Kenneth Dyson², Olivier Lucidarme³,⁴, Richard D. Hoge³, Frédérique Frouin⁴,⁵*

¹Laboratoire d'imagerie biomédicale, Sorbonne Université Univ Paris 06, Inserm, CNRS, Paris, France; ²Centre de recherche de l’institut universitaire de gériatrie de Montréal, Montréal, Quebec, Canada; ³Service de Radiologie Polyvalente Diagnostique et Oncologique, CHU Pitié-Salpêtrière, AP-HP, Paris, France; ⁴Laboratoire d'imagerie biomédicale, Sorbonne Université Univ Paris 06, Inserm, CNRS., Paris, France; ⁵McConnell Brain Imaging Centre, Montreal Neurological Institute - McGill University, Quebec, Canada; ⁶CEA/I2BM/SHFJ, IMIV, Orsay, France

### 2360. Feasibility of Renal Perfusion Imaging Using Velocity Selective ASL

*Marijn van Stralen¹, Margreet F. Sanders¹, Hanke J. Schalks¹, Maurice A. van den Bosch¹, Clemens Bos¹, Peter J. Blankestijn¹, Tim Leiner¹, Esben Thade Petersen¹*

¹Image Sciences Institute, UMC Utrecht, Utrecht, Netherlands; ²Dept of Nephrology, UMC Utrecht, Utrecht, Netherlands; ³Dept of Radiology, UMC Utrecht, Utrecht, Netherlands

### 2361. Whole Brain Measurement of Dynamics of Arterial Spin Labeling Using Multi-Band Look-Locker Technique in Hypertension

*Yoojin Lee¹, Tae Kim¹*

¹Department of Radiology, University of Pittsburgh, Pittsburgh, PA, United States

### 2362. Dual Temporal Resolution DCE-MRI Reveals Increased Blood-Brain Barrier Leakage in Cerebral Small Vessel Disease

*Sau May Wong¹, Eleana Zhang¹, Harm J. van de Haar², Julie E.A. Staals², Cécile R.L.P.N. Jeuken², Paul A.M. Hofman¹, Robert J. van Oostenbrugge², Jacobus F.A. Jansen³, Walter H. Backes¹*

¹Radiology, Maastricht University Medical Center, Maastricht, Limburg, Netherlands; ²Neurology, Maastricht University Medical Center, Maastricht, Limburg, Netherlands

### 2363. Effect of Ketamine and Isoflurane Anesthesia on Regional Cerebral Blood Flow of Macaque Monkeys

*Chun-Xia Li¹, Sudeep Patel¹, Xiaodong Zhang¹*

¹Yerkes Imaging Center, Yerkes National Primate Research Center, Emory University, Atlanta, GA, United States

### 2364. Effect of Long-Duration Isoflurane Administration on Regional Cerebral Blood Flow

*Chun-Xia Li¹, Sudeep Patel¹, Xiaodong Zhang¹*

¹Yerkes Imaging Center, Yerkes National Primate Research Center, Emory University, Atlanta, GA, United States

### 2365. MRI Based Quantification of Cortical Responses to Exercise

*Andrew P. Hale¹, Charlotte E. Buchanan¹, Johannes van Lieshout¹, Penny A. Gowland¹, Paul L. Greenhaff¹, Sue T. Francis¹*

¹Sir Peter Mansfield Imaging Centre, University of Nottingham, Nottingham, United Kingdom; ²School of Biomedical Sciences, University of Nottingham, Nottingham, United Kingdom; ³Faculty of Medicine & Health Sciences, University of Nottingham, Nottingham, United Kingdom
2366. **Cerebral Blood Flow and Metabolism in Patients with Sickle Cell Disease**  
1Children's Hospital Los Angeles USC, Los Angeles, CA, United States

2367. **Evaluation of Random Vessel-Encoded ASL in Both Healthy Subjects and Stroke Patients**  
*Lirong Yan*, Songlin Liu, Jia Guo, David S. Liebeskind, Jeffrey L. Saver, Noriko Salamon, Neal Yao, Sunil Sheth, Conrad Liang, Eric C. Wong, Danny J. W. Wang  
1Neurology, UCLA, Los Angeles, CA, United States; 2UCSD, San Diego, CA, United States; 3Radiology, UCLA, Los Angeles, CA, United States

2368. **Diagnosis of Schizophrenia Using CBF Measures as a Classification Feature – a FBIRN Phase 3 Multisite ASL Study at 3T**  
*David Shin*, Burak Ozyurt, Jerod Rasmussen, Juan Bustillo, Theodoras Van Erp, Jatin Vaidya, Daniel Mathalon, Bryon Mueller, James Voyvodic, Douglas Greve, Judith Ford, Gary Glover, Gregory Brown, Steven Potkin, Thomas Liu  
1University of California, San Diego, La Jolla, CA, United States; 2University of California, Irvine, Irvine, CA, United States; 3University of New Mexico, Albuquerque, NM, United States; 4University of Iowa, Iowa City, IA, United States; 5University of California, San Francisco, San Francisco, CA, United States; 6University of Minnesota, Twin Cities, Minneapolis, MN, United States; 7Duke University, Durham, NC, United States; 8Harvard Medical School, Massachusetts General Hospital, Charlestown, MA, United States; 9Stanford University, Stanford, CA, United States

2369. **Non-Contrast Indirect MRI Quantification of Portal Hypertension Severity**  
*Daniel Aguirre-Reyes*, Juan P. Arab, Marco Arrese, Rodrigo Tejos, Pablo Irrazaval, Cristian Tejos, Sergio Uribe, Marcelo E. Andia  
1Biomedical Imaging Center - Electrical Engineering Department, Pontificia Universidad Catolica de Chile, Santiago, Region Metropolitana, Chile; 2Computational Sciences and Electronic Department, Universidad Tecnica Particular de Loja, Loja, Ecuador; 3Gastroenterology Department, School of Medicine, Pontificia Universidad Catolica de Chile, Santiago, Chile; 4Radiology Department, School of Medicine, Pontificia Universidad Catolica de Chile, Santiago, Chile

**Traditional Poster**

**Pulse Sequences - Spectroscopy**

Exhibition Hall Wednesday 16:00-18:00

2370. **Ultra-High Resolution 3D 1H-MRSI of the Brain: Subspace-Based Data Acquisitions and Processing**  
*Fan Lam*, Bryan Clifford, Chao Ma, Curtis L. Johnson, Zhi-Pei Liang  
1Electrical and Computer Engineering, University of Illinois at Urbana-Champaign, Urbana, IL, United States; 2Beckman Institute, University of Illinois at Urbana-Champaign, Urbana, IL, United States

2371. **Acceleration of Chemical-Shift Imaging by Applying True 3D Compressed Sensing**  
*Jian-Xiong Wang*, Matthew E. Merritt, A Dean Sherry, Craig R. Malloy  
1Advanced Imaging Research Center, University of Texas Southwestern Medical Center, Dallas, TX, United States; 2Department of Radiology, University of Texas Southwestern Medical Center, Dallas, TX, United States

2372. **Fast Sodium MRI of the Human Brain Using a Balanced Steady-State Free Precession Sequence**  
*Ruomin Hu*, Simon Konstandin, Lothar R. Schad  
1Computer Assisted Clinical Medicine, Heidelberg University, Mannheim, Baden-Württemberg, Germany; 2MR-Imaging and Spectroscopy, University of Bremen, Bremen, Germany

2373. **SPatiotemporal ENcoded Spectroscopic Imaging (SPENSI) a New Approach for Multi & Single Scan Spectral Imaging**  
*Amir Seginer*, Rita Schmidt, Lucio Frydman  
1Chemical Physics Department, Weizmann Institute of Science, Rehovot, Israel
2374. Model-Based Reconstruction of Hyperpolarized [1-13C]-Pyruvate

James Bankson1, Christopher Walker1, Wolfgang Stefan1, David Fuentes2, Matthew Merritt1, Yunnyn Chen1, Craig Malloy1, Dean Sherry1, Stephen Lat1, John Hazle1

1Department of Imaging Physics, UT MD Anderson Cancer Center, Houston, TX, United States; 2UT MD Anderson Cancer Center, Department of Imaging Physics, Houston, TX, United States; 3Advanced Imaging Research Center, UT Southwestern Medical Center, Dallas, TX, United States; 4Department of Head & Neck Surgery, UT MD Anderson Cancer Center, Houston, TX, United States

2375. Efficient Detection of Bound Potassium and Sodium Using TQTPPI Pulse Sequence

Victor D. Schepkin1, Boris M. Odintsov2, Ilya Litvak1, Peter L. Gor'kov1, William W. Brey1, Andreas Neubauer3, Thomas F. Budinger4

1NHMFL/FSU, Tallahassee, FL, United States; 2UIUC, IL, United States; 3Heidelberg University, Germany; 4LBNL/UCB, CA, United States

2376. Transmit Field Estimation from K-Space Data

Yu Ding1, Jinghua Wang2

1Dorothy M. Davis Heart and Lung Research Institute, The Ohio State University, Columbus, OH, United States; 2Center for Cognitive and Behavioral Brain Imaging, The Ohio State University, Columbus, OH, United States

2377. Slice Profile Corrections in the XFL (Magnetization-Prepared Turbo-FLASH) B1-Mapping Sequence

Alexis Amadon1, Franck Maucourant2, Alexandre Vignaud3, Nicolas Boullant4

1I2BM / NeuroSpin / UNIRS, CEA, Gif-sur-Yvette, France, France; 2Siemens Healthcare, Saint-Denis, France, France; 3I2BM / NeuroSpin / UNIRS, CEA, Gif-sur-Yvette, France, France

2378. Fast 3D Algorithm for Coil Localization as an Aid in Estimation of B1 Distribution

Parnian Zarghamravanbakhsh1, John M. Pauly1, Greig Scott1

1Electrical Engineering, Stanford University, Stanford, CA, United States

2379. In Vivo Comparison of B1 Mapping Techniques for Hip Joint Imaging at 7 Tesla

Oliver Kraff1, Andrea Lazik1,2, Daniel Brenner1, Desmond H.Y. Tse1, Qi Duan3, Soeren Johst1, Harald H. Quick1,7, Mark E. Ladd1,8

1Erwin L. Hahn Institute for MRI, University Duisburg-Essen, Essen, Germany; 2Diagnostic and Interventional Radiology and Neuroradiology, University Hospital Essen, Germany; 3German Center for Neurodegenerative Diseases (DZNE), Bonn, Germany; 4Neuropsychology and Psychopharmacology, Maastricht University, Netherlands; 5Radiology, Maastricht University MC, Netherlands; 6Adv. MRI Section, LFMI, NINDS, National Institutes of Health, MD, United States; 7Highfield and Hybrid MR Imaging, University Hospital Essen, Germany; 8Medical Physics in Radiology, German Cancer Research Center (DKFZ), Germany


Rüdiger Stirnberg1, Daniel Brenner1, Tony Stöcker2

1German Center for Neurodegenerative Diseases (DZNE), Bonn, Germany; 2Department of Physics and Astronomy, University of Bonn, Bonn, Germany

2381. Robust Implementation of 3D Bloch Siegert B1 Mapping

Andreas Lesch1, Andreas Petrovic1, Rudolf Stollberger2

1Department for Medical Engineering, Graz University of Technology, Graz, Styria, Austria

2382. Fast Low-Angle B1 Mapping

Caroline Le Ster1,2, Giulio Gambarota1, Eric Brillet1, Olivier Beuf4, Hervé Saint-Jalmes1,5

1Department of Imaging Physics, UT MD Anderson Cancer Center, Houston, TX, United States; 2UT MD Anderson Cancer Center, Department of Imaging Physics, Houston, TX, United States; 3Advanced Imaging Research Center, UT Southwestern Medical Center, Dallas, TX, United States; 4Department of Head & Neck Surgery, UT MD Anderson Cancer Center, Houston, TX, United States; 5Department of Head & Neck Surgery, UT MD Anderson Cancer Center, Houston, TX, United States

350
2383. Spin Echo B1+ Mapping in High Susceptibility Tissues

Eamon Doyle¹, ², Jonathan Chia³, Krishna Nayak⁴, John C. Wood, ¹²
¹Biomedical Engineering, University of Southern California, Los Angeles, CA, United States; ²Cardiology, Children's Hospital of Los Angeles, Los Angeles, CA, United States; ³Philips Healthcare, Cleveland, OH, United States; ⁴Electrical Engineering, University of Southern California, Los Angeles, CA, United States

2384. Comparing Bloch-Siegert B1+ Mapping Using Single Channel and Channel Combination Tx Methods

Mohammad Mehdi Khalighi¹, Gaohong Wu², Qin Liu²
¹Applied Science Lab, GE Healthcare, Menlo Park, CA, United States; ²MR Engineering, GE Healthcare, Waukesha, WI, United States

2385. Characterizing In Vivo B1 Maps at 7T Using the Kolmogorov-Smirnov Test

Douglas A C Kelley¹
¹Neuro Apps and Workflow, GE Healthcare, San Francisco, CA, United States

2386. B1 Mapping of the Breast with a Reference Tissue Method

Federico D. Pineda¹, Milica Medved¹, Xiaobing Fan¹, Gregory Karczmar¹
¹Radiology, The University of Chicago, Chicago, IL, United States

2387. 2-Spoke Placement Optimization Under Explicit SAR and Power Constraints in Parallel Transmission at Ultra-High Field

Laura Dupas¹, Aurélien Massire¹, Alexis Amadon¹, Alexandre Vignaud¹, Nicolas Boulant¹
¹NeuroSpin, CEA, Saclay, Ile de France, France

2388. Does the Best Distance Between 2 Spokes Match the Inverse RF Wavelength?

Alexis Amadon¹, Laura Dupas², Alexandre Vignaud², Nicolas Boulant²
¹12BM / NeuroSpin / UNIRS, CEA, Gif-sur-Yvette, France, France; ²12BM / NeuroSpin / UNIRS, CEA, Gif-sur-Yvette, France, France

2389. Off-Resonance Compensated Velocity Selective RF Pulse Design for Reducing Signal Dropout in Vessel Wall Imaging

Yunduo Li¹, Shuo Chen¹, Zechen Zhou¹, Rui Li¹, Chun Yuan¹, ²
¹Center for Biomedical Imaging Research, Beijing, China; ²Department of Radiology, University of Washington, Seattle, WA, United States

2390. Parallel 2D Excitation of Thin Limited Slice Profiles

Denis Kokorin¹, Jürgen Hennig¹, Maxim Zaitsev¹
¹Department of Radiology, Medical Physics, University Medical Center Freiburg, Freiburg, Germany

2391. Hybrids of Static and Dynamic RF Shimming for Body Imaging at 7T

Martina Flöser¹, ², Andreas Bitz¹, Sören Jost¹, Stephan Orzada¹, Marcel Gratz², Oliver Kraff², Mark Ladd², ²
2392. **Influence of 2-Spoke Pulses K-Space Placement in Different Optimization Strategies and Cost Functions**

Laura Dupas¹, Alexis Amadon¹, Aurélien Massire¹, Alexandre Vignaud¹, Nicolas Boulant¹

¹NeuroSpin, CEA, Saclay, Ile de France, France

2393. **Slice-Selective Adiabatic T2 Preparation Using a Modified STABLE Pulse**

Hadrien Dyvorne¹, Priti Balchandani¹

¹Radiology, Icahn School of Medicine at Mount Sinai, New York, NY, United States

2394. **Multiband Arbitrary-Phase SLR RF Pulse with Generalized Flip Angle Via Convex Optimization**

Hong Shang¹,², Peder E.Z. Larson¹,², Adam B. Kerr³, Galen Reed¹, Adam Elkhaled¹,², Jeremy W. Gordon¹, Cornelius von Morze¹, Michael Lustig⁵, Daniel B. Vigneron¹

¹Radiology and Biomedical Imaging, UCSF, San Francisco, CA, United States; ²UCSF-UC Berkeley Graduate Program in Bioengineering, San Francisco/Berkeley, CA, United States; ³Electrical Engineering, Stanford University, Stanford, CA, United States; ⁴HeartVista, Menlo Park, CA, United States; ⁵Electrical Engineering and Computer Science, UC Berkeley, Berkeley, CA, United States

2395. **Design and Optimization of Fast Imaging Pulse Sequences Using Optimal Control Theory.**

Oleksandr Khegai¹, Jinn-Jie Wang², Steffen J. Glaser³, Florian Wiesinger³

¹Healthy Aging Research Center, Chang Gung University, Taipei, Taiwan; ²Department of Medical Imaging and Radiological Sciences, Chang Gung University, Taipei, Taiwan; ³Department of Chemistry, Technische Universität München, Munich, Germany; ⁴Diagnostics and Biomedical Technologies Lab, GE Global Research Europe, Munich, Germany

2396. **Fully-Refocused SPatio-Temporal ENcoding (SPEN) MRSI Using Fourier-Encoding Polychromatic Spectral Pulses**

Zhiyong Zhang¹,², Lucio Frydman¹

¹Chemical Physics Department, Weizmann Institute of Science, Rehovot, Israel; ²Department of Electronic Science, Xiamen University, Xiamen, Fujian, China

2397. **SAR Reduced Excitation by Joint Design of RF Pulse and Slice Selective Gradient Shape**

Christoph Stefan Aigner¹, Christian Clason², Armin Rund³, Rudolf Stollberger³

¹Institute of Medical Engineering, Graz University of Technology, Graz, Austria; ²Faculty of Mathematics, University of Duisburg-Essen, Essen, Germany; ³Institute for Mathematics and Scientific Computing, University of Graz, Graz, Austria

2398. **Optimized Amplitude Modulated Multi-Band RF Pulses**

Shaithan J. Malik¹,², Anthony N. Price², Joseph V. Hajnal¹,²

¹Division of Imaging Sciences and Biomedical Engineering, Kings College London, London, United Kingdom; ²Centre for the Developing Brain, Kings College London, London, United Kingdom

2399. **SLR Pulse Implementation in Multi-Slice 2D FLASH Pulse Sequence for 3T MRI and Beyond**

A Alhamad¹, Jay Moore², Neal Derman², Ernesta Meintjes³, Marcin Jankiewicz²

¹Human Biology, MRC/UCT Medical Imaging Research Unit, University of Cape Town, Cape Town, Western Cape, South Africa; ²Institute of Imaging Science, Vanderbilt University, Nashville, TN, United States

2400. **Rapid 3D-FFE MR Image Acquisition Using Aliased K-Space Acquisitions**

Indrajit Saha¹, Rakesh Kumar Gupta¹

¹Philips Healthcare, Philips India Ltd, Gurgaon, Haryana, India; ²fortis memorial research institute, Gurgaon, India
2401. Contrast Variation in UTE Imaging with Very Short RF Pulse Duration
Chanhee Lee¹, Soon Ho Yoon¹, Jin Mo Goo², Jong-Yeon Park¹
¹Biomedical Engineering, IBS Center for Neuroscience Imaging Research, Sungkyunkwan University, Suwon, Gyeonggi, Korea; ²Radiology, Seoul National University College of Medicine, Seoul, Korea

2402. Steady-State Imaging with 3D Inner Volume Excitation
Hao Sun¹, Jeffrey A. Fessler¹, Douglas C. Noll¹, Jon-Fredrik Nielsen²
¹Electrical Engineering and Computer Science, University of Michigan, Ann Arbor, MI, United States; ²Biomedical Engineering, University of Michigan, Ann Arbor, MI, United States

Traditional Poster
Multi-Band MRI
Exhibition Hall Wednesday 16:00-18:00

2403. Multiband Imaging Method for Metal Artifact Correction with 3D Multi-Spectral Imaging
JaeJin Cho¹, Dongchan Kim¹, Hyunseok Seo¹, HyunWook Park¹
¹Department of Electrical Engineering, Korea Advanced Institute of Science and Technology, Daejeon, Chungcheong, Korea

2404. A Multi-Band Spatial Spectral Selective Excitation RF Design
Yajun Ma¹, Bing Wu², Wentao Liu¹, Weihan Tang¹, Jia-Hong Gao¹
¹Center for MRI, Peking University, Beijing, China; ²GE Healthcare MR Research China, Beijing, China

2405. caipirinha Using the RF Pulse Modulation with Random Phase for Multiband Imaging
Changheun Oh¹, Dongchan Kim¹, HyunWook Park¹
¹Korea advanced institute of science and technology, Daejeon, Korea

2406. Pre-Scan with Half-Sized Phase Encoding Blips Reducing Ghost and Slice Leakage Artifacts in Dual-Band EPI
Hiroshi Toyoda¹, Naoya Yuzuriha¹, Sosuke Yoshinaga², Hiroaki Terasawa²
¹Center for Information and Neural Networks, National Institute of Information and Communications Technology, Suita, Osaka, Japan; ²Department of Structural BioImaging, Kumamoto University Graduate school of Pharmaceutical Sciences, Kumamoto, Japan

2407. Hadamard and Sensitivity Encoding (H-SENSE) for Simultaneous Multi-Slice MR Imaging
Jong-Min Kim¹, Jongyong Park¹, Chulhyun Lee¹, Chang-Hyun Oh¹
¹Institute for Biomedical Engineering, Korea University, Seongbuk-Gu, Seoul, Korea; ²The MRI Team, Korea Basic Science Institute, Chungchungbuk-Do, Korea

2408. A GRAPPA Reconstruction for Simultaneous Multi-Slice Radial Acquisition
Weiran Deng¹, Kyoko Fujimoto¹, V. Andrew Stenger¹
¹University of Hawaii JABSOM, Honolulu, HI, United States

2409. Ghost-Correcting SENSE Reconstruction for Multi-Band EPI
Franciszek Hennel¹, Aline Seuwen¹, Constantin von Deuster¹, Klaas P. Praessmann¹
¹Institute for Biomedical Engineering, University and ETH Zurich, Zurich, Switzerland

2410. 2D-SENSE-GRAPPA for Fast, Ghosting-Robust Reconstruction of In-Plane and Slice Accelerated Blipped-CAIPI-EPI
Peter Jan Koopmans¹, Benedikt A. Poser², Felix A. Brewer³
¹FMRIB Centre, University of Oxford, Oxford, United Kingdom; ²Faculty of Psychology and Neuroscience, Maastricht University, Maastricht, Netherlands; ³Research Center Magnetic Resonance Bavaria, Wurzburg, Germany
2411. **Multi-Band PROPELLER Imaging with Auto-Calibration**


1Laboratory of Biomedical Imaging and Signal Processing, The University of Hong Kong, Hong Kong, HKSAR, China; 2Department of Electrical and Electronic Engineering, The University of Hong Kong, Hong Kong, HKSAR, China

2412. **Dynamic Compressed Sensing for Multiband MRI**


1Laboratory of Biomedical Imaging and Signal Processing, The University of Hong Kong, Hong Kong, HKSAR, China; 2Department of Electrical and Electronic Engineering, The University of Hong Kong, Hong Kong, HKSAR, China; 3Center for Biomedical Imaging Research, Tsinghua University, Beijing, China

2413. **Iterative GRAPPA Using Wiener Filter**

*Wan Kim*, 1, *Yihang Zhou*, 1

1The State University of New York at Buffalo, Buffalo, NY, United States

2414. **Single-Slab 3D TSE with CAIPIRINHA Acquisition Mode**

*Zhang Qiong*, 1, *Sun Zhi guo*, 1, *Liu Wei*, 1

1Siemens, Shenzhen, GuangDong, China

2415. **Fast G-Factor Estimation in Multi-Band Acquisition Based on Sum of Inverse Distance Model**

*Mengye Lyu*, 1, 2, *Victor B. Xie*, 1, 2, *Patrick P. Gao*, 1, 2, *Yilong Liu*, 1, 2, *Ed X. Wu*, 1, 2

1Laboratory of Biomedical Imaging and Signal Processing, The University of Hong Kong, Hong Kong, China; 2Department of Electrical and Electronic Engineering, The University of Hong Kong, Hong Kong, China

2416. **Dual Asymmetric Echo Steady State Imaging with CAIPIRINHA Acquisition Mode**

*Zhang Qiong*, 1, *Sun Zhi guo*, 1

1Siemens, Shenzhen, GuangDong, China

2417. **Automatic Coil Compression for Parallel MRI Based on Noise Variance Estimation**

*Allan Raventos*, 1, *Tao Zhang*, 1, *John M. Pauly*, 1

1Electrical Engineering, Stanford University, Stanford, CA, United States

2418. **Parallel MRI Reconstruction by Direct Convex Optimization**

*Cishen Zhang*, 1, *Ifat-Al Baqee*, 1

1Swinburne University of Technology, Hawthorn, Victoria, Australia

2419. **Effects of Motion on Coupling of Coil Elements and Parallel Imaging Reconstruction at 3T and 7T**


1Electrical Engineering, Stanford University, Stanford, CA, United States; 2Radiology, Stanford University, Stanford, CA, United States

2420. **Investigation of GRAPPA G-Factor Dependence on Calibration Scan Phase Errors and SNR**

*S. L. Talagala*, 1, *J. E. Sarlits*, 1, *S. J. Inati*, 2

1Electrical Engineering, Stanford University, Stanford, CA, United States; 2Radiology, Stanford University, Stanford, CA, United States
2421. **Parallel Magnetic Resonance Imaging Via Dictionary Learning**  
**Shanshan Wang**, Xi Peng, Jianbo Liu, Yuanyuan Liu, Pei Dong, Dong Liang  
1NMRF/NINDS, National Institutes of Health, Bethesda, MD, United States; 2FMRIF/NIMH, National Institutes of Health, Bethesda, MD, United States  
Recent work indicates that the temporal SNR of GRAPPA EPI data can be significantly compromised when using an EPI based ... The simulations also show that the detrimental effect of calibration scan phase error is more prominent at higher SNR.

2422. **Smallest Singular Value: A Metric for Assessing K-Space Sampling Patterns**  
**Andrew T. Curtis**, Christopher K. Anand  
1Computing and Software, McMaster University, Hamilton, Ontario, Canada  
This work proposes a dictionary learning (DL) based sensitivity encoding (SENSE) approach to accurately reconstruct ... reconstruction accuracy in terms of detail preserving and outperforms the state -of-the-art SparseSENSE based approach.

2423. **STEP: Self-Supporting Tailored K-Space Estimation for Parallel Imaging Reconstruction**  
**Zechen Zhou**, Jinnan Wang, Niranjan Balu, Rui Li, Chun Yuan  
1Center for Biomedical Imaging Research, Department of Biomedical Engineering, School of Medicine, Tsinghua University, Beijing, China; 2Philips Research North America, Briarcliff Manor, NY, United States; 3Vascular Imaging Lab, Department of Radiology, University of Washington, Seattle, WA, United States  
Parallel Imaging (PI) has been widely used for MR imaging acceleration in clinical applications. However, current ... amplification, less aliasing artifacts and better structure preservation when compared to the existing PI algorithms.

2424. **Highly Accelerated 3D Parallel Imaging with Transitional Auto-Calibration (3D-PITA)**  
**Ren He**, Jingyuan Lu, Leslie Ying  
1Department of Electrical Engineering, University at Buffalo, Buffalo, NY, United States; 2Department of Electrical Engineering, Department of Biomedical Engineering, University at Buffalo, Buffalo, NY, United States  
A novel 3D-PITA method is proposed for volumetric auto- calibrated parallel imaging. The method introduces a transition ... to achieve high reconstruction quality at reduction factors higher than 5 and is superior to the conventional 3D GRAPPA.

2425. **Generalized Direct Virtual Coil (DVC) with SPIRiT Kernel for Arbitrary Sampling Pattern**  
**Yuxin Hu**, Tao Zhang, Kui Ying, John M. Pauly  
1Biomedical Engineering, Tsinghua University, Beijing, China; 2Electrical Engineering, Stanford University, CA, United States; 3Engineering Physics, Tsinghua University, China  
This work generalized direct virtual coil (DVC) using SPIRiT kernel and generalized DVC can be used for arbitrary ... coils. The results of the generalized DVC are nearly the same as SPIRiT and ESPIRiT and are better than those of DVC.

2426. **Considerations for Parallel Imaging When Using High Permittivity Pads in the Thighs at 3 T**  
**Wyger Brink**, Maarten J. Versluis, Johannes M. Peeters, Peter Börnert, Andrew Webb  
1Radiology, Leiden University Medical Center, Leiden, Netherlands; 2Philips Healthcare, Best, Netherlands  
The use of dielectric pads substantially improves transmit homogeneity in the thighs. However, it compromises the receive ... procedure using prior knowledge of the body coil reception profile confirms this effect and restores image uniformity.

2427. **Anatomically Constrained Magnetic Resonance Inverse Imaging for Human Brain**  
**Kevin Wen-Kai Tsai**, Fa-Hsuan Lin  
1Department of Biomedical Engineering and Computational Science, Aalto University School of Science, Espoo, Finland; 2Brain Research Unit (BRU), Low Temperature Laboratory, Aalto University School of Science, Espoo, Finland; 3Institute of Biomedical Engineering, National Taiwan University, Taipei, Taiwan  
The under-determined inverse problem solved in InI coursed the source localization uncertainty. We proposed an ... at the thalamus. We conclude that anatomically constrained InI provide the better source localization accuracy than InI.

2428. **Sensitivity Improvement Under Parallel Detection in CW-EPR Imaging**  
**Ayano Enomoto**, Hiroshi Hirata  
1Division of Bioengineering and Bioinformatics, Hokkaido University, Sapporo, Hokkaido, Japan  
The purpose of this study was to improve the signal- to-noise ratio (SNR) in the parallel EPR detection scheme using ... In addition to in vivo mouse imaging, tests were also performed with phantoms filled with nitroxyl radical solutions.

2429. **COMPASS – Guiding Reconstruction with Parallel MRI Signal Structure**  
**Yudong Zhu**  
1Zhu Consulting, Scarsdale, NY, United States  
In this work we show that one can directly identify a parallel MRI signal structure based on imaging physics, elucidate ... the signal structure and acquired spectra samples, and improve SNR by emphasizing conformity to the signal structur e.

2430. **AC-LORAKS: Autocalibrated Low-Rank Modeling of Local K-Space Neighborhoods**  
**Justin P. Haldar**  
1355
Traditional Poster

2431. KerNL: Parallel Imaging Reconstruction Using Kernel-Based NonLinear Method
Jingyuan Lyu¹, Yihang Zhou¹, Ukash Nakarmi¹, Chao Shi¹, Leslie Ying.¹²
¹Department of Electrical Engineering, State University of New York at Buffalo, Buffalo, NY, United States; ²Department of Biomedical Engineering, State University of New York at Buffalo, Buffalo, NY, United States

2432. A Theory for Sampling in K-Space - Parallel Imaging as Approximation in a Reproducing Kernel Hilbert Space
Vivek Athalye¹, Michael Lustig¹, Martin Uecker¹
¹Electrical Engineering and Computer Sciences, University of California, Berkeley, Berkeley, CA, United States

2433. Clinical Feasibility of Accelerated TOF MR Angiography with Sparse Undersampling and Iterative Reconstruction: Comparison with Conventional Parallel Imaging
Takayuki YAMAMOTO¹, Koji FUJIMOTO¹, Tomohisa OKADA¹, Yasutaka FUSHIMI¹, Akira YAMAMOTO¹, Aurelien F. STALDER¹, Yutaka NATSUAKI¹, Michaela SCHMIDT², Kaori TOGASHI³
¹Diagnostic Imaging and Nuclear Medicine, Graduate School of Medicine, Kyoto University, Kyoto, Japan; ²Siemens Healthcare, Erlangen, Germany; ³Siemens Medical Solutions USA, Inc, PA, United States

2434. Ultra Short Echotime MRI to Locate Foreign Objects: Initial Phantom Results
Karl-Heinz Herrmann¹, Anusch Mheryan, Martin Stenzel, Hans-Joachim Mentzel, Ulf Teichgräber, Jürgen R. Reichenbach¹
¹Medical Physics Group, Institute of Diagnostic and Interventional Radiology, Jena University Hospital - Friedrich Schiller University Jena, Jena, Germany

2435. SNR-Efficient Anisotropic 3D Ultra-Short Echo Time Sequence for Sodium MRI with Retrospective Gating
Simon Konstandin¹, Matthias Günther¹²
¹MR-Imaging and Spectroscopy, Faculty 01 (Physics/Electrical Engineering), University of Bremen, Bremen, Germany; ²Fraunhofer MEVIS, Bremen, Germany

2436. T2-Selective Excitation with UTE Imaging for Bone Imaging
Ethan M. Johnson¹, Urvi Vyas¹, Kim Butts Pauly¹, John M. Pauly¹
¹Electrical Engineering, Stanford University, Stanford, CA, United States; ²Radiology, Stanford University, Stanford, CA, United States

2437. Anisotropic Field-Of-View Support for Golden Angle Radial Imaging
Ziyue Wu¹, Krishna S. Nayak¹
¹University of Southern California, Los Angeles, CA, United States

2438. Gradient-Modulated PETRA
Nasharu Kobayashi¹, Luning Wang¹, Michael Garwood¹
¹Center for Magnetic Resonance Research, Department of Radiology, University of Minnesota, Minneapolis, MN, United States

2439. Segmented Golden Ratio Radial Reordering for Dynamic Cardiac MRI with Variable Temporal Resolution
Fei Han¹, Ziwu Zhou¹, Stanislas Rapacchi¹, Paul Finn¹, Peng Hu¹
¹Radiology, David Geffen School of Medicine at UCLA, Los Angeles, CA, United States
2440. **3D Through Time GRAPPA for Dynamic Distributed Spirals**  
*Dallas C. Turley*, Jim Pipe*
1Imaging Research, Barrow Neurological Institute, Phoenix, AZ, United States

2441. **CODEC: Covariance-Driven Parallel Imaging for NonCartesian Sampling Trajectories**  
*James G. Pipe*
1Imaging Research, Barrow Neurological Institute, Phoenix, AZ, United States

2442. **Rapid 3D Spoiled Steady-State Imaging with Yarn-Ball Acquisition**  
*Robert W. Stobbe*, Christian Beaulieu*
1University of Alberta, Edmonton, Alberta, Canada

2443. **Density-Adapted Spiral MRI Sequence for $^{23}$Na Imaging**  
*Maria Engel*, Nadia Benkhedah*, Armin M. Nagel*
1Medical Physics in Radiology, German Cancer Research Center (DKFZ), Heidelberg, Germany

2444. **A Spiral Spin-Echo Sequence for Fast T2-Weighted Imaging with Improved Contrast**  
*Zhiqiang Li*, Dinghui Wang*, John P. Karis*, James G. Pipe*
1Imaging Research, Barrow Neurological Institute, Phoenix, AZ, United States; 2Neuroradiology, Barrow Neurological Institute, Phoenix, AZ, United States

2445. **Analytic Form 3D Radial Sampling Strategy for Maintaining the Uniformity of K-Space Coverage with Increasing Interleaves**  
*Jinil Park*, Tae-Hoon Shin*, Jang-Yeon Park*
1Biomedical Engineering, IBS Center for Neuroscience Imaging Research, Sungkyunkwan University, Suwon, Gyungki-do, Korea; 2Diagnostic Radiology and Nuclear Medicine, University of Maryland, Baltimore, MD, United States

2446. **In-Vivo Brain Fast Rosette Spectroscopic Imaging (RSI) with Reduced Gradient Demands/improved Patient Comfort and a Processing Pipeline with Automated LCModel Quantification, for All Acquired Voxels**  
*Claudiu Schirda*, Tiejun Zhao*, Ovidiu Andronesi*, James Mountz1, Fernando Boada*, Hoby Hetherington*
1Radiology, University of Pittsburgh School of Medicine, Pittsburgh, PA, United States; 2Siemens Medical Solutions, Pittsburgh, PA, United States; 3Radiology, Massachusetts General Hospital, Boston, MA, United States

2447. **Single-Shot Spiral Imaging Using the Gradient Impulse Response for Trajectory Prediction**  
*Signe Johanna Vannesjo*, Nadine N. Graedel*, Lars Kasper*, Simon Gross*, Christoph Barmet*, Klaas P. Pruessmann*
1Institute for Biomedical Engineering, University and ETH Zurich, Zurich, Switzerland; 2FMRIB Centre, University of Oxford, Oxford, United Kingdom; 3Skope Magnetic Resonance Technologies, Zurich, Switzerland

2448. **Dynamic Volumetric MRI Using Golden-Angle Variable Density Spiral Acquisition with Sparse Parallel Imaging Reconstruction**  
*Lyu Li*, Xiaodong Ma*, Pascal Spincemaille*, Yi Wang*, Huijun Chen*, Hua Guo*
1Center for Biomedical Imaging Research, Department of Biomedical Engineering, Tsinghua University, Beijing, China; 2Radiology, Weill Cornell Medical College, NY, United States; 3Biomedical Engineering, Cornell University, NY, United States

2449. **L1-ESPIRiT Reconstruction for Accelerating 3D UTE and Denoising**  
1Bioengineering, UC Berkeley/UCSF, Berkeley, CA - California, United States; 2EECS, UC Berkeley, Berkeley, CA, United States; 3Radiology and Biomedical Imaging, UCSF, San Francisco, CA - California, United States
2450. Proton-Constrained CMRO$_2$ Quantification with Direct $^{17}$O-MRI at 3 Tesla

Dmitry Kurzhunov$^1$, Robert Borowiak$^{1,2}$, Philipp Wagner$^1$, Marco Reisert$^1$, Michael Bock$^1$

$^1$Department of Radiology · Medical Physics, University Medical Center Freiburg, Freiburg, Baden-Württemberg, Germany; $^2$German Cancer Consortium (DKTK), German Cancer Research Center (DKFZ), Heidelberg, Baden-Württemberg, Germany

2451. Comparison of Pre-Reconstruction Interpolation Methods for Rapid Compressed Sensing Reconstruction of Non-Cartesian 4-Space

KC Erb$^1$, Ganesh Adluru$^1$, Srikant Kamesh Iyer$^1$, Devavrat Likhite$^1$, John A. Roberts$^1$, Edward DiBella$^1$

$^1$UCAIR, University of Utah, Salt Lake City, UT, United States

2452. Density Compensation for Iterative Reconstruction from Under-Sampled Radial Data

Boris Mailhe$^1$, Qiu Wang$^1$, Robert Grimm$^1$, Marcel Dominik Nickel$^1$, Kai Tobias Block$^1$, Hersh Chandarana$^3$, Mariappan S. Nadar$^4$

$^1$Imaging and Computer Vision, Siemens Corporation, Corporate Technology, Princeton, NJ, United States; $^2$MR Application & Workflow Development, Siemens Healthcare, Erlangen, Germany; $^3$Department of Radiology, New York University School of Medicine, New York, NY, United States

Traditional Poster

Encoding & Reconstruction

Exhibition Hall Wednesday 16:00-18:00

2453. CAIPIRINHA Acceleration Enables Rapid High-Spatial-Resolution Isotropic 3D SPACE of the Knee: Comparison with Conventional SPACE and 2D TSE

Esther Raithel$^1$, Gaurav Thavai$^1$, Shivani Ahlawat$^2$, Shadpour Demehri$^1$, Zhang Qiong$^1$, Jan Fritz$^2$

$^1$Siemens AG, Healthcare Sector, Erlangen, Bavaria, Germany; $^2$Russell H. Morgan Department of Radiology and Radiological Science, Johns Hopkins University School of Medicine, MD, United States; $^3$Siemens AG, Guang Dong, China

2454. Rapid Fast Field-Cycling MRI Using Keyhole Imaging

Peter James Ross$^1$, David J. Lurie$^2$

$^1$Aberdeen Biomedical Imaging Centre, University of Aberdeen, Aberdeen, Aberdeen City, United Kingdom

2455. Robust and Automatic Polarity Determination for Phase-Sensitive Inversion Recovery (PSIR) Imaging

Deqing Chen$^1$, Weiguo Zhang$^1$

$^1$Shanghai United Imaging Healthcare Co. Ltd., Shanghai, China

2456. An Integrated Approach of Interactive Land-Marking and Auto Coil Detection

Jia Guo$^1$, Yongchuan Lai$^1$, Xiaocheng Wei$^1$, Nan Cao$^1$, Bing Wu$^1$

$^1$GE Healthcare, Beijing, China

2457. Acquisition and Reconstruction Effects on Image Quality in Variable-Density Sparse MRI

Dimitris Mitsouras$^1$, Onur Afacan$^3$, Robert V. Mulkern$^3$, Dana H. Brooks$^3$

$^1$Radiology, BWH/Harvard Medical School, Boston, MA, United States; $^2$Children's Hospital Boston, MA, United States; $^3$Children's Hospital Boston, MA, United States; $^4$Northeastern University, Boston, MA, United States

2458. Optimal Spread Spectrum for Enhanced Multi-Receive Compressed Sensing MRI

Salatman A. Al Hasani$^1$, Gary F. Egan$^1$, Jingxin Zhang$^1$

$^1$Electrical and Computer Systems Engineering, Monash University, Clayton, VIC, Australia; $^2$Monash Biomedical Imaging, Monash University, VIC, Australia; $^3$School of Software and Electrical Engineering, Swinburne University of Technology, VIC, Australia
2459. Image Reconstruction of Under-Sampled Signal at Equal Interval Using Quadratic Phase Scrambling
Satoshi Ito1, Shungo Yasaka1, Yoshifumi Yamada1
1Utsumomiya University, Utsumomiya, Tochigi, Japan

2460. Improved Partial Fourier Reconstruction Using Two Reverse Polarity Echoes in a Single GRE Acquisition
Ehsan Hamtaei1,2, Saifeng Liu2, Yongquan Ye2, Dongmei Wu1, E. Mark Haacke1,2
1MR Innovations Inc., Detroit, MI, United States; 2Radiology, Wayne State University, Detroit, MI, United States; 3MRI Institute of Biomedical Research, Ontario, Canada; 4East China Normal University, Shanghai, China

2461. Non-Linear TRASE
Somaija Salajeghe1, Paul Babyn2, Jonathan C. Sharp3, Gordon E. Sarty4
1Division of Biomedical Engineering, University of Saskatchewan, Saskatoon, SK, Canada; 2Medical Imaging, University of Saskatchewan, Saskatoon, SK, Canada; 3Department of Oncology, University of Alberta, Edmonton, AB, Canada

2462. Enhanced FRONSAC Encoding with Compressed Sensing
Haifeng Wang1, R. Todd Constable3, Gigi Galiana1
1Yale University, New Haven, CT, United States

2463. Improved Scan Efficiency of 3D Fast Spin Echo with Subspace-Constrained Reconstruction
Jonathan I. Tamir1, Weitian Chen2, Peng Lai2, Martin Uecker3, Michael Lustig1
1Electrical Engineering and Computer Sciences, University of California, Berkeley, Berkeley, CA, United States; 2Global Applied Science Laboratory, GE Healthcare, Menlo Park, CA, United States

2464. In-Vivo High Resolution Imaging of Fine-Scale Anatomical Structures at 3T with Simultaneous Bias/Variance Reduction
Aymeric Stamm1, Onur Afacan, Benoit Scherrer, Jolene M. Singh1, Simon K. Warfield1
1Computational Radiology Laboratory, Department of Radiology, Boston Children's Hospital, Harvard Medical School, Boston, MA, United States

2465. rOi-Space: Accelerated Imaging of Sub-Volumes Using ROI Focused O-Space
Emre Kopanoglu1, Haifeng Wang3, Yuqing Wan1, Dana C. Peters1, Gigi Galiana1, Robert Todd Constable1
1Diagnostic Radiology, Yale University, New Haven, CT, United States

2466. Scan Time Reduction for Non-CPMG 3D FSE Imaging Based on Phase Cycling
Weitian Chen1, Rob Peters2, Suchandrima Banerjee1, Misung Han3, Roland Krug4, Garry Gold5, Yuval Zur6
1Global Applied Science Laboratory, General Electric, Menlo Park, CA - California, United States; 2Global Applied Science Laboratory, General Electric, Waukesha, WI, United States; 3Department of Radiology and Biomedical Imaging, UCSF, San Francisco, CA - California, United States; 4Radiology, Stanford University, Palo Alto, CA - California, United States; 5Healthcare Magnetic Resonance, General Electric, Haifa, Israel

2467. Accelerating MRI by Quadratic Phase Encoding
Lin Chen1, Congbo Cai2, Shuhui Cai1, Zhong Chen1
1Department of Electronic Science, Xiamen University, Xiamen, Fujian, China; 2Department of Communication Engineering, Xiamen University, Xiamen, Fujian, China

2468. High-Resolution fMRI Using Accelerated EPIK for Enhanced Characterisation of Functional Areas at 3T
Seong Dae Yun1, N. Jon Shah2
1Institute of Neuroscience and Medicine, Medical Imaging Physics (INM-4), Forschungszentrum Juelich, Juelich, Germany; 2Faculty of Medicine, Department of Neurology, JARA, RWTH Aachen University, Aachen, Germany
2469. Simultaneous Imaging of Myelin and Iron Using Ultrashort Echo Time (UTE) MRI
Vipul R. Sheth1, Jacopo Annese1, Hongda Shao1, Qun He1, Jody Corey-Bloom1, Graeme M. Bydder1, Jiang Du1
1Radiology, University of California, San Diego, CA, United States; 2Neurosciences, University of California, San Diego, CA, United States

2470. Spatial Localization of Relaxation Dispersion by Field-Cycling with One-Dimensional Projection
Kerrin J. Pine1, Gareth R. Davies1, David J. Lurie1
1Aberdeen Biomedical Imaging Centre, University of Aberdeen, Aberdeen, Scotland, United Kingdom

2471. Multivariate Asymmetry Analysis (MVAA): Applications in Temporal Lobe Epilepsy
Diego Cantor-Rivera1, Terry M. Peters2, Ali R. Khan2
1Biomedical Engineering Graduate Program, Western University, London, ON, Canada; 2Medical Biophysics, Western University, London, ON, Canada

2472. Polyhedral Phantom Framework with Analytical Fourier Transform with Intensity Gradients
Shuo Han1, Daniel A. Herzka1
1Department of Biomedical Engineering, Johns Hopkins School of Medicine, Baltimore, MD, United States

2473. A Hybrid Approach to Intensity Normalization of Brain MRI Based on Gaussian Mixture Model and Histogram Matching
Xiaofei Sun1, Lin Shi2, 3, Yishan Luo1, Winnie CW Chu1, Defeng Wang1, 4
1Department of Imaging and Interventional Radiology, The Chinese University of Hong Kong, Shatin, NT, Hong Kong; 2Department of Medicine and Therapeutics, The Chinese University of Hong Kong, Shatin, NT, Hong Kong; 3Chow Yuk Ho Technology Centre for Innovative Medicine, The Chinese University of Hong Kong, Shatin, NT, Hong Kong; 4Department of Biomedical Engineering and Shun Hing Institute of Advanced Engineering, The Chinese University of Hong Kong, Shatin, NT, Hong Kong

2474. Concentration Maps Improve Detection of Gray Matter Alteration in Cerebellum and Deep Gray Matter Structures
Guillaume Bonnier1, 2, Jean-Philippe Thiran2, Gunnar Krueger1, 2, Tobias Kober1, 2, Bénédicte Mortame1, 2, Cristina Granziera1, 2, Alexis Roche1, 2
1Siemens ACIT – CHUV Radiology, Siemens Healthcare IM BM PI & Department of Radiology CHUV, Lausanne, Vaud, Switzerland; 2LTS5, École Polytechnique Fédérale de Lausanne, Lausanne, Vaud, Switzerland; 3Department of Clinical Neurosciences, Laboratoire de recherche en neuroimagerie et Neuroimmunologie Unit, Lausanne, Vaud, Switzerland

2475. Iterative Residual Based Deconvolution Partial Volume Correction for Brain PET- MRI
Chenguang Peng1, Huayu Zhang1, Jinchao Wu1, Xingfeng Shao1, 2, Yingmao Chen1, Quanzheng Li4, Georges El Fakhri1, Kui Ying1
1Key Laboratory of Particle and Radiation Imaging, Ministry of Education, Department of Engineering, Beijing, China; 2Department of Bioengineering, UCLA, CA, United States; 3Department of Nuclear Medicine, The general hospital of Chinese People's Liberation, Beijing, China, Beijing, China; 4Department of Radiology, Division of Nuclear Medicine and Molecular Imaging, Harvard Medical School, Boston, United States

2476. Processing Induced Spatial Correlations Are Quantified with a Temporal Frequency Representation in Complex-Valued fMRI
Mary C. Kociuba1, Daniel B. Rowe1, 2
1Department of Mathematics, Statistics, and Computer Science, Marquette University, Milwaukee, WI, United States; 2Department of Biophysics, Medical College of Wisconsin, Milwaukee, WI, United States
2477. **Influence of Anisotropic Blood Vessels Modeling in the EEG/MEG Forward Problem Using MRI.**
Ernesto Cuartas-M, Angel Torrado-C, Juan A Hernandez-T, JosÁEl Pineda, Eva Manzanedo-S, German Castellanos-D
1Universidad Nacional de Colombia, Manizales, Caldas, Colombia; 2Medical Image Analysis and Biometry Lab, Rey Juan Carlos University, Madrid, Spain; 3Madrid-MIT M+Vision Consortium, Madrid, Spain; 4Centre for Biomedical Technology-U.P.M, Pozuelo de AlarcÁOn, Spain

2478. **Partial Volume Correction Based on Spatial Variant Point Spread Function for Simultaneous PET-MR Imaging**
Chenguang Peng, Jinchao Wu, Xingfeng Shao, Yingmao Chen, Quanzheng Li, Georges El Fakhr, Kui Ying
1Key Laboratory of Particle and Radiation Imaging, Ministry of Education, Department of Engineering, Beijing, China; 2Department of Bioengineering, UCLA, CA, United States; 3Department of Nuclear Medicine, The general hospital of Chinese People's Liberation, Beijing, China, Beijing, China; 4Department of Radiology, Division of Nuclear Medicine and Molecular Imaging, Harvard Medical School, Boston, United States

2479. **Weighted Echo Sharing Technique (WEST) for Highly Undersampled Multi-Echo T2(∗) Weighted Data in Cartesian Domain**
Taejoon Eo, Jinseong Jang, Dosik Hwang
1Yonsei University, Seoul, Korea

2480. **Rapid Segmentation of the Cervical Spinal Cord on 3D MRI Data with Cord Image Analyzer (Cordial): Application to Three-Year Follow-Up Data of MS Patients with a Progressive Disease Course**
Michael Amann, Simon Pezold, Yvonne Naegelin, Ketut Fundana, Michaela Andelova, Katrin Weier, Christoph Stippich, Ludwig Kappos, Philippe Cattin, Till Sprenger
1Neurology/Neuroradiology, University Hospital Basel, Basel, BS, Switzerland; 2Medical Image Analysis Center (MIAC), University of Basel, Basel, BS, Switzerland; 3Neurology, University Hospital Basel, Basel, BS, Switzerland

2481. **Abnormal Brain Anatomy Can Introduce Considerable Bias to Studies Relying on FIRST – an Improved Segmentation Pipeline**
Xiang Feng, Andreas Deistung, Jesper Hagemeier, Michael Dwyer, Robert Zivadinov, Juergen R. Reichenbach, Ferdinand Schweser
1Medical Physics Group, Institute of Diagnostic and Interventional Radiology, Jena University Hospital - Friedrich Schiller University Jena, Jena, Germany; 2Buffalo Neuroimaging Analysis Center, Dept. of Neurology, School of Medicine and Biomedical Sciences, State University of New York at Buffalo, Buffalo, NY, United States; 3MRI Molecular and Translational Imaging Center, Buffalo CTRC, State University of New York at Buffalo, Buffalo, NY, United States

2482. **Semi-Automatic Prostate Segmentation Via a Hidden Markov Model with Anatomical and Textural Priors**
Christian Scharfenberger, Dorothy Lui, Farzad Khandavi, Alexander Wong, Masoom Haider
1Systems Design Engineering, University of Waterloo, Waterloo, Ontario, Canada; 2Department of Medical Imaging, University of Toronto, Toronto, Ontario, Canada; 3Sunnybrook Health Sciences Centre, Toronto, Toronto, Canada

2483. **Magnetic Resonance Neurography (MRN) of Brachial Plexus at 1.5 T: Comparative Evaluation of 3D SHINKEI Versus DWIBS, Our Initial Experience**
Prashant Nair, Rajagopal K. V, Rolfa Narayana, Indrajit Saha, Satish M
1KMCH Hospital, Manipal University, Manipal, India; 2Philips Healthcare, Philips India Ltd, Bangalore, India; 3Philips Healthcare, Philips India Ltd, Gurugram, Haryana, India
Traditional Poster

Traditional Poster

Novel Computing Frameworks
Exhibition Hall  Wednesday 16:00-18:00

2484. A Hardware-Independent Environment for MR Acquisition and Simulation
Kelvin Layton1, Stefan Kroboth1, Jochen Leupold1, Huijun Yu1, Feng Jia1, Sebastian Littin1, Tony Stöcker2, Maxim Zaitsev1
1Medical Physics, University Medical Center Freiburg, Freiburg, BW, Germany; 2German Center for Neurodegenerative Diseases, Bonn, NRW, Germany

2485. Sub-Second Compressed Sensing Reconstruction for Large Array Data Using GPUs
Ching-Hua Chang1, Jim Ji1
1Texas A&M University, College Station, TX, United States

2486. Berkeley Advanced Reconstruction Toolbox
Martin Uecker1, Frank Ong1, Jonathan I.Tamir1, Dara Bahri1, Patrick Virtue1, Joseph Y. Cheng2, Tao Zhang2, Michael Lustig1
1Electrical Engineering and Computer Sciences, University of California, Berkeley, Berkeley, CA, United States; 2Department of Radiology, Stanford University, Stanford, United States

2487. Customized CPU Accelerated CS-Based MRI Reconstruction Platform
Kyunghyun Sung1, Di Wu1, Fei Han1, Ziwu Zhou1, Peng Hu1, Holden Wu1, Alex Bu1, Jason Cong1
1Radiological Sciences, University of California, Los Angeles, Los Angeles, CA, United States; 2Bioengineering, University of California, Los Angeles, Los Angeles, CA, United States; 3Computer Science, University of California, Los Angeles, Los Angeles, CA, United States

2488. Faster-Than-Acquisition 4D Sparse Reconstruction for Cartesian 2D SENSE-Type Acquisition
Eric A. Borisch1, Joshua D. Trzasko1, Adam T. Froemming1, Roger C. Grimm1, Akira Kawashima3, Armando Manduca1, Phillip M. Young2, Stephen J. Riederer1
1Mayo Clinic, Rochester, MN, United States; 2Radiology, Mayo Clinic, Rochester, MN, United States

2489. A Low-Cost Flexible Non-Linear Parallelized MR Image Reconstruction System
Fei Han1, Ziwu Zhou1, Kyunghyun Sung1, J Paul Finn1, Peng Hu1
1Radiology, David Geffen School of Medicine at UCLA, Los Angeles, CA, United States

Traditional Poster

Image Quality Assessment
Exhibition Hall  Wednesday 16:00-18:00

2490. Standardization and Automatization of Quality Assurance in Structural and Dynamic MRI.
Robin Antony Birkeland Bjugge1, Ate Bjørnerud1, Wibeke Nordbø1, Øystein Bech Gadmar1
1Intervention Center, Oslo University Hospital, Oslo, Norway

Brian Hanna1, Naoharu Kobayashi1, Djaudat Idiyatullin1, Curtis Andrew Corum1, Brad Weegman1, Jinjin Zhang1, Michael Garwood1
1Radiology, University of Minnesota, Minneapolis, MN, United States
2492. Extending BrainWeb for Evaluating Methods of Brain Volume Change: Simulation of Central and Peripheral Brain Atrophy
Kunio Nakamura1, Vladimir S. Fonov1, Nicolas Guizard1, Sridar Narayanan1, Douglas L. Arnold1, D. Louis Collins1
1Montreal Neurological Institute, McGill University, Montreal, Quebec, Canada

2493. A New Approach for Automatic Image Quality Assessment
Thomas Küstner1, 2, Parnia Bahar2, Christian Würslin1, Sergios Gatidis1, Petros Martirosian3, Nina Schwenzer1, Holger Schmidt1, Bin Yang1
1Department of Radiology, University Hospital of Tübingen, Tübingen, Baden-Württemberg, Germany; 2Institute of Signal Processing and System Theory, University of Stuttgart, Stuttgart, Baden-Württemberg, Germany; 3Diagnostic and Interventional Radiology, University Hospital of Tübingen, Tübingen, Baden-Württemberg, Germany

2494. A Generalized Method for Automated Quality Assessment in Brain MRI
Bénédicte Marêchal1, 2, Stephan Kannengiesser3, Kaely Thostenson1, Peter Kollasch1, Pavel Falkovsky1, 2, Jean-Philippe Thiran4, Reto Meuli5, Matt A. Bernstein4, Philippe Thiran2, Reto Meuli6, Matt A. Bernstein4, Gunnar Krueger1, 2
1Siemens ACIT – CHUV Radiology, Siemens Healthcare IM BM PI & Department of Radiology CHUV, Lausanne, Switzerland; 2LTS5, Ecole Polytechnique Fédérale de Lausanne, Lausanne, Switzerland; 3Siemens Healthcare, Erlangen, Germany; 4Department of Radiology, Mayo Clinic, Rochester, MN, United States; 5Siemens Healthcare, MN, United States; 6CHUV Radiology, Lausanne, Switzerland

2495. Semi-Automatic Quantification of Long-Term Stability and Image Quality of a Parallel Transmit System at 7T
Marcel Gratz1, 2, Maximilian Völker2, Sören Johst2, Mark E. Ladd2, 1, Harald H. Quick1, 2
1High Field and Hybrid MR Imaging, University Hospital Essen, Essen, Germany; 2Erwin L. Hahn Institute for Magnetic Resonance Imaging, University of Duisburg-Essen, Essen, Germany; 3Medical Physics in Radiology, German Cancer Research Center, Heidelberg, Germany

2496. Comparison of BRISQUE and SSIM as Image Quality Assessment (IQA) on MR Optic Nerve Images.
Li Sze Chow1, Raveendran Paramesran1, Martyn Paley2
1Electrical Engineering, University of Malaya, Kuala Lumpur, Wilayah Persekutuan, Malaysia; 2Academic Radiology, University of Sheffield, Sheffield, South Yorkshire, United Kingdom

2497. Radiological and Quantitative Assessment of Compressed Sensing Reconstruction of Undersampled 3D Brain Images
Ian Marshall1, Gabriel Rilling1, Yuehui Tao2, Chaoran Du1, Samarth Varma1, Dominic Job1, Andrew Farrall1, Mike Davies3
1University of Edinburgh, Edinburgh, United Kingdom; 2University of Oxford, Oxford, United Kingdom

2498. How to Improve the Accuracy of Total Water Content Measured Using T2 Relaxation
Sandra M. Meyers1, Shannon H. Kolind2, Alex L. MacKay1, 3
1Physics and Astronomy, University of British Columbia, Vancouver, BC, Canada; 2Department of Medical Imaging, University of Arizona, Tucson, AZ, United States; 3Biomedical Engineering, University of Arizona, Tucson, AZ, United States

Traditional Poster
Dictionary-Based Reconstruction
Exhibition Hall Wednesday 16:00-18:00

2499. Efficient Dictionary Design for MR Fingerprinting Using Tree-Structured Vector Quantization
Zhitao Li1, Benjamin Paul Berman2, Diego R. Martín3, Maria I. Altbach3, Ali Bilgin1, 4
1Electrical and Computer Engineering, University of Arizona, Tucson, AZ, United States; 2Applied Mathematics, University of Arizona, Tucson, AZ, United States; 3Department of Medical Imaging, University of Arizona, Tucson, AZ, United States; 4Biomedical Engineering, University of Arizona, Tucson, AZ, United States
2500. **Fast Reconstruction of Highly-Undersampled Dynamic MRI Using Random Sampling and Manifold Interpolation**
Kanwal K. Bhatia¹, Anthony N. Price²,³, Joseph V. Hajnal²,³, Daniel Rueckert¹
¹Biomedical Image Analysis Group, Imperial College London, London, United Kingdom; ²Centre for the Developing Brain, Kings College London, London, United Kingdom; ³Biomedical Engineering Department, Kings College London, London, United Kingdom

2501. **Fast Dictionary Learning-Based Compressed Sensing MRI with Patch Clustering**
Zhifang Zhan¹, Yunsong Liu¹, Jian-Feng Cai², Di Guo¹, Jing Ye¹, Zhong Chen¹, Xiaobo Qu¹
¹Department of Electronic Science, Xiamen University, Xiamen, Fujian, China; ²Department of Mathematics, University of Iowa, Iowa City, IA, United States; ³School of Computer and Information Engineering, Xiamen University of Technology, Xiamen, Fujian, China

2502. **Dictionary Learning for Compressive T2 Mapping with Non-Cartesian Trajectories and Parallel Imaging**
Benjamin Paul Berman¹, Mahesh Bharath Keerthivasan², Zhita Li², Diego R. Martin¹, Maria I. Altbach³, Ali Bilgin²,³
¹Program in Applied Mathematics, University of Arizona, Tucson, AZ, United States; ²Electrical & Computer Engineering, University of Arizona, Tucson, AZ, United States; ³Medical Imaging, University of Arizona, Tucson, AZ, United States; ⁴Biomedical Engineering, University of Arizona, Tucson, AZ, United States

2503. **Sparsity-Promoting Orthogonal Dictionary Updating for Highly Undersampled MRI Reconstruction**
Jinhong Huang¹,², Xiaohui Liu¹, Wufan Chen¹, Yanqiu Feng¹
¹Department of Experimental Physics 5, University of Würzburg, Würzburg, Germany; ²Corporate Technology, Siemens AG, Erlangen, Germany

2504. **Accelerating MR Parameter Mapping Using Manifold Recovery**
Chao Shi¹, Yihang Zhou¹, Yanhua Wang¹, Dong Liang², Xiaojuan Li³, Leslie Ying¹,⁴
¹Department of Electronic Science, Xiamen University, Xiamen, Fujian, China; ²Department of Radiology, Shenzhen Institute of Advanced Technology, Shenzhen, Guangdong, China; ³School of Mathematics and Computer Science, Gannan Normal University, Ganzhou, Jiangxi, China; ⁴Biomedical Engineering, University of Arizona, Tucson, AZ, United States

---

**Traditional Poster**

**Imaging Near Metal**

**Exhibition Hall**

**Wednesday 16:00-18:00**

2505. **Reduced FOV Imaging Near Metal Using 2D Multispectral Imaging and Very Selective Outer Volume Suppression**
Valentina Taviani¹, Daniel Litwiller², Kevin M. Koch¹, Brian A. Hargreaves¹
¹Radiology, Stanford University, Stanford, CA, United States; ²GE Healthcare, Rochester, MN, United States; ³Biophysics and Radiology, Medical College of Wisconsin, Milwaukee, WI, United States

2506. **Compressed Sensing Accelerated Broadband 3D Phase Encoded Turbo Spin-Echo Imaging for Geometrically Undistorted Imaging in the Presence of Field Inhomogeneities**
Jetse van Gorp¹, Chris Bakker¹, Job Bouwman¹, Jouke Smink¹, Frank Zijlstra¹, Peter Seevinck¹
¹Image Sciences Institute, University Medical Center Utrecht, Utrecht, Netherlands; ²Department of Radiology, University Medical Center Utrecht, Utrecht, Netherlands; ³Philips, Best, Noord-Brabant, Netherlands

2507. **Imaging of the Spine with Metal Implants Using High-Bandwidth RF Pulses from a Local Tx/Rx Coil**
Theresa Bachschmidt¹, Johanna Schöpfer¹, Stephan Biber¹, Peter Jakob¹, Mathias Nittka¹
¹Department of Experimental Physics 5, University of Würzburg, Würzburg, Germany; ²Magnetic Resonance, Siemens AG, Erlangen, Germany; ³Corporate Technology, Siemens AG, Erlangen, Germany
2508. **Automatic Detection of Metal Implant Location in Hexagonally Sampled MAVRIC-SL**
Bragi Sveinsson¹, Valentina Taviani¹, Garry Gold¹, Brian Hargreaves¹
¹Radiology, Stanford University, Stanford, CA, United States

2509. **Initial Experience with Artefact Reduction Sequences and MR Conditional Cochlear Implants**
Jonathan Paul Ashmore¹, Mathias Nittka², Lyndall Blakeway³, Steve Connor¹,³, Geoff Charles-Edwards³
¹Neuroradiology, King’s College Hospital NHS Foundation Trust, London, United Kingdom; ²Siemens Healthcare, Erlangen, Germany; ³Guy’s & St Thomas’ NHS Foundation Trust, London, United Kingdom

2510. **Metal Artifact Correction Using Sensitivity Information**
Dongchan Kim¹, JaeIn Cho¹, Kinam Kwon¹, HyunWook Park¹
¹Electrical engineering, KAIST, Daejeon, Yuseong-Gu, Korea

2511. **Metal Implant-Induced Spectral Range Optimization Using Rapid 3D-MSI Calibration Scans**
Kevin M. Koch¹
¹Biophysics and Radiology, Medical College of Wisconsin, Milwaukee, WI, United States

2512. **Evaluation of T2-Weighted WARP Sequences in Patients with Spinal Prosthesis**
shun qi¹, Ying Liu, Langlang Gao, Panli Zuo², Mathias Nittka¹, Hong Yin
¹Xijing Hospital, Fourth Military Medical University, xian, shaanxi, China; ²Siemens Healthcare, MR Collaborations NE Asia, shaanxi, China; ³Siemens Healthcare, Germany, Germany

2513. **An Improved Complex Image Combination Algorithm for SEMAC**
Daehyun Yoon¹, Brian A. Hargreaves¹
¹Radiology, Stanford University, Palo Alto, CA, United States

2514. **Phase Unwrapping Near Metal Implants with Prior Knowledge of the Implant Geometry**
Laura J. King¹, Philip J. Bones¹, Rick P. Millane¹
¹Department of Electrical and Computer Engineering, University of Canterbury, Christchurch, New Zealand

2515. **Numerical RF Pulse Optimization to Reduce Peak B1 for Multi-Spectral Imaging Around Metal Implants**
Andrew M. Huettner¹, Andrew S. Nencka¹, L.Tugan Muftuler², Kevin M. Koch¹
¹Biophysics, The Medical College of Wisconsin, Milwaukee, WI, United States; ²Neurosurgery, The Medical College of Wisconsin, Milwaukee, WI, United States; ³Biophysics and Radiology, The Medical College of Wisconsin, Milwaukee, WI, United States

2516. **Fluid-Sensitive Metal Artifact Reduction Using a 3D-Composite Fast Steady State Free Precession (COFIsp) Sequence**
Xeni Deligianni¹,², Thomas Egelhof², Thorsten Wischer², Reinhard Elke², Oliver Bieri³
¹Radiology, Division of Radiological Physics, University of Basel Hospital, Basel, NA, Switzerland; ²Merian Iselin Klinik, Basel, NA, Switzerland; ³Radiology, Division of Radiological Physics, University of Basel Hospital, Basel, NA, Switzerland

**Traditional Poster**

**Elastography**

**Exhibition Hall Wednesday 16:00-18:00**

2517. **Estimation of Abdominal Aortic Aneurysm Stiffness Using MR Elastography: Is Stiffness Superior to Diameter?**
Shantanu Warhadpande¹, William Kenyhercz², Priyanka Illapani², Brian Raterman¹, Joshua Dowell¹, Michael Go¹, Patrick Vaccaro¹, Jean Starr¹, Richard White¹, Arunark Kolipaka²
¹The Ohio State University College of Medicine, Columbus, OH, United States; ²The Ohio State University, Columbus, OH, United States; ³The Ohio State University Wexner Medical Center, OH, United States
2518. Theoretical Performance and Sampling Limits in Steady-State Magnetic Resonance Elastography
Joshua Trzasko¹, Kevin Glaser¹, Arvin Arani¹, Armando Manduca¹, David Lake¹, Phillip Rossman¹, Shivaram Poigai Arunachalam¹, Kieran McGee¹, Richard Ehman¹, Philip Araoz²
¹Mayo Clinic, Rochester, MN, United States

2519. Consistent SNR Measures for Magnetic Resonance Elastography
Armando Manduca¹, David S. Lake², Khang T. Huynh¹, Rehmahn S. Eon¹, Elizabeth M. Annoni¹, Richard L. Ehman¹
¹Physics and Biomedical Engineering, Mayo Clinic, Rochester, MN, United States

2520. Mechanical Properties and Force Output of Quadriceps Muscle Following Eccentric Exercise
P Kennedy¹, I MacGregor², E Barnhill¹, A Cooper¹, L Hiscox¹, C Brown¹, J Braun¹, I Sack¹, E van Beek¹, A Hunter², CL Johnson³, N Roberts²
¹Clinical Research Imaging Centre (CRIC), University of Edinburgh, Edinburgh, United Kingdom; ²School of Sport, University of Stirling, Stirling, United Kingdom; ³The Mercholatun Company Ltd., Glasgow, United Kingdom; ⁴Department of Radiology, Charité - Universitätsmedizin Berlin, Berlin, Germany; ⁵Beckman Institute, University of Illinois at Urbana-Champaign, Urbana, IL, United States

2521. In Vivo Waveguide Elastography of White Matter Tracts in the Full Human Brain
Anthony Joseph Romano¹, Jing Guo², Michael Scheel¹, Sebastian Hirsch³, Jürgen Braun³, Ingolf Sack²
¹Physical Acoustics, Naval Research Laboratory, Washington, DC, United States; ²Radiology, Charité-Universitätsmedizin, Berlin, Germany; ³Medical Informatics, Charité-Universitätsmedizin, Berlin, Germany

2522. Fast 2D Hepatic MR Elastography for Free-Breathing and Short Breath Hold Applications
Kevin Glaser¹, Jun Chen¹, Richard Ehman¹
¹Radiology, Mayo Clinic, Rochester, MN, United States

2523. Combining Conjugate and Non-Conjugate Wave Data for Faster Elastography
Roger Grimm¹, Eric Stinson¹, Richard Ehman¹
¹Mayo Clinic, Rochester, MN, United States

2524. Three Dimensional Three Parameter Direct Inversion MR Elastography of Incompressible Transverse Isotropic Media: Application to In Vivo Soleus Muscle
Jing Guo¹, Sebastian Hirsch³, Jürgen Braun³, Ingolf Sack²
¹Radiology, Charité - Universitätsmedizin Berlin, Berlin, Germany; ³Department of Medical Informatics, Charité - Universitätsmedizin Berlin, Berlin, Germany

2525. The Accuracy of Multi-Slice Multi-Frequency MR Elastography in a Brain Stiffness Mimicking Phantom
Arvin Arani¹, Ondrej Sleza¹, Nikoo Fattahi¹, Kevin J. Glaser¹, Joel Felmlee¹, Armando Manduca¹, Clifford R. Jack¹, Richard L. Ehman¹, John Huston III²
¹Radiology, Mayo Clinic, Rochester, MN, United States; ²Physiology and Biomedical Engineering, Mayo Clinic, Rochester, MN, United States

2526. Observation of Functional Magnetic Resonance Elastography (FMRE) in Mouse Brain
Samuel Patz¹,², Katharina Schreger¹, Iga Marabyan¹,², Angelos Kyriazis¹,², Jens Wuerfel¹,², Srinu Mukundan¹,², Ralph Sinkus³
¹Brigham & Women's Hospital, Boston, MA, United States; ²Harvard Medical School, Boston, MA, United States; ³Institute of Neuroradiology, University Medicine Goettingen, Goettingen, Germany; ⁴NeuroCure, Charité University Medicine, Berlin, Germany; ⁵Imaging Sciences & Biomedical Engineering, Kings College, London, United Kingdom
In the previous work (ISMRM2014, 1686), we introduced the wireless TR synchronization system with a dipole antenna tuned ... In this study, we replaced the cable by an optical fiber, to prevent the external RF noise enter the magnet room.

1Department of Radiology and Neuroradiology, UKSH, Kiel, Germany; 2Philips Research, Hamburg, Germany

Thomas Lindner¹, Ulf Jensen-Kondering¹, Fritz Wodarg¹, Olav Jansen¹, Michael Helle²

---

The major disadvantage for ASL is low SNR and low spatial resolution of the resulting images. The hypothesis of this work ... this method in a simulated numerical phantom and with in-vivo data and found that it improves SNR and reduces error.

1Biomedical Engineering, University of Virginia, Charlottesville, VA, United States; 2Radiology, Stanford University, Palo Alto, CA, United States; 3Biomedical Engineering, Eindhoven University of Technology, Eindhoven, Netherlands

Samuel Fielden¹, Li Zhao¹, Max Wintermark², Craig Meyer³

---

The University of Auckland, New Zealand; 4Department of Research and Development, Ohio Supercomputer Center, OH, United States; 5Brigham and Women's Hospital, Radiology, Boston, MA, United States; 6Harvard Medical School, Radiology, Boston, MA, United States

---

Exhibition Hall Wednesday 16:00-18:00

Multi-Scale Motion

Traditional Poster

---


Jules Nelissen¹,², Larry de Graaf³, Tom Schreurs¹,², Willeke Traa¹, Kevin Moerman¹, Cees Oomens³, Aart Nederveen¹, Klaas Nicolay¹, Gustav Strijkers²,³

¹Biomedical NMR, Department of Biomedical Engineering, Eindhoven University of Technology, Eindhoven, Netherlands; ²Biomedical Engineering and Physics, Academic Medical Center, Amsterdam, Netherlands; ³Soft Tissue Biomechanics and Engineering, Department of Biomedical Engineering, Eindhoven University of Technology, Eindhoven, Netherlands; ⁴Department of Radiology, Academic Medical Center, Amsterdam, Netherlands; ⁵Soft Tissue Biomechanics and Engineering, Department of Biomedical Engineering, Eindhoven University of Technology, Eindhoven, Netherlands

Tomokazu Numano¹, Yoshihiko Kawabata¹, Kazuyuki Mizuhara¹, Toshikatsu Washio¹, Junichi Hata¹, Kazuhiro Homma⁴

¹Radiological Sciences, Tokyo Metropolitan University, Arakawa-ku, Tokyo, Japan; ²Takashima Seisakusho Co., Ltd., Tokyo, Japan; ³Tokyo Denki University, Tokyo, Japan; ⁴National Institute of Advanced Industrial Science and Technology (AIST), Ibaraki, Japan; ⁵Graduate School of Medicine Keio University, Tokyo, Japan

2528. A Retrofit Technology for MR Elastography

Ria Mazuender¹,², Renee Miller¹, Haodan Jiang¹, Bradley D. Clymer¹, Richard D. White¹,³, Alistair Young¹, Anthony Romano¹,³, Arunark Kolipaka²,³

¹Department of Electrical and Computer Engineering, The Ohio State University, Columbus, OH, United States; ²Department of Radiology, The Ohio State University College of Medicine, Columbus, OH, United States; ³Department of Anatomy with Radiology, The University of Auckland, New Zealand; ⁴Department of Research and Development, Ohio Supercomputer Center, OH, United States; ⁵Department of Internal Medicine-Division of Cardiology, The Ohio State University College of Medicine, OH, United States; ⁶Naval Research Laboratory, DC, United States

2529. Validation of Waveguide Magnetic Resonance Elastography Using Finite Element Model Simulation

Richard Bowtell¹,², Moheen Ali¹, Jason Medica¹, Ingrid Vella¹, Matthew Brookes¹

¹School of Physics and Astronomy, University of Nottingham, Nottingham, United Kingdom

---

Richard Bowtell¹,², Moheen Ali¹, Jason Medica¹, Ingrid Vella¹, Matthew Brookes¹

¹School of Physics and Astronomy, University of Nottingham, Nottingham, United Kingdom

---

2530. Finger Tapping Experiment Observed by Brain Magnetic Resonance Elastography

Ondrej Holub¹, Simon Lambert¹, Katharina Schregel¹, Lynne Bilston², Samual Patz³,⁴, Ralph Sinkus⁵

¹Imaging Sciences and Biomedical Engineering, King's College London, London, United Kingdom; ²Imaging Sciences and Biomedical Engineering, King's College London, London, United Kingdom; ³University Medicine Goettingen, Institute of Neuroradiology, Goettingen, Germany; ⁴University of New South Wales, Neuroscience Research Australia, Sydney, New South Wales, Australia; ⁵Brigham and Women's Hospital, Radiology, Boston, MA, United States; ⁶Harvard Medical School, Radiology, Boston, MA, United States

---

Traditional Poster

Mapping Magnetism using Magnetoencephalography

Exhibition Hall Wednesday 16:00-18:00

2531. Mapping Magnetisation Using a Magnetoencephalography System

Richard Bowtell¹, Moheen Ali¹, Jason Medica¹, Ingrid Vella¹, Matthew Brookes¹

¹School of Physics and Astronomy, University of Nottingham, Nottingham, United Kingdom

---

Traditional Poster

Multi-Scale Motion

Exhibition Hall Wednesday 16:00-18:00

2532. Introducing Prior Knowledge Through the Non-Local Means Filter in Model-Based Reconstructions Improves ASL Perfusion Imaging

Samuel Fielden¹, Li Zhao¹, Max Wintermark², Craig Meyer³,⁴

¹Biomedical Engineering, University of Virginia, Charlottesville, VA, United States; ²Radiology, Stanford University, Palo Alto, CA, United States; ³Radiology, University of Virginia, Charlottesville, VA, United States

---

2533. Non-Contrast Enhanced 4D Artery-Selective MR Angiography Using Spatially Selective Saturation

Thomas Lindner¹, Ulf Jensen-Kondering¹, Fritz Wodarg³, Olav Jansen¹, Michael Helle²

¹Department of Radiology and Neuroradiology, UKSH, Kiel, Germany; ²Philips Research, Hamburg, Germany

---

367
2534. **Systematic Evaluation of Region-Wise IVASO Reproducibility at Multiple Blood Water Nulling Times**  
Swati Rane¹, Pratik Talati², Manus Donahue³, ⁴, Stephan Heckers²  
¹Radiology and Radiological Sciences, Vanderbilt University Institute of Imaging Science, Nashville, TN, United States; ²Psychiatry, Vanderbilt University, Nashville, TN, United States; ³Radiology and Radiological Sciences, Vanderbilt University, Nashville, TN, United States; ⁴Neurology, Vanderbilt University, Nashville, TN, United States

2535. **Evaluation of GLACIER Sampling for 3D DCE-MRI**  
Yinghua Zhu¹, Yi Guo¹, Sujan Goud Lingala¹, R. Marc Lebel², Meng Law¹, Krishna Nayak¹  
¹University of Southern California, Los Angeles, CA, United States; ²GE Healthcare, Calgary, Canada

2536. **A Novel Sequence to Improve Signal to Noise in DCE Measurements**  
Jason Kraig Mendes¹, Scott McNally², Dennis L. Parker¹  
¹Radiology, University of Utah, Salt Lake City, UT, United States; ²Clinical Radiology, University of Utah, Salt Lake City, UT, United States

2537. **In Vivo Rapid 3D Microscopic DTI Combining Super Resolution Reconstruction and Reverse Gradient Correction Method**  
Ulysse Gimenez¹, Antoine Triquel¹, Hana Lahrech¹  
¹Clinatec, CEA, Grenoble, Rhones-Alpes, France

2538. **Image Reconstruction for Accelerated Diffusion Tensor Imaging Using Joint Low-Rank and Sparsity Constraints**  
Sen Ma¹, Xiaodong Ma², Hua Guo²  
¹Department of Electronic Engineering, Tsinghua University, Beijing, China; ²Center for Biomedical Imaging Research, Department of Biomedical Engineering, School of Medicine, Tsinghua University, Beijing, China

2539. **Fast, Whole Brain Radial Diffusion Spectrum Imaging (RDSI) Via Simultaneous Multi Slice Excitation**  
Steven Baete¹, ², Tiejun Zhai³, Fernando Emilio Boada¹, ²  
¹Center for Advanced Imaging Innovation and Research (CAI2R), NYU School of Medicine, New York, NY, United States; ²Center for Biomedical Imaging, Dept. of Radiology, NYU School of Medicine, New York, NY, United States; ³Siemens Healthcare, Siemens Medical Solutions USA, Inc., New York, NY, United States

2540. **Body DWI Using NCPMG FSE**  
Eric Kenneth Gibbons¹, Shreyas Vasanawala², John Mark Pauly³, Adam Bruce Kerr³  
¹Department of Bioengineering, Stanford University, Stanford, CA, United States; ²Department of Radiology, CA, United States; ³Department of Electrical Engineering, Stanford University, CA, United States

2541. **TOF-MRA Reconstruction from Undersampled Data: Comparison of Three Different Regularization Methods**  
Akira Yamamoto¹, Koji Fujimoto¹, Yasutaka Fushimi¹, Tomohisa Okada¹, Kei Sano², Toshiyuki Tanaka², Kaori Togashi¹  
¹Department of Diagnostic Imaging and Nuclear Medicine, Graduate School of Medicine, Kyoto University, Kyoto, Japan; ²Department of Systems Science, Graduate School of Informatics, Kyoto University, Kyoto, Japan

2542. **A Simple and Practical Method to Optimize Regularization Parameters in Compressed Sensing Reconstruction of Time-Of-Flight (TOF) MR Angiography**  
Koji Fujimoto¹, Takayuki Yamamoto¹, Thai Akasaka¹, Tomohisa Okada¹, Yasutaka Fushimi¹, Akira Yamamoto¹, Toshiyuki Tanaka², Kei Sano², Masayuki Ohzeki², Kaori Togashi¹  
¹Diagnostic Imaging and Nuclear Medicine, Graduate School of Medicine, Kyoto University, Kyoto, Japan; ²Department of Systems Science, Graduate School of Informatics, Kyoto University, Kyoto, Japan
Comparison of 2D Versus 3D Sparse Priors in Compressed Sensing Reconstruction of Time-Of-Flight (TOF) MR Angiography

Thailand Asaka1, Koji Fujimoto1, Takayuki Yamamoto1, Tomohisa Okada1, Yasutaka Fushima1, Akira Yamamoto1, Toshiyuki Tanaka1, Kei Sano1, Masayuki Ohzeki1, Kaori Togashi1

1Diagnostic Imaging and Nuclear Medicine, Kyoto University Graduate School of Medicine, Kyoto, Japan; 2Kyoto University Graduate School of Informatics, Kyoto, Japan

Optimization of Flow-Compensation Gradients in SWI and TOF Scans for Acoustic Noise Reduction in MRI

David Manuel Grodzki1, Aurelien F. Stalder1, Yutaka Natsuaki2, Julie Roesch3, Bjoern Heismann1, 4

1Magnetic Resonance, Siemens Healthcare, Erlangen, Bavaria, Germany; 2Siemens Healthcare USA, Los Angeles, CA, United States; 3Neuroradiology, University of Erlangen, Erlangen, Bavaria, Germany; 4Friedrich-Alexander-University of Erlangen-Nuremberg, Pattern Recognition Lab, Germany

Simultaneous Assessment of Respiration and Heart Beat on CSF and Blood Oscillations in Near Real-Time Imaging

Joel Daouk1, Roger Bouzerar1, 2, Olivier Baledent1, 2

1BioFlow Image, University of Picardie Jules Verne, Amiens, Picardie, France; 2Medical Image Processing, CHU Amiens, Picardie, France

A Preliminary Study of Self-Gated Rat Cardiac Imaging by Using Wideband MRI Technique

Yi-Hang Tung1, Yun-An Huang2, Edzer L. Wu2, Wan-Ting Zhao2, Tzi-Dar Chiueh2, Jyh-Horng Chen2

1National Taiwan University, Taipei, Taiwan, Taiwan; 2National Taiwan University, Taiwan, Taiwan

First Experiences with a Time of Flight (ToF) Camera for Marker-Less Motion Tracking Within a 7 Tesla MR Scanner

Thomas Siegert1, Enrico Reimer1, Roland Müller1, Robert Turner2, Harald Möller1, Jessica Schulz1

1Max Planck Institute for Human Cognitive and Brain Sciences, Leipzig, Sachsen, Germany

In Vivo 7T MR Imaging Triggered by Phase Information Obtained from Video Signals of the Human Skin

Nicolai Spicher1, Markus Kukuk1, Mark E. Ladd2, 3, Stefan Maderwald2

1University of Applied Sciences and Arts Dortmund, Dortmund, Germany; 2Division of Medical Physics in Radiology, German Cancer Research Center, Heidelberg, Germany

Assessment of Marker Fixation in Prospective Motion Correction Using a Multiple Marker Approach.

Benjamin Knowles1, Thomas Lange1, Aditya Singha1, Michael Herbst2, Maxim Zaitsev2

1Medical Physics, University Medical Centre Freiburg, Freiburg, Germany; 2John A Burns School of Medicine, University of Hawaii, Honolulu, HI, United States

The Necessity of Coil Sensitivity and Gradient Non-Linearity Distortion Corrections in Prospective Motion Correction

Uten Yarachi1, Daniel Stucht1, Frank Godenschweger1, Oliver Speck1

1Department of Biomedical Magnetic Resonance, Otto-von-Guericke University, Magdeburg, Sachsen-Anhalt, Germany
Traditional Poster

2551. Contribution of FOV Updating and Reacquisition to Estimates of Cortical Surface Measures in PROMO MPRAGE
Joelle E. Sarlls¹, Francois Lalonde², Dan Rettmann¹, Ajit Shankaranarayanan³, Vinai Roopchansingh⁴, S. Lalith Talagala¹
¹NMRF/NINDS, National Institutes of Health, Bethesda, MD, United States; ²NIMH, National Institutes of Health, Bethesda, MD, United States; ³GE Healthcare, Rochester, NY, United States; ⁴GE Healthcare, Menlo Park, CA, United States; ⁵FMRIF/NIMH, National Institutes of Health, Bethesda, MD, United States

2552. Real-Time Dynamic Prediction of Motion During Prospective Motion Correction Helps Reduce Errors Caused by Fast Motions and Delayed Motion Measurements
Burak Erem¹,², Onur Afacan¹,², Ali Gholipour¹,², Simon K. Warfield¹,²
¹Department of Radiology, Boston Children's Hospital, Boston, MA, United States; ²Harvard Medical School, Boston, MA, United States

2553. Comparing 1.5T Vs. 7T Phase Contrast MRI for Measuring Brain Tissue Pulsation
Nils Noorman¹, Fredy Visser¹,², Peter R. Luijten¹, Jaco J.M. Zwanenburg¹
¹Department of Radiology, University Medical Center Utrecht, Utrecht, Netherlands; ²Philips Healthcare, Best, Netherlands

2554. Inter-Scan Motion Artefacts in Quantitative R1 Mapping Require Correction of Coil Sensitivity Profiles
Daniel Papp¹, Martina F. Callaghan¹, Craig Buckley², Heiko Meyer³, Nikolaus Weiskopf³
¹Wellcome Trust Centre For Neuroimaging, UCL Institute of Neurology, London, United Kingdom; ²SIEMENS PLC (Healthcare Division), United Kingdom; ³SIEMENS Healthcare AG, Germany

2555. Prospective Motion Correction (PROMO) Enabled MP2RAGE for Multi-Contrast High-Resolution Brain Imaging
Alexandru V. Avram¹, Joelle E. Sarlls², Cibu P. Thomas¹,³, Vinai Roopchansingh⁴, Dan Rettmann⁵, Ajit Shankaranarayanan³, Peter J. Basser¹
¹Section on Tissue Biophysics and Biomimetics, NICHD, National Institutes of Health, Bethesda, MD, United States; ²NINDS, National Institutes of Health, Bethesda, MD, United States; ³The Henry Jackson Foundation, Bethesda, MD, United States; ⁴Siemens Healthcare, Zurich, Switzerland; ⁵High-Field Magnetic Resonance Center, Max Planck Institute for Biological Cybernetics, Tübingen, Germany

2556. Retrospective Rigid Motion Correction of Undersampled MRI Data
Alexander Loktyushin¹, Maryna Babayeva¹, Daniel Gallichan¹, Gunnar Krueger²,³, Klaus Scheffler⁴,⁶, Tobias Kober¹,³
¹Empirical Inference, Max Planck Institute for Intelligent Systems, Tübingen, Germany; ²Siemens ACIT - CHUV Radiology, Siemens Healthcare BM PL & Department of Radiology, University Hospital (CHUV), Lausanne, Switzerland; ³LTSS, École Polytechnique Fédérale de Lausanne, Lausanne, Switzerland; ⁴CIBM, École Polytechnique Fédérale de Lausanne, Lausanne, Switzerland; ⁵High-Field Magnetic Resonance Center, Max Planck Institute for Biological Cybernetics, Tübingen, Germany; ⁶Department for Biomedical Magnetic Resonance, University of Tübingen, Tübingen, Germany

2557. Parallel Imaging for Motion Correction in Neonatal Brain MR Reconstruction
Lucitlo Cordero-Grande¹,², Emer Hughes¹,², Rui Pedro A. G. Teixeira¹,², Joseph V. Hajnal¹,²
¹Centre for the Developing Brain, King's College London, London, United Kingdom; ²Division of Imaging Sciences and Biomedical Engineering, King's College London, London, United Kingdom

2558. The Correction of Motion-Induced Coil Sensitivity Miscalibration in Parallel Imaging with Prospective Motion Correction
Uten Yarach¹, Daniel Stucht¹, Frank Godenschweger¹, Oliver Speck¹
¹Department of Biomedical Magnetic Resonance, Otto-von-Guericke University, Magdeburg, Sachsen-Anhalt, Germany
2559. Using Brain Imaging Data to Detect and Correct Non-Rigid Sensor Motion in Prospective Motion Correction
Paul Wighton1, 2, Matthew Dylan Tisdall3, 4, Erez Nevo1, André Dylan van der Kouwe1
1Martinos Center for Biomedical Imaging, MGH, Charlestown, MA, United States; 2Harvard Medical School, Boston, MA, United States; 3Robin Medical, Baltimore, MD, United States

2560. Prospective Motion Correction of DW 3D-MS EPI Using Collapsed FatNav (CFatNav)
Mathias Engström1, 2, Enrico Avventi1, 2, Magnus Mårtensson1, 2, Ola Norbeck1, Stefan Skare1, 2
1Dept. of Neuroradiology, Karolinska University Hospital, Stockholm, Sweden; 2Dept. of Clinical Neuroscience, Karolinska Institutet, Stockholm, Sweden; 3EMEA Research and Collaboration, GE Applied Science Laboratory, GE Healthcare, Stockholm, Sweden

2561. Effect of Hand Feedback Visualization on Head Motion During fMRI of Neuropsychological Testing
Mahta Karimpoor1, 2, Zahra Faraji-Dana1, 2, Simon James Graham1, 2
1Physical Sciences, Sunnybrook Research Institute, Toronto, Ontario, Canada; 2Medical Biophysics, University of Toronto, Toronto, Ontario, Canada

2562. An Automatic EEG-Assisted Retrospective Motion Correction for fMRI (AE-REMCOR)
Chung-Ki Wong1, Vadim Zotev1, Han Yuan1, Masaya Misaki1, Raquel Phillips1, Qingfei Luo1, Jerzy Bodurka1, 2
1Laureate Institute for Brain Research, Tulsa, OK, United States; 2College of Engineering, University of Oklahoma, Norman, OK, United States

2563. Six-Degree of Freedom Retrospective Motion Correction Using Spherical Navigator Echoes (SNAV)
Patricia Johnson1, 2, Junnin Liu1, Trevor Wade1, Maria Drangova1, 2
1Imaging Research Laboratories, Robarts Research Institute, London, Ontario, Canada; 2Dept. of Medical Biophysics, Schulich School of Medicine & Dentistry, Western University, London, Ontario, Canada; 3Imaging Research Laboratories, Robarts Research Institute, London, Ontario, Canada

2564. Motion Correction for Variable Density Spiral MRI Using Sampling Overlap as Inherent Navigators
Yilong Liu1, 2, Xiaodong Ma2, Hua Guo2, Ed X. Wu1, 3
1Laboratory of Biomedical Imaging and Signal Processing, The University of Hong Kong, Hong Kong, China; 2Center for Biomedical Imaging Research, Department of Biomedical Engineering, School of Medicine, Tsinghua University, Beijing, China; 3Department of Electronic and Electrical Engineering, The University of Hong Kong, Hong Kong, China

Traditional Poster
Motion Correction - Body
Exhibition Hall Wednesday 16:00-18:00

2565. 2D Diaphragm Navigation with Rapid Gradient Echo Images: Validation at 3T and Application at 7T
Aaron T. Hess1, Andre JW van der Kouwe2, 3, Matthew Dylan Tisdall2, Stefan Neubauer1, Matthew D. Robson1
1Oxford Centre for Clinical Magnetic Resonance Research (OCMR), Oxford, Ox, United Kingdom; 2Radiology, Harvard Medical School, Boston, MA, United States; 3Martinos Center, Massachusetts General Hospital, Boston, MA, United States

2566. Comparison of Breath-Holding and Respiratory Gating T2* Mapping in the Heart and Liver for Thalassemia
Major Patients
Xiaodong Chen1, 2, Zuoquan Zhang1, Qiuhua Yang1, Zebin Luo1, Ziliang Cheng1, Jiaji Mao1, Queenie Chan1, Hua Guo1, Biling Liang1
1Sun Yat-Sen Memorial Hospital, Guangzhou, Guangdong, China; 2Affiliated hospital of Guangdong Medical College, Zhanjiang, Guangdong, China; 3The Fifth Affiliated Hospital of Sun Yat-Sen University, Guangdong, China; 4Philips Healthcare, Hong Kong, China; 5Center for Biomedical Imaging Research, Department of Biomedical Engineering, School of Medicine, Tsinghua University, Beijing, China
Traditional Poster

2567. Continuous Adaptive Sampling of K-Space from Real-Time Physiologic Feedback in MRI
Francisco Contijoch1, Yuchi Han1, Michael Hansen2, Peter Killman1, Gene Guenther1, Mark A. Elliott1, Sebastian Berisha1, James J. Pilla1, Robert C. Gorman1, Walter RT Witschey1
1University of Pennsylvania, Philadelphia, PA, United States; 2National Institute of Health, Bethesda, MD, United States; 3Drexel University, Philadelphia, PA, United States

2568. Using Optical Flow to Estimate Displacement Between 3D Navigators in Coronary Angiography
Nicholas Dwork1, Daniel O’Connor2, Nii Okai Addy1, Reeve Ingle1, John Pauly1, Dwight Nishimura1
1Electrical Engineering, Stanford University, Stanford, CA, United States; 2Mathematics, University of California, Los Angeles, CA, United States

2569. Estimating 3D Deformable Motion from a Series of Fast 2D MRI Images with CLARET
Jason Brown1, Cihat Eldeniz1, Wolfgang Rehwald2, Brian Dale1, Hongyu An1, David Latush1
1Joint Department of Biomedical Engineering, The University of North Carolina at Chapel Hill and North Carolina State University, Chapel Hill, NC, United States; 2Siemens Healthcare, Malvern, PA, United States; 3Siemens Healthcare, Cary, NC, United States

2570. 3D FFE PROPELLER Free-Breathing Abdominal Imaging
Yuchou Chang1, Dallas C. Turley1, James G. Pipe1
1Imaging Research, Barrow Neurological Institute, Phoenix, AZ, United States

2571. 3D T2w-MRI Using a Magnetization-Prepared Golden Angle Radial Sequence with Motion-Corrected ESPIRiT Reconstruction
Isabel Dregely1, Fei Han1, Ziwu Zhou1, Kyung Sung1, Peng Hu1, Holden H. Wu1
1Radiological Sciences, University of California Los Angeles, Los Angeles, CA, United States

2572. 3D Free-Breathing Abdominal MRI Using Robust Navigator Processing with Coil Clustering
Tao Zhang1, 2, Joseph Y. Cheng1, 2, Yuxin Chen2, John M. Pauly2, Shreyas S. Vasanawala1
1Radiology, Stanford University, Stanford, CA, United States; 2Electrical Engineering, Stanford University, Stanford, CA, United States

2573. Interleaved Versus Grouped Viewsharing in 3D DCE-DIXON of the Abdomen: Sensitivity to Motion Artifacts
Christine Nabuurs1, Gabriele Beck1, Silke Hey1, Marko Ivancevic2
1Clinical Excellence, Philips Healthcare, Best, NB, Netherlands; 2Clinical Science, Philips Healthcare, Best, NB, Netherlands

2574. Dynamic Reacquisition for Respiratory Gated, Constant TR 2D Multi-Slice MRI
Paul Kinchesh1, Philip D. Allen1, John S. Beech1, Emmanouil Fokas1, Stuart Gilchrist1, Veerle Kersemans1, Ruth Muschel1, Sean C. Smart1
1Department of Oncology, University of Oxford, Oxford, United Kingdom

2575. Flow Artifact Suppression in Subtractionless First-Pass Peripheral Angiography Based on Vessel Tree Segmentation
Holger Eggers1, Rafael Wiemker1, Peter Börner1, Tim Leiner2
1Philips Research, Hamburg, Germany; 2Department of Radiology, University Medical Center Utrecht, Utrecht, Netherlands

2576. Quantification of Fetal Motion Tracked with Volumetric Navigator MRI Acquisitions
Patrick McDaniel1, Borjan Gagoski2, M. Dylan Tisdall1, André J. W. van der Kouve1, P. Ellen Grant2, Lawrence Wald1, Elfar Adalsteinsson2
1Electrical Engineering and Computer Science, Massachusetts Institute of Technology, Cambridge, MA, United States; 2Fetal-Neonatal Neuroimaging and Developmental Science Center, Boston Children's Hospital, Harvard Medical School, Boston, MA,
2577. **Motion Detection and Correction Using Non-Marker-Attached Optical System During MRI Scanning**


1University of Washington, Seattle, WA, United States

**Abstract:**
In the field of oncology, simultaneous PET/MR scanners offer a great potential for improving diagnostic accuracy. However, respiratory motion is a major challenge that limits the diagnostic performance of PET/MR imaging. To address this issue, we propose a new method for PET/MR respiratory Motion Compensation (MoCo), which is based on strongly undersampled MR data. Our method, Motion Compensation (MoCo) for Simultaneous PET/MR Based on Strongly Undersampled Radial MR Data - A Simulation Study, demonstrates a significant quantitative improvement in terms of SUV mean values of MoCo 4D PET images compared to 3D and 4D gated reconstructions. This approach provides a promising solution for improving the accuracy of PET/MR imaging in the clinical setting.

2578. **In-Vivo MR-Derived Non-Rigid Motion Correction of Simultaneously Acquired PET**


1Department of Radiology, University Hospital of Tübingen, Tübingen, Baden-Württemberg, Germany; 2Institute of Signal Processing and System Theory, University of Stuttgart, Stuttgart, Baden-Württemberg, Germany; 3Diagnostic and Interventional Radiology, University Hospital of Tübingen, Tübingen, Baden-Württemberg, Germany

**Abstract:**
We introduce a new method for PET/MR respiratory Motion Compensation (MoCo), which is based on strongly undersampled MR data. Our method, Motion Compensation (MoCo) for Simultaneous PET/MR Based on Strongly Undersampled Radial MR Data - A Simulation Study, demonstrates a significant quantitative improvement in terms of SUV mean values of MoCo 4D PET images compared to 3D and 4D gated reconstructions. This approach provides a promising solution for improving the accuracy of PET/MR imaging in the clinical setting.

2579. **Motion Compensation (MoCo) for Simultaneous PET/MR Based on Strongly Undersampled Radial MR Data - A Simulation Study**

*Christopher M. Rank*, 1, *Thorsten Heußer*, 1, *Marcus Brehm*, 1, *Marc Kachelrieß* 1

1Division of Medical Physics in Radiology, German Cancer Research Center, Heidelberg, Germany

**Abstract:**
We propose a new method for PET/MR respiratory Motion Compensation (MoCo), which is based on strongly undersampled MR data. Our method, Motion Compensation (MoCo) for Simultaneous PET/MR Based on Strongly Undersampled Radial MR Data - A Simulation Study, demonstrates a significant quantitative improvement in terms of SUV mean values of MoCo 4D PET images compared to 3D and 4D gated reconstructions. This approach provides a promising solution for improving the accuracy of PET/MR imaging in the clinical setting.
2585. **High Resolution In Vivo Cardiac MRI of Zebrafish with an Integrated Coil Flow Cell Design**

*Gavin D. Merrifield*, *Lindsay Gallagher*, *James Mullin*, *Carl S. Tucker*, *Maurits A. Jansen*, *William M. Holmes*, *Martin A. Denvir*

1Glasgow Experimental MRI Centre, University of Glasgow, Glasgow, United Kingdom; 2University of Edinburgh/British Heart Foundation Centre for Cardiovascular Science, University of Edinburgh, Edinburgh, Midlothian, United Kingdom; 3Edinburgh Preclinical Imaging, University of Edinburgh, Edinburgh, Midlothian, United Kingdom

2586. **A Pilot Study of Early Cognitive and Brain Imaging Changes Associated with Risk Factors for Cardiovascular Disease**

*Victoria X. Wang*, *Cheuk Tang*, *Maryann McLaughlin*, *Edmund Wong*, *Johnny C. Ng*, *Lazar Fleysner*, *Fayad A. Zahr*, *Maceda Cynara*, *Heather N. Beebe*, *Joseph Friedman*

1Radiology, Mount Sinai School of Medicine, New York, NY, United States; 2Radiology & Psychiatry, Mount Sinai School of Medicine, New York, NY, United States; 3Cardiology & Medicine, Mount Sinai School of Medicine, New York, NY, United States; 4Radiology & Cardiology, Mount Sinai School of Medicine, New York, NY, United States

2587. **Quantitative Myocardial T1 and T2 Mapping in a Swine Model of Ventricular Tachycardia**

*Sébastien Roujol*, *Tamer A. Basha*, *Cory Tschabrunn*, *Kraig V. Kissinger*, *Warren J. Manning*, *Mark E. Josephson*, *Elad Anter*, *Reza Nezafat*

1Department of Medicine, Beth Israel Deaconess Medical Center and Harvard Medical School, Boston, MA, United States; 2Department of Radiology, Beth Israel Deaconess Medical Center and Harvard Medical School, Boston, MA, United States

2588. **fMRI Study of the Hemodynamics of Calf Muscle During Exercise in Peripheral Arterial Disease**

*Zhijun Li*, *Matthew Muller*, *Jianli Wang*, *Christopher Sica*, *Liang Han*, *Prasanna Karunanayaka*, *Jeffrey Vesek*, *Qing X. Yang*.

1Center for NMR Research, Department of Radiology, College of Medicine, The Pennsylvania State University, Hershey, PA, United States; 2Heart and Vascular Institute, College of Medicine, The Pennsylvania State University, PA, United States; 3Department of Neurosurgery, College of Medicine, The Pennsylvania State University, PA, United States

2589. **Self-Navigated 100µs Echo Time 3D Radial Whole-Heart Coronary Magnetic Resonance Angiography: A Feasibility Study.**

*Simone Cappo*, *Jean Delacoste*, *Gabriele Bonanno*, *Davide Piccini*, *Matthias Stuber*

1Department of Radiology, University Hospital (CHUV), University of Lausanne (UNIL), Center for Biomedical Imaging (CIBM), Lausanne, Switzerland; 2Advanced Clinical Imaging Technology, Siemens Healthcare IM BM PI, Lausanne, Switzerland

2590. **In Vivo Cardiac DTI on a Widely-Available Clinical Scanner**

*Christopher Nguyen*, *Zhaoyang Fan*, *Xiaoming Bi*, *Debiao Li*

1Biomedical Imaging Research Institute, Cedars Sinai Medical Center, Los Angeles, CA, United States; 2Siemens Healthcare, Los Angeles, CA, United States

2591. **In-Vivo Free-Breathing DTI & IVIM of the Whole Human Heart Using a Real-Time Slice-Followed SE-EPI Navigator-Based Sequence: A Reproducibility Study in Healthy Volunteers.**

*Kévin Moulin*, *Pierre Croisille*, *Thorsten Feitweiser*, *Benedicte M.A. Delattre*, *Hongjiang Wei*, *Benjamin Robert*, *Olivier Beuf*, *Magalie Viallon*

1CREATIS; CNRS (UMR 5220); INSERM (U1044); INSA Lyon; Université de Lyon, Lyon, France; 2Siemens Healthcare France, Saint-Denis, France; 3Department of Radiology, Centre Hospitalier Universitaire de Saint-Etienne, Université Jean-Monnet, France; 4Healthcare, Siemens AG, Erlangen, Germany

2592. **Diffusion Tensor MRI of Hearts with Chronic Infarct in Multiple Mechanical States**

*Maelene Loheziel*, *Remi Peyronnet*, *Craig A. Lygate*, *Debra McAndrew*, *Irvin Teh*, *Peter Kohl*, *Jurgen E. Schneider*

1Biomedical Imaging Research Institute, Cedars Sinai Medical Center, Los Angeles, CA, United States; 2Siemens Healthcare, Los Angeles, CA, United States
2593. Investigating the Hemodynamics of Calf Muscle During Exercise Using Independent Component Analysis (ICA)
Zhijun Li¹, Prasanna Karunanayaka¹, Matthew Muller², Lawrence Sinoway³, Qing X. Yang¹, ³
¹Center for NMR Research, Department of Radiology, College of Medicine, The Pennsylvania State University, Hershey, PA, United States; ²Department of Electrical Engineering, National Taiwan University, Taipei, Taiwan; ³Department of Radiology, Cambridge University Hospitals NHS Foundation Trust, Cambridge, United Kingdom

Jyh-Miin Lin¹, Chengcheng Zhu², Hsiao-Wen Chung¹, Martin Graves¹, Andrew Patterson⁴
¹Department of Radiology, University of Cambridge, Cambridge, Cambridgeshire, United Kingdom; ²Department of Radiology, UCSF School of Medicine, San Francisco, CA, United States; ³Department of Electrical Engineering, National Taiwan University, Taipei, Taiwan; ⁴Department of Radiology, Cambridge University Hospitals NHS Foundation Trust, Cambridge, United Kingdom

2595. Towards a Subject-Specific Calibration of a Systole Model for CMR Undergoing Heart Rate Variations
Pierre-André Vuissiez¹, ², Christophe Meyer¹, ², Jacques Felbinger¹, ⁴, Laurent Bonnamains¹, ²
¹Imagerie Adaptative Diagnostique et Interventionnelle, Université de Lorraine, Nancy, France; ²U947, INSERM, Nancy, France; ³CIC-IT 1433, INSERM, Nancy, France; ⁴University Hospital Nancy, Nancy, France

2596. R Wave Peak Detection Using Wavelet Decomposition and Multi-Level Thresholding for ECGs Acquired in MR Scanner
Manivannan Jayapalan¹, Bhargav Bhati², Vijikumar N³
¹MR PSD & Applications, GE Healthcare, Bangalore, Karnataka, India; ²MR Systems, GE Healthcare, Bangalore, Karnataka, India; ³MR Applications, GE Healthcare, Bangalore, Karnataka, India

Traditional Poster
Cardiovascular MR - Tissue Characterization
Exhibition Hall Thursday 10:30-12:30

2597. Distribution and Significance of Myocardial Hyperintensity on T2-Weighted MRI of Hypertrophic Cardiomyopathy
Yasuuo Amano¹, Kumiko Mine¹, Fumi Yamada¹, Shinichiro Kumita¹
¹Radiology, Nippon Medical School, Tokyo, Japan

2598. Combination of T2-Magnetization Preparation and Slice Interleaved Inversion Recovery for Improved Motion Correction of Myocardial Extra-Cellular Volume Mapping Using Spoiled Gradient Echo Imaging
Sébastien Roujol¹, Tamer A. Basha¹, Jihye Jang¹, Kraig V. Kissinger¹, Beth Goddu¹, Sophie Berg¹, Warren J. Manning¹, ², Reza Nezafat¹
¹Department of Medicine, Beth Israel Deaconess Medical Center and Harvard Medical School, Boston, MA, United States; ²Department of Radiology, Beth Israel Deaconess Medical Center and Harvard Medical School, Boston, MA, United States

2599. High Spatial Resolution Myocardial T₂* Mapping at 7.0 T Reveals Differences Between Healthy Volunteers and Patients with Hypertrophic Cardiomyopathy
Till Huelnhagen¹, Fabian Hezel¹, Andreas Pohlmann¹, Andreas Graessl¹, Jan Rieger², Darius Lysiak², Christof Thalhammer¹, Peter Kellman³, Marcel Prothmann³, Jeannette Schulz-Menger³, ⁴, Thoralf Niendorf¹, ⁵
¹Berlin Ultrahigh Field Facility (B.U.F.F.), Max-Delbrueck Center for Molecular Medicine (MDC), Berlin, Germany; ²MRLTOOLS GmbH, Berlin, Germany; ³National Heart, Lung, and Blood Institute, National Institutes of Health, Bethesda, MD, United States; ⁴Dept. of Cardiology and Nephrology, HELIOS Klinikum Berlin-Buch, Berlin, Germany; ⁵Experimental and Clinical Research Center, a joint cooperation between the Charite Medical Faculty and the Max-Delbrueck Center, Berlin, Germany
2600. Improved Accuracy of T1 Mapping Reconstruction Using a Novel Bloch Equation-Based Fitting with Graphic Processing Unit Implementation

Sébastien Roujol1, Tamer A. Basha1, Jihye Jang1, Sophie Berg1, Warren J. Manning1, 2, Reza Nezafat1

1Department of Medicine, Beth Israel Deaconess Medical Center and Harvard Medical School, Boston, MA, United States; 2Department of Radiology, Beth Israel Deaconess Medical School, Boston, MA, United States

2601. Multimodality Cardiac Magnetic Resonance Imaging to Assess Large Intramural Lesions of a New Irrigated Needle Catheter on Sheep Infarct Model

Julie Magat1, Benjamin Berte1, Hubert Cochet1, Jérôme Naulin1, Daniele Ghidoli2, Pierre Jais1, Stephen Henry Gilbert1, Olivier Bernus1, Bruno Queusson1

1IHU-LIRYC U1045, University of Bordeaux, Pessac, France; 2Biosense Webster, R&D, Diamond Bar, CA, United States; 3Mathematical Cell Physiology, Max Delbrück Center for Molecular Medicine, Berlin, Germany

2602. MRI Visible Bioscaffold for Stem Cell-Mediated Repair and Improved Cardiac Function

Lawrence H. Jackson1, Thomas Roberts2, Valerie Taylor1, Josef Habib3, Daniel J. Stuckey1, Mark F. Lyshgoe1

1Centre for Advanced Biomedical Imaging, University College London, London, United Kingdom; 2Imaging Sciences and Biomedical Engineering, Perinatal Imaging and Health, Kings College London, London, United Kingdom

2603. In Vivo Assessment of Free Radicals in a Mouse Model for Diabetic Cardiomyopathy

Rheal A. Towner1, Nataliya Smith1, Jorge Carrizales1, Debra Sauners1, Robert Silasti-Mansat2, Florea Lupu2, Marilyn Ehrenshaft1, Ronald P. Mason1

1Advanced Magnetic Resonance Center, Oklahoma Medical Research Foundation, Oklahoma City, OK, United States; 2Cardiovascular Biology, Oklahoma Medical Research Foundation, Oklahoma City, OK, United States; 3NIEHS, NC, United States

2604. Free-Breathing Multi-Slice Myocardial T2 Mapping

Tamer Basha1, Sébastien Roujol1, Reza Nezafat1

1Department of Medicine, Beth Israel Deaconess Medical Center & Harvard Medical School, Boston, MA, United States

2605. Cardiovascular Magnetic Resonance T2-STIR Imaging Is Unable to Discriminate Between Intramyocardial Haemorrhage and Microvascular Obstruction

Esben Søva å Hansen1, 2, Steen Fjord Pedersen1, Steen Bonnelykke Pedersen1, Uffe Kjærgaard3, Nikolaj Hjort Schmidt1, Hans Erik Bøtker2, Won Yong Kim1, 6

1The MR Research Centre, Aarhus University, Skejby, Aarhus, Denmark; 2Danish Diabetes Academy, Odense, Denmark; 3Dept. of Cardiothoracic and Vascular Surgery T, Aarhus University Hospital Skejby, Skejby, Aarhus N, Denmark; 4Dept. of Department of Endocrinology and Internal Medicine, Aarhus University Hospital THG, Skejby, Aarhus, Denmark; 5Department of Clinical Medicine - Comparative Medicine Laboratory, Aarhus University, Skejby, Aarhus, Denmark; 6Dept. of Cardiology, Aarhus University Hospital Skejby, Skejby, Aarhus, Denmark


Neil Chatterjee1, Octavia Bane2, Bruce Spottiswoode2, 4, James Carr3, Timothy Carroll2

1Biomedical Engineering, Northwestern University, Chicago, IL, United States; 2Mount Sinai, NY, United States; 3Siemens Healthcare, Chicago, IL, United States; 4Radiology, Northwestern University, IL, United States

2607. In-Vivo Right-Ventricular Myocardial T1 Mapping at 3.0 Tesla

Nadja M. Meßner1, Lothar R. Schad1, Frank G. Zöllner1

1Computer Assisted Clinical Medicine, Medical Faculty Mannheim, Heidelberg University, Mannheim, Germany

2608. First and Second Order Motion Compensated Spin-Echo Diffusion Tensor Imaging of the Human Heart

Christian Torben Stoeck1, 2, Constantin von Deuster1, 2, Martin Genet1, David Atkinson2, Sebastian Kozek1, 2

1Institute for Biomedical Engineering, University and ETH Zurich, Zurich, Switzerland; 2Imaging Sciences and Biomedical Engineering, King's College London, London, United Kingdom; 3Centre for Medical Imaging, University College London, London, United Kingdom
2609. **Comparison of High Resolution $T_1$ Mapping and Quantitative Susceptibility Mapping to Investigate Myocardial Microstructure in the Ex Vivo Rodent Heart**
Eva Peper$^1$, Till Huehnhan$^1$, Andreas Pohlmann$^1$, Min-Chi Ku$^1$, Thoralf Niendorf$^2$, Eva Peper$^1$, Till Huehnhan$^1$, Andreas Pohlmann$^1$, Min-Chi Ku$^1$, Thoralf Niendorf$^2$
$^1$Berlin Ultrahigh Field Facility (B.U.F.F.), Max Delbrück Center for Molecular Medicine, Berlin, Germany; $^2$Experimental and Clinical Research Center, a joint cooperation between the Charité Medical Faculty and the Max Delbrück Center, Berlin, Germany

2610. **Monitoring the Resorption of Myocardial Infarct in the Presence and Absence of Coronary Microemboli Using MRI and Microscopy**
Maythem Saeed$^1$, Loi Do$^1$, Roland Krug$^1$, Steven W. Hetts$^1$, Mark W. Wilson$^1$
$^1$Radiology and Biomedical Imaging, University of California San Francisco, San Francisco, CA, United States

2611. **High Resolution 2D ECG-Segmented Slice Interleaved $T_1$ Mapping (STONE) with Reduced Partial Voluming**
Jihye Jang$^1$, Tamer Basha$^1$, Sophie Berg$^1$, Cory Tschabrunn$^1$, Elad Anter$^1$, Sébastien Roujol$^1$, Reza Nezafat$^1$
$^1$Department of Medicine, Beth Israel Deaconess Medical Center and Harvard Medical School, Boston, MA, United States; $^2$Computer Aided Medical Procedures, Technische Universität München, Munich, Bayern, Germany

2612. **Verification of the Intra-Voxel Incoherent Motion (IVIM) Model in the Porcine Heart**
Constantin von Deuster$^1$, $^2$, Christian T. Stoeck$^1$, Lukas Wissmann$^3$, Georg Spinner$^4$, Thea Fleischmann$^4$, Maximilian Y. Emmert$^5$, Nikola Cesarovic$^6$, Sebastian Kezerke$^7$
$^1$Division of Imaging Sciences and Biomedical Engineering, King’s College London, London, United Kingdom; $^2$Institute for Biomedical Engineering, University and ETH Zurich, Zurich, Switzerland; $^3$Institute of Laboratory Animal Science, University of Zurich, Zurich, Switzerland; $^4$Department of Surgical Research, University Hospital Zurich, Zurich, Switzerland; $^5$Swiss Center of Regenerative Medicine, Zurich, Switzerland

2613. **Characterization of Chronic Myocardial Infarctions in Patients with Contrast-Free T1 Maps at 3T**
Avinash Kali$^1$, Eui-Young Choi$^1$, Behzad Sharif$^1$, Young Jin Kim$^1$, Xiaoming Br$^1$, Bruce Spottiswoode$^2$, Ivan Cokic$^1$, Hsin-Jung Yang$^1$, Mourad Tighiouart$^1$, Debiao Li$^1$, Daniel S. Berman$^1$, Byoung Wook Choi$^1$, Hyuk-Jae Chang$^1$, Rohan Dharmakumar$^1$
$^1$Biomedical Imaging Research Institute, Cedars-Sinai Medical Center, Los Angeles, CA, United States; $^2$Department of Bioengineering, University of California, Los Angeles, CA, United States; $^3$Yonsei University College of Medicine, Seoul, Korea; $^4$Siemens Healthcare, Los Angeles, CA, United States; $^5$Siemens Healthcare, Chicago, IL, United States; $^6$Biostatistics and Bioinformatics Research Center, Cedars-Sinai Medical Center, Los Angeles, CA, United States; $^7$Cedars-Sinai Heart Institute, Cedars-Sinai Medical Center, Los Angeles, CA, United States; $^8$Department of Medicine, University of California, Los Angeles, CA, United States

2614. **3D Dynamic T1 Mapping of the Myocardium Using a Time-Varying Subspace**
Anthony G. Christodoulou$^1$, Zhi-Pei Liang$^1$
$^1$Beckman Institute and Department of Electrical and Computer Engineering, University of Illinois at Urbana-Champaign, Urbana, IL, United States

2615. **Highly Accelerated Free-Breathing Whole Heart T1/T2/Proton Density Mapping**
Jing Liu$^1$, David Saloner$^1$, Jing Liu$^1$, David A. Bluemke$^1$, Gary Gerstenblith$^1$, Stefan L. Zimmerman$^1$, Ji Li$^1$, Hong Zhu$^1$, Shenghan Lai$^1$, Hong Lai$^1$
$^1$Radiology and Imaging Sciences, NIH, Bethesda, MD, United States; $^2$Johns Hopkins School of Medicine, MD, United States

2616. **Noncontrast T1 Mapping Is Independently Associated with Myocardial Fat in Healthy African Americans**
Chia-Ying Liu$^1$, David A. Bluemke$^1$, Gary Gerstenblith$^1$, Stefan L. Zimmerman$^1$, Ji Li$^1$, Hong Zhu$^1$, Shenghan Lai$^1$, Hong Lai$^1$
$^1$Radiology and Imaging Sciences, NIH, Bethesda, MD, United States; $^2$Johns Hopkins School of Medicine, MD, United States
2617. Effect of Blood T1 Value on Extracellular Volume Fraction in Dilated Cardiomyopathy with Septal Scarring
Yasuho Amano, Masaki Tachl, Keisuke Imai, Fumi Yamada, Makoto Obara, Shogo Imai, Shinichiro Kumita
1Radiology, Nippon Medical School, Tokyo, Japan; 2Cardiology, Nippon Medical School, Tokyo, Japan; 3Philips Asia Pacific, Tokyo, Japan

2618. Effects of Supplemental Oxygen on Cardiovascular Relaxation Parameter Mapping (T1, T2 and T2*)
1Department of Radiology, University Hospital (CHUV) and University of Lausanne (UNIL), Lausanne, Switzerland; 2Center for Biomedical Imaging (CIBM), Lausanne, Switzerland

2619. KWIC-Filtered Cardiac T1 Mapping for Improved Precision and Faster Acquisition
Emeline Lugand, Jérôme Yerly, Hélène Feliciano, Jérôme Chaptinel, Matthias Stuber, Ruud B. van Heeswijk
1Department of Radiology, University Hospital (CHUV) and University of Lausanne (UNIL), Lausanne, Switzerland; 2Center for Biomedical Imaging (CIBM), Lausanne, Switzerland

2620. Non-Contrast Characterization of Intersitial Cardiac Remodeling in Chronic Kidney Disease Patients
Tori A. Stromp, Steve W. Leung, Vincent L. Sorrell, Moriel H. Vandsburger
1Department of Physiology, University of Kentucky, Lexington, KY, United States; 2Saha Cardiovascular Research Center, University of Kentucky, Lexington, KY, United States; 3Gill Heart Institute, University of Kentucky, Lexington, KY, United States

2621. Myocardial T1 Mapping Comparing SMART1Map and MOLLI: Clinical Experience at 3T
Erik P. Skulborstad, Zachary S. Borden, Karl K. Vigen, Glenn S. Slavin, Kang Wang, Mark L. Schiebler, Scott K. Nagle, Scott B. Reeder, Thomas M. Grisli, Christopher J. Francois
1Department of Radiology, University of Wisconsin-Madison, Madison, WI, United States; 2GE Healthcare, Bethesda, MD, United States; 3Global MR Applications and Workflow, GE Healthcare, Madison, WI, United States; 4Department of Medical Physics, University of Wisconsin-Madison, Madison, WI, United States

2622. Myocardial T1 Mapping Comparing SMART1Map and MOLLI: Clinical Experience at 3T
Erik P. Skulborstad, Zachary S. Borden, Karl K. Vigen, Glenn S. Slavin, Kang Wang, Mark L. Schiebler, Scott K. Nagle, Scott B. Reeder, Thomas M. Grisli, Christopher J. Francois
1Department of Radiology, University of Wisconsin-Madison, Madison, WI, United States; 2GE Healthcare, Bethesda, MD, United States; 3Global MR Applications and Workflow, GE Healthcare, Madison, WI, United States; 4Department of Medical Physics, University of Wisconsin-Madison, Madison, WI, United States

2623. Myocardium and Blood T1 Measurement Using SMART1Map in Healthy Volunteers at 1.5T
Pauline Ferry, Glenn S. Slavin, Anne Menin, Anja Brau, Damien Mandry, Laurent Bonnemains, Jacques Fellinger, Marine Beaumont
1IADI, Université de Lorraine, Nancy, France; 2U947, INSERM, Nancy, France; 3GE Healthcare, Bethesda, MD, United States; 4GE Global Research, Munich, Germany; 5GE Healthcare, Munich, Germany; 6University Hospital, Nancy, France; 7CIC-IT 1433, INSERM, Nancy, France; 8CIC-IT, University Hospital, Nancy, France; 9CIC-IT 1433 , INSERM, Nancy, France

2624. Bloch Equation Simulation with Slice Profile Correction (BLESSPC) T1 Estimation- Enabling Accurate and Precise Myocardial T1 Mapping at 3.0T Using the FLASH-Readout Based MOLLI Sequence
Jiaxin Shao, Stanislas Rapacchi, Kim-Lien Nguyen, Peng Hu
1Department of Radiological Sciences, David Geffen School of Medicine, University of California, Los Angeles, CA, United States; 2Department of Medicine, Division of Cardiology, David Geffen School of Medicine, University of California, Los Angeles, CA, United States; 3Biomedical Physics Inter-Departmental Graduate Program, University of California, Los Angeles, CA, United States

378
2625. **Free-Breathing Multi-Slice Myocardial T1 Mapping Using Inversion Recovery Slice Interleaved Spoiled Gradient Echo Imaging**

*Sébastien Rouyot*, Jihye Jang, Tamer A. Basha, Sebastian Weingtätnert, Sophie Berg, Reza Nezafat

1Department of Medicine, Beth Israel Deaconess Medical Center and Harvard Medical School, Boston, MA, United States; 2Computer Aided Medical Procedures, Technische Universität München, Munich, Germany; 3Computer Assisted Clinical Medicine, University Medical Center Mannheim, Heidelberg University, Mannheim, Germany

2626. **Motion Corrected Model-Based Acceleration of Parameter Mapping (MOCO-MAP) for Improved Late Gd Enhancement Imaging in Cardiac MRI**

*Tobias Wecht*, Felix Rützel, Johannes Tran-Gia, Andreas Schindele, Theresa Reiter, Thorsten Klink, Michael Braun, Alfio Borzi, Walter H. Kullmann, Thorsten A. Bley, Herbert Köstler

1Department of Diagnostic and Interventional Radiology, University of Wuerzburg, Würzburg, Germany; 2Institute of Medical Engineering, University of Applied Sciences Würzburg-Schweinfurt, Schweinfurt, Germany; 3Institute of Mathematics, University of Wuerzburg, Würzburg, Germany; 4Department of Internal Medicine I, University of Wuerzburg, Würzburg, Germany

2627. **Rapid Automatic Segmentation of Enhanced Tissue in LGE MRI of Long-Standing Persistent Atrial Fibrillation**

*Archontis Giannakidis*, Sowvik Haldar, Eva Nyktari, Jennifer Keegan, Irina Suman Horduna, Dudley J. Pennell, Raad Mohiuddin, Tom Wong, David N. Firmin

1NIHR Cardiovascular Biomedical Research Unit, Royal Brompton Hospital, London, United Kingdom; 2National Heart Lung Institute, Imperial College London, London, United Kingdom

2628. **Evaluation of Late Gadolinium Enhancement in Non-Ischemic Cardiomyopathy at 3T Using Motion Corrected Free Breathing Single Shot SSFP**

*Ian Gavin Murphy*, Oisin Flanagan, Marcos J. Botelho, Jeremy Collins, Bruce J. Spottiswoode, Maria J. Carr, Michael Markl, Robert R. Edelman

1Cardiovascular Imaging, Feinberg School of Medicine, Northwestern Memorial Hospital, CHICAGO, IL, United States; 2Cardiovascular Imaging, Northwestern University, CHICAGO, IL, United States; 3Cardiovascular Imaging, Northshore Hospital, Evanston, IL, United States

2629. **A Reference Dataset of In-Vivo Human Left-Ventricular Fiber Architecture in Systole and Diastole**

*Constantin von Deuster*, Christian T. Stoeck, Martin Gener, Nicolas Toussaint, David Atkinson, Sebastian Kozorke

1Division of Imaging Sciences and Biomedical Engineering, King's College London, London, United Kingdom; 2Institute for Biomedical Engineering, University and ETH Zurich, Zurich, Switzerland; 3Dept of Med Phys & Biomedical Eng, University College London, London, United Kingdom; 4Centre for Medical Imaging, University College London, London, United Kingdom

2630. **The Left Ventricular Global Function Index by Cardiac Magnetic Resonance Is More Strongly Negatively Affected by Myocardial Iron Overload Than the Global Systolic Function**

*Antonella Meloni*, Vincenzo Positano, Antonino Vallone, Paolo Preziosi, Maria Chiara Resta, Gennaro Restaino, Maria Giovanna Neri, Roberta Renni, Monica Benci, Petra Keilberg, Cristina Salvatorii, Alessia Pepe

1CMR Unit, Fondazione G. Monasterio CNR-Regione Toscana, Pisa, Italy; 2Istituto di Radiologia, Az. Osp. "Garibaldi" Presidio Ospedaliero Nesima, Catania, Italy; 3U.O.C. Diagnostica per Immagini e Interventistica, Policlinico "Casilino", Roma, Italy; 4Struttura Complessa di Radiologia, OSP. SS. Annunziata ASL Taranto, Taranto, Italy; 5Dipartimento di Radiologia, Università Cattolica del Sacro Cuore, Campobasso, Italy; 6Day Hospital, Ospedale Civile “F. Ferrari”, Casarano (LE), Italy; 7Servizio di Immunomorfologia e Centro Trasfusionale, Policlinico S. Orsola "L. e A. Seragnoli", Bologna, Italy; 8Unità Operativa Sistemi Informatici, Fondazione G. Monasterio CNR-Regione Toscana, Pisa, Italy

2631. **Prospective Changes of Cardiac and Hepatic Iron and Cardiac Function in Low and Intermediate-1 Risk MDS Patients**

*Antonella Meloni*, Michele Rizzo, Giovanni Carulli, Esther Natalie Oliva, Francesco Arcioni, Sergio Storti, Maria Giovanna Neri, Stefania Renne, Emanuele Graspedonio, Gennaro Restaino, Vincenzo Positano, Alessia Pepe

1CMR Unit, Fondazione G. Monasterio CNR-Regione Toscana, Pisa, Italy; 2Reparto di Ematologia, Azienda Sanitaria Provinciale Caltanissetta - Ospedale “Sant’Elia, Caltanissetta, Italy; 3Dip. di Oncologia, dei Trapianti e delle Nuove Tecnologie in Medicina – Divisione di Ematologia, Facoltà di Medicina e chirurgia – Università degli Studi di Pisa, Pisa, Italy; 4Hematology Unit, A.O. Bianchi-Melacrinio-Morelli, Reggio Calabria, Italy; 5Dipartimento di Medicina Clinica e Sperimentale, Università degli Studi di Perugia, Perugia, Italy; 6UOC di Onco-Ematologia, Università Cattolica del Sacro Cuore, Campobasso, Italy; 7Struttura Complessa di
2632. Estimation of Error Maps for Evaluating Precision of Myocardial T2* Mapping Techniques
Christopher M. Sandino1,2; Peter Kellman1; Michael S. Hansen2, Andrew E. Arai2; Hui Xue2
1Ming Hsieh Department of Biomedical Engineering, University of Southern California, Los Angeles, CA, United States; 2Lab of Cardiac Energetics, National Heart, Lung, and Blood Institute, Bethesda, MD, United States

2633. Improved 2D Slice-Interleaved Flow-Independent Black Blood Cardiac Imaging Using Ferumoxytol
Junfei Lu1, J Paul Finn2,3, Peng Hu2,3
1Department of Bioengineering, UCLA, Los Angeles, CA, United States; 2Department of Radiological Sciences, UCLA, Los Angeles, CA, United States; 3Biomedical Physics Inter-Departmental Graduate Program, UCLA, Los Angeles, CA, United States

2634. Preliminary Rat Myocardial Tissue Characterisation at 4.7T
Matthew Firth1, Marco Mingarelli1, Hugh Seton1, Dana Dawson1
1University of Aberdeen, Aberdeen, United Kingdom

2635. Enhancing Referenceless Phase Sensitive Reconstruction Using Geometry Based B0 Simulation
Jinnan Wang1, Rene Bastkowski2, Jeffrey H. Maki1, Chun Yuan3, Peter Boernert4
1Philips Reserach North America, Seattle, WA, United States; 2Philips Reserach Europe, Hamburg, Germany; 3University of Washington, Seattle, WA, United States; 4Philips Research Europe, Hamburg, Germany

2636. Can Quantitative Texture Analysis on Cardiac Magnetic Resonance Differentiate Hypertrophic Cardiomyopathy Patients at High Risk of Sudden Cardiac Death and Candidates for Implantable Cardioverter-Defibrillator Placement from Those at Low Risk?
Rebecca E. Thornhill1,2, Julie Robillard3,4, Michael Gollo5, Carole Dennie5,6, Alexander Dick5,6, Edith Kolozsi7, Elena Pena1,6
1Medical Imaging, The Ottawa Hospital, Ottawa, ON, Canada; 2Radiology, University of Ottawa, Ottawa, ON, Canada; 3Radiology, Montreal Heart Institute, Montreal, PQ, Canada; 4Radiologie, Université de Montréal, Montreal, PQ, Canada; 5Electrophysiology, Peter Munk Cardiac Centre, Toronto, ON, Canada; 6Radiology, University of Ottawa, Ottawa, ON, Canada; 7Cardiology, University of Ottawa Heart Institute, Ottawa, ON, Canada; 8Medicine, University of Ottawa, Ottawa, ON, Canada

2637. Visualization of Cryoballoon Ablation Lesions with 3D LGE Cardiac MR of the Left Atrium
Joseph S. Soltys1, Ibrahim M. Saeed1, Sanjaya Gupta1, Piero Ghein1, Anja C.S. Brau2, James A. Case1, Timothy M. Bateman1,2
1Cardiovascular Imaging Technologies, Kansas City, MO, United States; 2Saint Luke's Mid America Heart and Vascular Institute, Kansas City, MO, United States; 3Global Research Center, GE Healthcare, Munich, Germany

2638. Eliminating the Impact of Myocardial Lipid Content on Myocardial T1 Mapping Using a Spectrally-Selective Inversion Pulse
Maryam Nezafat1,2, Sébastien Roujol2, Jihye Jang2, Tamer Basha2, René M. Botnar3
1King’s College London, London, UK, United Kingdom; 2Beth Israel Deacons Medical Center and Harvard Medical School, Boston, MA, United States

2639. In Vivo Spin Echo EPI Cardiac Diffusion Tensor MRI Using Ultrahigh Gradient Amplitudes
Eric Aliotta1,2, Stanislas Rapacchi1, Peng Hu1, Daniel Ennis3
1Radiological Sciences, UCLA, Los Angeles, CA, United States; 2Biomedical Physics IDP, UCLA, Los Angeles, CA, United States
Davide Piccini1, Simone Coppo2, Giulia Ginami2, Gabriele Bonanno2, Tobias Ruiz2, Gabriella Vincenti3, Juerg Schwittr2, Matthias Stuber2
1Advanced Clinical Imaging Technology, Siemens Healthcare IM BM PL Lausanne, Switzerland; 2Department of Radiology, University Hospital (CHUV) and University of Lausanne (UNIL) / Center for Biomedical Imaging (CIBM), Lausanne, Switzerland; 3Division of Cardiology and Cardiac MR Center, University Hospital of Lausanne (CHUV), Lausanne, Switzerland

2641. Diagnostic Performance of Native T1 Maps at 3T for Characterizing Chronic Myocardial Infarctions
Avinash Kali1, 2, Ivan Coki1, Hsin-Jung Yang2, 2, Richard L Q Tang1, Behzad Shari2, Rohan Dharmakumar1, 1
1Biomedical Imaging Research Institute, Cedars-Sinai Medical Center, Los Angeles, CA, United States; 2Department of Bioengineering, University of California, Los Angeles, CA, United States; 3Department of Medicine, University of California, Los Angeles, CA, United States

2642. Ferroportin Regulates Cardiac Iron Homeostasis
Jack Miller1, 2, Samira Lakhal-Littleton1, Magda Wolna1, Carolyn Carr1, Ana Santos3, Rebeca Diaz2, Daniel Biggs3, Ben Davies3, Vicky Ball1, Peter Robbins2, Damian Tyler1
1Department of Physiology, Anatomy & Genetics, University of Oxford, Oxford, United Kingdom; 2Department of Physics, University of Oxford, Oxford, United Kingdom; 3Welcome Trust Centre for Human Genetics, University of Oxford, Oxford, United Kingdom

2643. Comparison of MOLLI and AIR Cardiac T1 Mapping Pulse Sequences in a Clinical Population of Cardiomyopathies
Sean Robison1, Daniel Kim1, Kyungpyo Hong1, Emma Hornsey1, Piyush Srivastava3, 4, Gerard Smith1, Leighton Kearney1, Ruth P. Lim1, 4
1Department of Radiology, Austin Health, Melbourne, Victoria, Australia; 2UCAIR, Department of Radiology, University of Utah, Salt Lake City, UT, United States; 3Department of Cardiology, Austin Health, Melbourne, Victoria, Australia; 4The University of Melbourne, Melbourne, Victoria, Australia

2644. Assessing Myocardial Infarct Using T1ρ and Late Gadolinium Enhancement In Vivo
Elias Ylä-Herttuala1, Svetlana Laidinen1, Maarit Pulkkinen1, Hanne Hakkarainen1, Timo Liimatainen1
1Biomedical Imaging Unit, University of Eastern Finland, A. I. Virtanen institute, Kuopio, Finland

2645. Right Ventricular Myocardial T1 Quantification by Free-Breathing Fat-Water Separated Dark Blood Saturation-Recovery Imaging (SASHA)
Peter David Gatehouse1, 2, Peter Kellman1, EeLing Heng1, Michael Gatzoulis1, James C. Moon1, Sonya Babu-Narayan1, David N. Firmin3
1Department of Radiology, Austin Health, Melbourne, Victoria, Australia; 2Department of Cardiology and Cardiac MR Center, University Hospital of Lausanne (CHUV), Lausanne, Switzerland; 3Division of Cardiology and Cardiac MR Center, University Hospital of Lausanne (CHUV), Lausanne, Switzerland

2646. Utility of Multi-Slice T1 Mapping by Using Slice Interleaved T1 (STONE) Sequence for the Detection of Diffuse Myocardial Fibrosis in Patients with Hypertrophic Cardiomyopathy
Shingo Kato1, Roujol Sébastien1, Jihye Jang1, Basha Tamer1, Berg Sophie1, Kissingler Kraig1, Goddu Beth1, Evan Appelbaum1, Martin Maron1, Warren J. Manning3, Nezafat Reza2
1Department of Medicine, Beth Israel Deaconess Medical Center, Boston, MA, United States; 2Division of Cardiology, Tufts Medical Center, Boston, MA, United States; 3Department of Medicine and Radiology, Beth Israel Deaconess Medical Center, Boston, MA, United States

2647. Evaluation of Myocardial Viability in Recent, Sub-Acute and Chronic Myocardial Infarction Using 3.0T CMR Quantitative T1, T2 Mapping and Multi-B DWI Combined with LGE
Mingxi Liu1, Wanshi Zhang1, Zhiheng Zhang1, Limin Meng1, Jie Liu1, Wanfeng Gong2
1The Fourth Military Medical University, Xi’an, Shanxi, China; 2Air Force General Hospital, Beijing, China; 3GE Healthcare China, Beijing, China
2648. High Resolution Multi-Slice Myocardial T2 Mapping with Improved Scan Time Efficiency
Jihye Jang1, 2, Cory Tschabrunn1, Elad Anter1, Tamer Basha1, Reza Nezafat1
1Beth Israel Deaconess Medical Center and Harvard Medical School, Boston, MA, United States; 2Computer Aided Medical Procedures, Technische Universität München, Munich, Bayern, Germany

2649. Enhanced Glucose Oxidation Has No Effect on Hypertrophic Progression in the Abdominal Aortic Banding Model of Left Ventricular Hypertrophy
Lucia F. Giles1, Vicky Ball1, Carolyn A. Carr2, Anne-Marie L. Seymour3, Lydia Le Page1, Lucy Ambrose1, Damian J. Tyler1
1Department of Physiology, Anatomy and Genetics, University of Oxford, Oxford, Oxfordshire, United Kingdom; 2Department of Physiology, Anatomy and Genetics, University of Oxford, Oxford, Oxfordshire, United Kingdom; 3Department of Biological Sciences, University of Hull, Hull, United Kingdom

2650. Noninvasive Three-Dimensional Mapping of Endothelial Dysfunction in Cardiac Ischemia by Dynamic Contrast Enhanced Magnetic Resonance Imaging Using Albumin-Based Contrast Agent
Katrien Vandoorne1, Moriel H. Vandsburger2, Yue Han1, Igor Jacobs1, Hagit Dafni3, Klaas Nicolay1, Gustav J. Strijkers, 14
1Department of Biomedical Engineering, Eindhoven University of Technology, Eindhoven, Netherlands; 2Department of Physiology, University of Kentucky, KY, United States; 3Weizmann Institute of Science, Israel; 4Academic Medical Center, Amsterdam, Netherlands

Traditional Poster
Vessel Wall
Exhibition Hall Thursday 10:30-12:30

2651. Imaging of Abdominal Aortic Aneurysm Morphology and Inflammation Using 3D Isotropic Black Blood MRI
Chengchong Zhu1, Henrik Haraldsson1, Sinyeob Ahn2, Jing Liu1, Michael Hope1, David Saloner1
1Radiology, UCSF, San Francisco, California, United States; 2Siemens Healthcare, CA, United States

2652. Assessment of Calcification Size and Juxtaluminal Status Using Gray-Blood 3D Vessel Wall MRI
Niranjan Balu1, Jie Sun1, Jin Liu1, Shuo Chen1, Huijun Chen1, Chun Yuan1
1Radiology, University of Washington, Seattle, WA, United States; 2Bioengineering, University of Washington, Seattle, WA, United States; 3CBIR, Tsinghua University, Beijing, China

2653. Three-Dimensional Multi-Contrast Assessment of the Aortic Wall at 3 Tesla
Iulius Dragonu1, 2, Thomas Wehrum1, Christoph Strecker1, Benjamin R. Knowles1, Jürgen Hennig1, Andreas Hartloff1
1Radiology, Medical Physics, University Medical Center Freiburg, Freiburg, Germany; 2Neurology, University Medical Center Freiburg, Freiburg, Germany

2654. 3D Large Coverage Atherosclerotic Plaque Assessment with Single Scan (APASS): Preliminary Application in Carotid Artery and Femoral Artery
Shuo Chen1, Zechen Zhou1, Huijun Chen1, Bida Zhang2, Rui Li1, Jinnan Wang1, 4, Chun Yuan1, 3, Xihai Zhao1
1Center for Biomedical Imaging Research, Department of Biomedical Engineering, School of Medicine, Tsinghua University, Beijing, China; 2Healthcare Department, Philips Research China, Shanghai, China; 3Department of radiology, University of Washington, Seattle, United States; 4Philips Research North America, Briarcliff Manor, NY, United States

2655. Optimizing T1w-SPACE for Intracranial Arterial Imaging
Lei Zhang1, Jaesok Park2, Jun Wu1, Xin Liu1, Yiu-Chung Chung1
1Paul C. Lauterbur Center for Biomedical Imaging, Shenzhen Institutes of Advanced Technology, Chinese Academy of Sciences, Shenzhen, Guangdong, China; 2department of brain and cognitive engineering, Korea university, Seoul, Korea; 3Neurology, Peking University Shenzhen Hospital, Shenzhen, Guangdong, China
2656. Large Coverage 3D Combined Angiography and Plaque Risk Identification (3D-CAPRI)
Haining Liu†, Niranjali Balic, Jinnan Wang†, Chun Yuan†,‡
†Bioengineering Department, University of Washington, Seattle, WA, United States; ‡Radiology Department, University of Washington, Seattle, WA, United States

2657. Carotid Pulse Wave Velocity Measurements Using Accelerated High Temporal Resolution MRI
Abdallah G. Motaal†,‡, Wouter WJ Potters†, Huiying Dong†, Luc M. J. Florack†, Klaas Nicolay†, Aart J. Nederveen†, Gustav J. Strijkers†,‡, Bram F. Coolen†
†Department of Radiology, Academic Medical Center, Amsterdam, Netherlands; ‡Department of Biomedical Engineering, Eindhoven University of Technology, Eindhoven, Netherlands; ‡Mathematics and Computer Science, Eindhoven University of Technology, Eindhoven, North Brabant, Netherlands; ‡Department of Biomedical Engineering and Physics, Academic Medical Center, Amsterdam, Netherlands

2658. In Vivo Quantification and Correlation of Intracranial Aneurysm Wall Thickness and Wall Shear Stress
Roos Blankena†,‡, Rachel Kleinloog†, Pim van Ooij‡, Bon Verweij‡, Bennie ten Haken‡, Jaco Zwanenburg‡
†Neurology and Neurosurgery, Brain Center Rudolf Magnus, University Medical Center Utrecht, Utrecht, Netherlands; ‡Technical Medicine, University of Twente, Enschede, Overijssel, Netherlands; ‡Biomedical Engineering & Physics, Academic Medical Center, Amsterdam, Noord-Holland, Netherlands; ‡Radiology, University Medical Center Utrecht, Utrecht, Netherlands

2659. Ultra-High Field MRI of Aortic Plaques in a Rabbit Model: Initial Experience and Comparison Between 1.5T, 3T and 7T
Claudia Calcagno†, Martin J. Willemink†, Bei Zhang†, Hadrien Dyvorne†, Philip M. Robson†, Olivier Laires†, Bram F. Coolen†, Gustav J. Strijkers†, Tim Leiner†, Venkatesh Mani†, Willem JM Mulder‡, Zahi A. Fayad‡
†Department of Radiology, Icahn School of Medicine at Mount Sinai, New York, NY, United States; ‡Department of Radiology, University Medical Center Utrecht, Utrecht, The Netherlands, Netherlands; ‡Department of Radiology, Academic Medical Center, Amsterdam, The Netherlands, Netherlands; ‡Department of Biomedical Engineering and Physics, Academic Medical Center, Amsterdam, The Netherlands, Netherlands

2660. Feasibility and Signal Analysis of DANTE-TSE with Variable Flip Angles for Intracranial Vessel Wall Imaging at 7 Tesla
Olivia Viessmann†, Linqing Li†, Peter Jezzard†
†Nuffield Department of Clinical Neurosciences, Oxford Centre for Functional Magnetic Resonance Imaging of the Brain, Oxford, United Kingdom

2661. Quantitative MR Imaging of Ex Vivo Intracranial Atherosclerotic Plaques at 7.0 Tesla
A.A. Harteveled, N.P. Denswit‡, J.C.W. Siero‡, J.J.M. Zwanenburg‡, A. Vink‡, W.G.M. Splief†, F.R. Luijten†, M.J. Daemen‡, J. Hendriks‡, A.G. van der Kolk‡
†Department of Radiology, University Medical Center Utrecht, Utrecht, Netherlands; ‡Department of Pathology, Academic Medical Center, Amsterdam, Netherlands; ‡Image Sciences Institute, University Medical Center Utrecht, Utrecht, Netherlands; ‡Department of Pathology, University Medical Center Utrecht, Utrecht, Netherlands

Traditional Poster
CE & Non-CE MRA
Exhibition Hall Thursday 10:30-12:30

2662. Comparison of DANTE- And IMSDE-Based Methods for Subtractive NCE-MRA of the Central Thoracic Vein
Andrew N. Priest†, Kristian H. Mortensen†, David J. Lomas†
†Department of Radiology, Addenbrooke's Hospital and Cambridge University, Cambridge, United Kingdom

2663. ZTE for Whole Heart Imaging - Initial Results, Limitations and Challenges at 1.5T
Peter Börnert†, Jan Groen‡, Christian Stehning‡, Jouke Smink‡, Kay Nehrke‡
2664. **Atlas-Based 3D-Affine Self-Navigated Whole-Heart Coronary MRA: Initial Experience in Patients**

*Gabriele Bonanno1, Davide Piccini, 12, Bénédicte Marechal2,1, Cristophe Sierro2,1, Juerg Schwitter2,1*  
1Radiology, University Hospital (CHUV) and University of Lausanne (UNIL) / Center for Biomedical Imaging, Lausanne, Switzerland; 2Advanced Clinical Imaging Technology, Siemens Healthcare IM BM PI, Lausanne, Switzerland; 3Radiology, CHUV - LTS5 - Ecole polytechnique Fédérale de Lausanne, Lausanne, Switzerland; 4Division of Cardiology and Cardiac MR Center, University Hospital (CHUV) and University of Lausanne (UNIL), Lausanne, Switzerland; 5Division of Cardiology and Cardiac MR Center, University Hospital (CHUV) and University of Lausanne (UNIL), Switzerland

2665. **Diagnostic Value of 3.0T Non-Contrast Enhanced Magnetic Resonance Angiography for Lower Extremity Arterial Stenosis**

*Yunlong Song1, Dongmei Wang2, Guangnan Quan1, Lizhi Xie1*  
1Department of CT & MRI, Air Force General Hospital, Beijing, China; 2Department of CT & MRI, Air Force General Hospital, Beijing, China; 3GE Healthcare China, Beijing, China

2666. **High-Resolution Coronary MR Angiography with Outer Volume Suppression/T2 Preparation**

*Nii Okai Addy1, Jieying Luo2, Bob S. Hu1, Dwight G. Nishimura1*  
1Electrical Engineering, Stanford University, Stanford, CA, United States; 2Cardiovascular Disease, Palo Alto Medical Foundation, Palo Alto, CA, United States

2667. **Non-Contrast-Enhanced Magnetic Resonance Venography Using DANTE and MSDE Preparations**

*Guoxi Xie1, Xiaoyong Zhang1,1; Caiyu Shı1, Xin Liu1, Debiao Li1, Zhaoyang Fan1*  
1Shenzhen Institutes of Advanced Technology, Chinese Academy of Sciences, Shenzhen, Guangdong, China; 2University of Science and Technology of China, Hefei, Anhui, China; 3Biomedical Imaging Research Institute, Cedars Sinai Medical Center, Los Angeles, CA, United States

2668. **A Comparative Study of Contrast-Enhanced and Unenhanced MR Pulmonary Angiography in the Diagnosis of Pulmonary Embolism**

*Sishu Yuan1, Liming Xia1*  
1Radiology, Tongji Hospital, Tongji Medical College, Huazhong University of Science and Technology, Wuhan, Hubei, China

2669. **Acceleration-Selective Magnetic Resonance Angiography**

*Kalina V. Jordanova1, Taehoon Shin1, Adam B. Kerr1, Dwight G. Nishimura1*  
1Electrical Engineering, Stanford University, Stanford, CA, United States; 2Diagnostic Radiology and Nuclear Medicine, University of Maryland, Baltimore, MD, United States

2670. **Optimized and Accelerated Non-Contrast-Enhanced MRA of the Lower Extremities Using IMSDE Prepared BSSFP Acquisition**

*Li Jiang1, Andy Jiang1, Zhigang Wu1, Allan Jin1, Stephon Xu1, Feng Huang1*  
1Philips Healthcare (Suzhou), Suzhou, Jiangsu, China

2671. **Accuracy of Lumen Measurement Using Non-Contrast SNAP MRA**

*Haining Liu1, Niranjan Balu2, Jinnan Wang1, Jie Sun1, Chun Yuan1,3*  
1University of Washington, Seattle, WA, United States; 2Radiology Department, University of Washington, Seattle, WA, United States; 3Philips Research North America, NY, United States; 4Bioengineering Department, University of Washington, Seattle, WA, United States; 5Bioengineering Department, Tsinghua University, Beijing, China

2672. **Cerebral Angiography and Vessel Wall in Progressive Hypertension**

*Yunxia Li1,2, Qiang Shen1, Shiliang Huang1, Wei Li1, Eric R. Muir1, Justin Alexander Long1, Timothy Q. Duong1*  
1Philips Research, Hamburg, Germany; 2Radiology, LUMC, Leiden, Netherlands; 3Philips Healthcare, Best, Netherlands
2673. Thin-Slice Acquisition Using Saturation Spin Labeling (TASSL) MRA
Robert R. Edelman, Shivraman Giri, Ian Murphy, Ioannis Koktzoglou
1Radiology, NorthShore University HealthSystem, Evanston, IL, United States; 2Radiology, Feinberg School of Medicine, Northwestern University, Chicago, IL, United States; 3Siemens Healthcare, Chicago, IL, United States; 4Radiology, Pritzker School of Medicine, University of Chicago, Chicago, IL, United States

2674. QISS UTE: Quiescent-Inflow Single-Shot MRA of the Peripheral Arteries Using an Ultra-Short Echo Time Readout
Robert R. Edelman, Shivraman Giri, Ian Murphy, Kieran O’Brien, Matthew D. Robson, Ioannis Koktzoglou
1Radiology, NorthShore University HealthSystem, Evanston, IL, United States; 2Radiology, Feinberg School of Medicine, Northwestern University, Chicago, IL, United States; 3Siemens Healthcare, Chicago, IL, United States; 4Siemens Healthcare, Switzerland; 5Department of Cardiovascular Medicine, Oxford University, Oxford, United Kingdom; 6Radiology, Pritzker School of Medicine, University of Chicago, Chicago, IL, United States

2675. Target Volume Coronary MRA Revisited: Usefulness of Non-Rigid Reregistration of Multi-Frame 3D MRA Acquisitions at 3T
Masaki Ishida, Ryohi Nakayama, Shinichi Takase, Katsushihiro Inoue, Yoshitaka Goto, Yasutaka Ichikawa, Motonori Nagata, Kakuya Kitagawa, Hajime Sakuma
1Radiology, Mie University Hospital, Tsu, Mie, Japan

2676. Peripheral MR Angiography Using Fourier Velocity Encoding and Dynamic Reconstruction
Dongchun Kim, Changheun Oh, Hyunseok Seo, HyunWook Park
1Electrical engineering, KAIST, Daejeon, Yuseong-Gu, Korea

2677. Respiratory Self-Navigated Inversion Recovery GRE Whole-Heart Coronary MR Imaging Using an Intravascular Contrast Agent in a Pediatric Population
Davide Piccini, Gary R. McNeal, W. James Parks, Michael O. Zenge, Tim C. Slesnick
1Advanced Clinical Imaging Technology, Siemens Healthcare, Lausanne, Switzerland; 2Department of Radiology, University Hospital (CHUV) and University of Lausanne (UNIL) / Center for Biomedical Imaging (CIBM), Lausanne, Switzerland; 3Customer Solutions Group, Siemens Medical Solutions USA, Inc, Malvern, PA, United States; 4Department of Pediatrics, Emory University, Atlanta, GA, United States; 5Children’s Healthcare of Atlanta, Atlanta, GA, United States; 6MR Product Innovation and Definition, Siemens AG, Healthcare Sector, Erlangen, Germany

2678. Clinical Performance of a Spatiotemporally Accelerated Motion-Corrected Pediatric 3D Free-Breathing Time-Resolved Contrast-Enhanced MR Angiography
Tao Zhang, Ufra Yousaf, Albert Hsiao, Joseph Y. Cheng, Marcus Alley, Michael Lustig, John M. Pauly, Shreyas S. Vasanawala
1Radiology, Stanford University, Stanford, CA, United States; 2Electrical Engineering, Stanford University, Stanford, CA, United States; 3Radiology, UC San Diego, San Diego, CA, United States; 4Electrical Engineering and Computer Sciences, UC Berkeley, Berkeley, CA, United States

2679. R1- ΔR2- ΔR3 Combined MR Angiogram with Dual Contrast SPION
Hoesu Jung, Sohyun Han, Seokha Jin, Dongkyu Lee, Hyungjoon Cho
1Department of Biomedical Engineering, UNIST (Ulsan National Institute of Science & Technology), Ulsan, Gyeongsangnam-do, Korea

2680. Contrast Enhanced Self-Gated Coronary Angiography at 7 Tesla Using Ultra-Short Echo Time Imaging
Naoharu Kobayashi, Jianing Pang, Steen Moeller, Pierre-Francois van de Moortele, Sebastian Schmitter, Kamil Ugurbil, Debiao Li, Michael Garwood, Gregory J. Metzger
2681. Intraindividual Comparison of Different Contrast Agent Application Schemes and Their Influence on Concentration, Signal and Bolus Geometry

**Harald Kramer**\(^1\), **Gregor Jost**\(^1\), **Hubertus Pietsch**\(^1\), **Maximilian F. Reiser**\(^1\)

\(^1\)Department of Clinical Radiology, University of Munich, Munich, Bavaria, Germany; \(^2\)Department of Radiology, University of Wisconsin - Madison, Madison, WI, United States; \(^3\)MR and CT Contrast Media Research, Bayer Healthcare, Berlin, Germany

2682. Combined Acquisition of Low-Dose Time-Resolved and Single-Phase High-Resolution Contrast-Enhanced MRA in the Evaluation of Spinal Vascular Diseases

**Bum-soo Kim**\(^1\), **Jieun Back**\(^1\), **Song Lee**\(^1\), **Jinhee Jang**\(^1\), **Hyeon Seok Choi**\(^1\), **So-Lyung Jung**\(^1\), **Kook-Jin Ahn**\(^1\)

\(^1\)Department of Radiology, Seoul St.Mary's Hospital, The Catholic University of Korea, Seoul, Korea

Traditional Poster

**Cardiac Perfusion & Function**

**Exhibition Hall**

**Thursday 10:30-12:30**

2683. Improved Visualization of Myocardial Perfusion Defects Using Ungated Continuously-Sampled Radial First-Pass MRI with Comparison to ECG-Gated Imaging

**Behzad Sharifi**\(^1\), **Reza Arsanjani**\(^2\), **Rohan Dharmakumar**\(^2\), **Noel Bairney Mertz**\(^2\), **Daniel S. Berman**\(^1\), **Debiao Li**\(^1\)

\(^1\)Biomedical Imaging Research Institute, Dept. of Biomedical Sciences, Cedars-Sinai Medical Center, Los Angeles, CA, United States; \(^2\)Radiology, University of Utah, Salt Lake City, UT, United States

2684. Motion Compensated Free Breathing Myocardial Perfusion MRI Using Iterative Non Local Shrinkage

**Yasir Q. Mohsin**\(^1\), **Sajan Goud Lingala**\(^2\), **Edward DiBella**\(^2\), **Mathews Jacob**\(^1\)

\(^1\)Electrical Engineering, University of Iowa, Iowa city, IA, United States; \(^2\)Electrical Engineering, University of Southern California, Los Angeles, CA, United States; \(^3\)Department of Radiology, University of Utah, S.L.City,UT, United States

2685. Rapid Ungated Myocardial Perfusion MRI with an Undersampled Radial CAIPI Acquisition and a Compressed Sensing Reconstruction

**Ganesh Adluru**\(^1\), **Liyong Chen**\(^2\), **Eugene Kholmovski**\(^1\), **John Roberts**\(^1\), **Edward V.R. DiBella**\(^1\)

\(^1\)Radiology, University of Utah, Salt Lake City, UT, United States; \(^2\)Advanced MRI Technologies, CA, United States

2686. Restating MS-CAIPIRINHA as an In-Plane Acceleration Problem: an Efficient Method for Integrating High Coverage Cardiac Perfusion MRI into Clinical Workflow

**Daniel Stäb**\(^1\), **Peter Speier**\(^1\), **Theresa Reiter**\(^1\), **Thorsten Klink**\(^2\), **Henning Neubauer**\(^2\), **Thorsten A. Bley**\(^1\), **Tobias Wech**\(^2\), **Andreas Max Weng**\(^2\), **Herbert Köstler**\(^2\)

\(^1\)The Centre for Advanced Imaging, The University of Queensland, Brisbane, Queensland, Australia; \(^2\)Institute of Radiology, University of Würzburg, Würzburg, Bavaria, Germany; \(^3\)Siemens AG Healthcare Sector, Erlangen, Bavaria, Germany; \(^4\)Department of Internal Medicine I, University of Würzburg, Würzburg, Bavaria, Germany

2687. Quantitative First-Pass Perfusion with Whole-Ventricle Coverage Using 3D Through-Time Spiral GRAPPA

**Johannes Tran-Gia**\(^1\), **Jesse Hamilton**\(^1\), **David Lohr**\(^1\), **Kestutis Barkauskas**\(^2\), **Andreas M. Weng**\(^2\), **Herbert Köstler**\(^2\), **Nicole Seiberlich**\(^2\)

\(^1\)Department of Diagnostic and Interventional Radiology, University of Würzburg, Würzburg, Germany; \(^2\)Biomedical Engineering, Case Western Reserve University, Cleveland, OH, United States

2688. Estimation of Coil Sensitivities in Myocardial First-Pass Perfusion Imaging Using a Model-Based T1 Mapping Technique

**Johannes Tran-Gia**\(^1\), **David Lohr**\(^1\), **Andreas M. Weng**\(^2\), **Christian O. Ritter**\(^1\), **Thorsten A. Bley**\(^1\), **Herbert Köstler**\(^1\)

\(^1\)Department of Diagnostic and Interventional Radiology, University of Würzburg, Würzburg, Germany; \(^2\)Department of Diagnostic and Interventional Radiology, University Medical Center Göttingen, Göttingen, Germany
2689. Fast Multicoil Total Variation Reconstruction of Cardiac Perfusion Images
Srikant Kamesh Iyer1, 2, Tolga Tasdizen2, Ganesh Adluri1, Edward DiBella1
1Electrical and Computer Engineering, University of Utah, Salt Lake City, UT, United States; 2Scientific Computational Institute, University of Utah, Salt Lake City, UT, United States

2690. A Look-Locker Acquisition Scheme for Quantitative Myocardial Perfusion Imaging by Arterial Spin Labelling in Humans at 3 T
Graeme A. Keith1, Christopher T. Rodgers1, Michael A. Chappell2, Matthew D. Robson1
1Oxford Centre for Clinical Magnetic Resonance Research, University of Oxford, Oxford, Oxfordshire, United Kingdom; 2Institute of Biomedical Engineering, University of Oxford, Oxford, Oxfordshire, United Kingdom

2691. Reducing Saturation Effects in the AIF Determination of Quantitative First-Pass Perfusion Imaging Using a Model-Based Reconstruction
Johannes Tran-Gia1, David Lohr1, Andreas M. Weng1, Christian O. Ritter1, 2, Thorsten A. Bley1, Herbert Kästler1
1Department of Diagnostic and Interventional Radiology, University of Würzburg, Würzburg, Germany; 2Department of Diagnostic and Interventional Radiology, University Medical Center Göttingen, Göttingen, Germany

Karsten Sommer2, 3, Dominik Bernat1, Regina Schmidt1, Laura M. Schreiber1
1Department of Radiology, Johannes Gutenberg University Medical Center, Mainz, Rhineland-Palatinate, Germany; 2Max Planck Graduate Center with the Johannes Gutenberg University Mainz, Mainz, Rhineland-Palatinate, Germany

2693. MRI Perfusion Discriminates Stunned Myocardium Adjacent to Focal Infarct from Microemblized Infarcted Myocardium
Maythem Saeed1, Loi Do1, Steven W. Hetts1, Mark W. Wilson1
1Radiology and Biomedical Imaging, University of California San Francisco, San Francisco, Ca, United States

2694. The Influence of Contrast Agent Bolus Dispersion in Contrast-Enhanced Myocardial Perfusion MRI: A Computational Fluid Dynamics Simulation Study on Influencing Factors and Different Methods of Quantitative Analysis
Regine Schmidt1, Dirk Graaf1, Karsten Sommer1, Hanns-Christian Breit1, Laura Maria Schreiber1, 2
1Section of Medical Physics, Department of Radiology, Johannes Gutenberg University Medical Center, Mainz, Germany; 2Department of Cellular and Molecular Imaging, Comprehensive Heart Failure Center (CHFC), Wuerzburg, Germany

2695. Evaluation of Cardiac Stress Perfusion and Functional MRI Biomarkers in Healthy Nonhuman Primates: Reproducibility and Repeatability Study
Sarayu Parimal1, 2, Smita Sampath1, 2, Michael Klimas2, Dai Feng1, Richard Baumgartner1, Elaine Manighas1, Willy Gsell1, Jeffrey L. Evelhoch1, Chin Chih-Liang1, 2
1Imaging, MSD, Singapore; 2Imaging, Merck & Co. Inc., WestPoint, Philadelphia, United States; 3Biometric Research, Biostatistics and Research Decision Sciences, Merck & Co. Inc., Rahway, NJ, United States; 4MRI department, Maccine Pte Ltd, Singapore

2696. New Method to Validate In Vivo 2D Displacements from Spiral Cine DENSE at 3T
Gregory J. Wehner1, Jonathan D. Suever1, Christopher M. Haggerty2, Linyuan Jing2, David K. Powell1, Sean M. Hamlet1, Jonathan D. Grabau1, Dimitri Mosjesenko1, Xiaodong Zhong3, Frederick H. Epstein1, Brandon K. Fornwall1, 6
1Biomedical Engineering, University of Kentucky, Lexington, KY, United States; 2Pediatrics, University of Kentucky, Lexington, KY, United States; 3Electrical Engineering, University of Kentucky, Lexington, KY, United States; 4MR R&D Collaborations, Siemens Healthcare, Atlanta, GA, United States; 5Biomedical Engineering, University of Virginia, Charlottesville, VA, United States; 6Physiology and Medicine, University of Kentucky, Lexington, KY, United States
2697. Real-Time Imaging of the Heart and Aorta at 7.0 T Using a 16 Channel Bow Tie Antenna Transceiver Array
Celal Oezerdem1, Lukas Winter1, Andreas Graessl1, Katharina Paul1, Antje Els1, Dirk Voit2, Jens Frahm2, Thoralf Niendorf1, 4
1Berlin Ultra-High Field Facility (B.U.F.F.), MDC, Berlin, Germany; 2Biomagnetische NMR Forschungs GmbH am Max-Planck-Institut für biophysikalische Chemie, Göttingen, Germany; 3DZHK (German Center for Cardiovascular Research), partner site Göttingen, Germany; 4Experimental and Clinical Research Center, a joint cooperation between Charité Medical Faculty and the Max Delbrueck Center, Berlin, Germany

2698. Sub-Millimeter In-Plane Spatial Resolution CINE Imaging of the Heart at 7.0 T Using a 16 Channel Bow Tie Antenna Transceiver Coil Array
Celal Oezerdem1, Lukas Winter1, Andreas Graessl1, Katharina Paul1, Antje Els1, Thoralf Niendorf1, 2
1Berlin Ultra-High Field Facility (B.U.F.F.), MDC, Berlin, Germany; 2Experimental and Clinical Research Center, a joint cooperation between Charité Medical Faculty and the Max Delbrueck Center, Berlin, Germany

2699. Free-Breathing Cardiac Cine MRI Using the Diminishing Variance Algorithm
R Reeve Ingle1, Kenneth O. Johnson2, Galen D. Reed3, Juan M. Santos4, William R. Overall5, Bob S. Hu1, 2
1HeartVista, Inc., Menlo Park, CA, United States; 2Cardiology, Palo Alto Medical Foundation, Palo Alto, CA, United States

2700. Evaluate Radial and Longitudinal Myocardial Motion Velocity in Left and Right Ventricles for Repaired Tetralogy of Fallot Patients by Phase-Contrast MRI
Meng-Chu Chang1, Ming-Ting Wu2, Marius Menza3, Mao-Yuan Su4, Hung-Chieh Huang5, Hsu-Hsia Peng6
1Interdisciplinary Program of Nuclear Science, National Tsing Hua University, Hsinchu, Taiwan; 2Department of Radiology, Kaohsiung Veterans General Hospital, Kaohsiung, Taiwan; 3Medical Physics, Department of Radiology, University Hospital Freiburg, Freiburg, Germany; 4Department of Medical Imaging, National Taiwan University Hospital, Taipei, Taiwan; 5Department of Biomedical Engineering and Environmental Sciences, National Tsing Hua University, Hsinchu, Taiwan

2701. Evaluate Myocardial Dyssynchrony Index in Left Ventricle for Marfan Syndrome Patients by Using Phase-Contrast Magnetic Resonance Imaging
Tzu-Yu chou1, 2, Hsin-Hui Chiu1, Wen-Yih Isaac Tseng1, Marius Menza3, Hsu-Hsia Peng2
1Institute of Biomedical Engineering, National Taiwan University, Taipei, Taiwan; 2Department of Biomedical Engineering and Environmental Sciences, National Tsing Hua University, Hsinchu, Taiwan; 3Department of Pediatrics, Taipei Medical University Hospital, Taipei, Taiwan; 4Center for Optoelectronic Biomedicine, College of Medicine, National Taiwan University, Taiwan; 5Medical Physics, Department of Radiology, University Hospital Freiburg, Freiburg, Germany

2702. A New Self-Gating Method for Cardiac-MRI Using Phase Information
Hyunseok Seo1, Dongchan Kim1, HyunWook Park1
1Electrical Engineering, KAIST, Daejeon, Korea

2703. Assessment of Left Ventricular Abnormal Twist in Repaired Tetralogy of Fallot Patients Using Phase-Contrast MRI
Meng-Chu Chang1, Ming-Ting Wu2, Marius Menza3, Mao-Yuan Su4, Hung-Chieh Huang5, Hsu-Hsia Peng6
1Interdisciplinary Program of Nuclear Science, National Tsing Hua University, Hsinchu, Taiwan; 2Department of Radiology, Kaohsiung Veterans General Hospital, Kaohsiung, Taiwan; 3Medical Physics, Department of Radiology, University Hospital Freiburg, Freiburg, Germany; 4Department of Medical Imaging, National Taiwan University Hospital, Taipei, Taiwan; 5Department of Biomedical Engineering and Environmental Sciences, National Tsing Hua University, Hsinchu, Taiwan

2704. Clinical Impact of Left Ventricular Eccentricity Index Using Cardiac Cine MRI for Assessment of Right Ventricular Hemodynamics in Adult Congenital Heart Disease
Yuzo Yamazaki1, Michinobu Nagaoshi2, Masato Yonezawa3, Takeshi Kamitani1, Torahiko Yamanouchi1, Kenichiro Yamamura1, Iehiro Sakamoto1, Hidehiko Yabuuchi1, Hiroshi Honda1
1Clinical Radiology, Kyushu University, Fukuoka, Japan; 2Molecular Imaging & Diagnosis, Kyushu University, Fukuoka, Japan; 3Pediatrics, Kyushu University, Fukuoka, Japan; 4Cardiovascular Medicine, Kyushu University, Fukuoka, Japan; 5Health Sciences, Kyushu University, Fukuoka, Japan
2705. Comparison of Right Ventricular Volume Measurements Obtained Using Transaxial and Short-Axis Slices Acquired by Cardiac MRI in Patients with Chronic Thromboembolic Pulmonary Hypertension
Rieko Ishimura1, Kenich Yokoyama1, Toshiya Kariyasu1, Shigehide Kuhara2, Toshiaki Nitatori1
1Department of Radiology, Kyorin University, Mitaka, Tokyo, Japan; 2Toshiba Medical Systems, Otawara, Tochigi, Japan

2706. Quantitative Assessment of Left Ventricular Tissue Relaxometry and Dynamics in Human Heart Transplant Recipients in a Gold Standard Comparison
Helene Feliciana1, 2, Ruud B. van Heesswijk1, 2, Davide Piccin1, 3, Pierre Monney5, 6, Juerg Schwitter5, 6, Roger Mullin5, Matthias Stuber1, 2
1Department of Radiology, University Hospital (CHUV) and University of Lausanne (UNIL), Lausanne, Switzerland; 2Center for Biomedical Imaging (CIBM), Lausanne, Switzerland; 3Department of Radiology, University Hospital (CHUV) and University of Lausanne (UNIL); 4Center for Biomedical Imaging (CIBM), Lausanne, Switzerland; 5Advanced Clinical Imaging Technology, Siemens Healthcare DM BM PI, Lausanne, Switzerland; 6Division of Cardiology, Department of Internal Medicine, University Hospital (CHUV) and University of Lausanne (UNIL), Lausanne, Switzerland; 7Cardiac MR Center (CRMC), University Hospital of Lausanne (CHUV), Lausanne, Switzerland

2707. Intravoxel Incoherent Motion and Arterial Spin Labeling MRI of Isolated Perfused Hearts
Osama Abdullah1, Arnold David Gomez1, Samer Merchant1, Michael Heidinger1, Edward W. Hsu1
1Department of Biomedical Engineering, University of Utah, Salt Lake City, UT, United States; 2Cardiac Research and Training Institute, University of Utah, UT, United States

2708. Comparison of First-Pass MRI and Arterial Spin Labeling for Quantification of Myocardial Perfusion in Mice
Nivedita K. Naresh1, Xiao Chen1, Yikui Tian2, Eric M. Moran1, Brent A. French1, Frederick H. Epstein1, 3
1Biomedical Engineering, University of Virginia, Charlottesville, VA, United States; 2Surgery, University of Virginia Health System, Charlottesville, VA, United States; 3Radiology, University of Virginia, VA, United States

2709. Alterations of Left Atrial Function and Substrate After Myocardial Infarction in Relation to Vulnerability for Atrial Fibrillation: A Chronic Porcine Model
Dana C. Peters1, Stephanie L. Thorn2, Alda Bregasi2, Edgar J. Diaz1, Mitchel R. Stacy2, Christi Hawley2, Albert J. Simms2
1Radiology, Yale School of Medicine, New Haven, CT, United States; 2Cardiology, Yale School of Medicine, New Haven, CT, United States

2710. Noninvasive Detection of Congestive Heart Failure in Postinfarction Rats
Emil Knut Stenersen Espel1, 2, Jan Magnus Aronsen1, 2, Kristine Skårdal1, 2, Lili Zhang1, 2, Ivar Sjaastad1, 2
1Institute for Experimental Medical Research, Oslo University Hospital and University of Oslo, Oslo, Norway; 2KG Jebsen Cardiac Research Center and Center for Heart Failure Research, University of Oslo, Oslo, Norway; 3Bjørknes College, Oslo, Norway

2711. Transplantation of Integrin-Linked Kinase-Overexpressing Mesenchymal Stem Cells Via Coronary Improves the Myocardial Repairing in Swine Model of Acute Myocardial Infarction
Dan Wu1, Wei Bo Chen2, Bin Zhu3, Biao Xu4
1Drum Tower Hospital, Nanjing, Jiangsu, China; 2Philips Healthcare, Shanghai, China; 3Radiology, Drum Tower Hospital, Nanjing, Jiangsu, China; 4Cardiology, Drum Tower Hospital, Nanjing, Jiangsu, China

2712. Development of Real-Time Magnetic Resonance Imaging of Mouse Hearts at 9.4 Tesla – Simulations and First Applications
Tobias Wech1, Nicole Seiberlich2, Andreas Schindele1, Michael L. Gyngell1, Valentina Daidosiu1, Alfo Borzi1, Herbert Köstler1, Jürgen E. Schneider1
1Department of Diagnostic and Interventional Radiology, University of Wuerzburg, Wuerzburg, Germany; 2Biomedical Engineering, Case Western Reserve University, Cleveland, OH, United States; 3Institute of Mathematics, University of Wuerzburg, Würzburg, Germany; 4Perspectum Diagnostics Ltd, Oxford, United Kingdom; 5Division of Imaging Sciences & Biomedical Engineering, King's College London, London, United Kingdom; 6Division of Cardiovascular Medicine, University of Oxford, Oxford, United Kingdom
2713. Assessing Diastolic Function in Mouse Hearts: High-Temporal Resolution CINE MRI Vs. Ultrasound
Thomas A. Roberts1, Anthony N. Price2, Anna L. David3, Valerie Taylor4, Daniel J. Stuckey5, Mark F. Lythgoe6
1Centre for Advanced Biomedical Imaging, Division of Medicine, University College London, London, United Kingdom; 2Division of Imaging Sciences and Biomedical Engineering, London, United Kingdom; 4Institute for Women’s Health, University College London, London, United Kingdom

2714. Quantification of Flow Rates in Short Vessel Segments from Arterial Spin Labeling Dynamic Angiography
Flora A. Kennedy McConnell1, Thomas W. Okell2, Michael A. Chappell1, Stephen J. Payne1
1Institute of Biomedical Engineering, Department of Engineering Science, University of Oxford, Oxford, Oxfordshire, United Kingdom; 2FMRIB Centre, Nuffield Department of Clinical Neurosciences, University of Oxford, Oxford, Oxfordshire, United Kingdom

2715. Assessment of Blood Flow Velocity and Pulsatility in Cerebral Perforating Arteries with 7T Phase Contrast MRI
Lennart J. Geurts1, Willem H. Boun2, Hugo J. Kuijf1, Peter R. Luijten1, L. Jaap Kappelle2, Geert Jan Biessels2, Jaco J.M. Zwanenburg2
1Radiology, UMC Utrecht, Utrecht, Netherlands; 2Neurology, UMC Utrecht, Utrecht, Netherlands; 3Imaging Sciences Institute, UMC Utrecht, Utrecht, Netherlands

2716. Volumetric Quantification of Localized Normalized Helicity in Patients with Bicuspid Valve and Aortic Dilation
Julio Garcia1, Michael Markl1, Jeremy Collins1, James Carr1, Alex J Barker1
1Radiology, Northwestern University, Chicago, IL, United States

2717. Contribution of Early and Late Filling Vortex Rings to Normal Left Ventricular Flow: Quantitative 4D Flow MRI Analysis Using 3D Vortex Cores Combined with Particle Tracing
Mohammed S.M. Elbaz1, Patrick J.H. de Koning1, Jos J.M. Westenberg1, Emmeline E. Calkoen2, Boudewijn P.F. Lelieveldt1, 3, Arno A.W. Roes1, Rob R.J. van der Geest1
1Division of Image Processing, Radiology, Leiden University Medical Center, Leiden, Netherlands; 2Paediatric Cardiology, Leiden University Medical Center, Leiden, Netherlands; 3Intelligent Systems, Delft University of Technology, Delft, Netherlands

2718. Scan-Rescan Reproducibility of Flow and Pressure Difference Using 4D Flow MRI in Pulmonary Artery
Ke Ma1, Zechen Zhou1, Aiqi Sun2, Shuo Chen1, Rui Li1
1Center for Biomedical Imaging Research, Department of Biomedical Engineering, School of Medicine, TsingHua university, Beijing, China

2719. One Step Toward Automating Vessel Detection and Labeling in the Neck for Flow Quantification
Ying Wang1, 2, Jing Jiang1, 3, Paul Kokemey1, Yi Zhong4, E. Mark Haacke1, 4
1Department of Biomedical Engineering, Wayne State University, Detroit, MI, United States; 2College of Information Science and Engineering, Northeastern University, Shenyang, Liaoning, China; 3Department of Radiology, Wayne State University, Detroit, MI, United States; 4MR Innovations, Inc., Detroit, MI, United States

2720. Computational Fluid Dynamics Simulations Guided by Fourier Velocity Encoded MRI
Vinicius Rispoli1, Jon-Fredrik Nielsen2, Krishna Nayak3, Joao Luiz Carvalho4
1University of Brasilia, Brasilia, DF, Brazil; 2University of Michigan, Ann Arbor, MI, United States; 3University of Southern California, Los Angeles, CA, United States
2721. Use of 4D Flow MRI to Investigate If Aortic Tissue Resection Without an Open Distal and Hemi-Arch Procedure Addresses All Regions Suspected for Progression of Bicuspid Aortopathy
Alex J. Barker1, Pin van Ooij1, David Guzzardi2, S. Chris Malaisrie1, Patrick M. McCarthy1, James Carr1, Jeremy Collins1, Michael Marktl1, 4, Paul W. M. Fedak2, 3
1Radiology, Northwestern University, Chicago, IL, United States; 2Department of Cardiac Sciences, University of Calgary, Calgary, AB, Canada; 3Division of Surgery-Cardiary Surgery, Northwestern University, Chicago, IL, United States; 4Biomedical Engineering, Northwestern University, Chicago, IL, United States

2722. Analyzing Myocardial Torsion Based on Tissue Phase Mapping MRI
Teodora Chitiboi1, 2, Susanne Schnell2, Jeremy Collins3, James Carr2, Horst Hahn1, Michael Marktl2
1Fraunhofer MEVIS, Bremen, Germany; 2Radiology, Northwestern University, Chicago, IL, United States

2723. PRESSURE GRADIENT PREDICTION in AORTIC COARCTATION USING a COMPUTATIONAL-FLUID-DYNAMICS MODEL: Validation Against Invasive Pressure Catheterization at Rest and Pharmacological Stress
Julio Sotelo1, 2, Israel Valverde1, 4, Philipp Beerbaum5, Heynric B. Grotenhuis6, Gerald Greil7, Tobias Schaeffter2, Reza Razavi1, Daniel E. Hurtado1, Sergio Uribe1, 4, C. Alberto Figueroa1, 9
1Biomedical Imaging Center, Electrical Engineering Department, Pontificia Universidad Catolica de Chile, Santiago, RM, Chile; 2Structural and Geotechnical Engineering Department, Pontificia Universidad Catolica de Chile, Santiago, RM, Chile; 3Pediatric Cardiology Unit, Hospital Virgen del Rocio, Seville, Spain; 4Cardiovascular Pathology Unit, Institute of Biomedicine of Seville (IBIS), Seville, Spain; 5Hannover Medical University, Hannover, Niedersachsen, Germany; 6Child Cardiology Department, Leiden University, Leiden, Netherlands; 7Division of Imaging Sciences and Biomedical Engineering, King’s College London, London, United Kingdom; 8Radiology Department, School of Medicine, Pontificia Universidad Catolica de Chile, Santiago, Chile; 9Department of Surgery and Biomedical Engineering, University of Michigan, MI, United States

2724. Intra-Scan and Inter-Scan Reproducibility and Variability of Left Ventricular 4D Flow Kinetic Energy Values in Healthy Volunteers.
Victoria Stoll1, Aaron Hess1, Malenka Bissell, Jonatan Eriksson1, Petter Dyverfeldt1, Andrew Lewis, Tino Ebbers2, Saul Myerson, Carl-Johan Carlhäll2, Stefan Neubauer
1Division of Cardiovascular Medicine, OCMR, Oxford, United Kingdom; 2Division of Cardiovascular Medicine and Center for Medical Imaging Science and Visualization (CMIV), Linköping University, Linköping, Sweden

2725. 4D Flow MRI: Analysis of Aortic Hemodynamics After Valve-Sparing Aortic Root Replacement with an Anatomically Shaped Sinus Prosthesis
Thekla Oechtering1, Julian Haegele1, Peter Hnidoll1, Michael Scharfschwerdt2, Markus Huellebrand3, Hans-Hinrich Sievers1, Jörg Barkhaussen1, Alex Frydrychowicz2
1Clinic for Radiology and Nuclear Medicine, University Hospital Schleswig-Holstein, Lübeck, Germany; 2Department of Cardiac and Cardiothoracic Vascular Surgery, University Hospital Schleswig-Holstein, Lübeck, Germany; 3Fraunhofer MEVIS, Bremen, Germany

2726. Application of Full Turbulent Tensor in Estimation of MR-Based Relative Pressure
Sarah Kefayati1, Henrik Haraldsson2, Belén Casas Garcia1, Jonas Lantz1, Tino Ebbers2, David Saloner2
1University of California, San Francisco, San Francisco, CA, United States; 2University of California, San Francisco, CA, United States; 3Linköping University, Sweden

2727. Radial Tissue Phase Mapping Is More Robust Against In-Flow Effects Than Cartesian Tissue Phase Mapping
Jan Paul1, Peter Bernhardt1, Heiko Neumann1, Volker Rasche1
1Internal Medicine II, University Hospital Ulm, Ulm, Germany; 2Institute of Neural Information Processing, University of Ulm, Ulm, Germany

2728. Inter-Study Reproducibility of Interleaved Spiral Phase Velocity Mapping of Renal Artery Blood Flow Velocity
Jennifer Keegan1, Hitesh Patel1, Robin Simpson1, Raad Mohiaddin1, 3, David Firmin3
1Royal Brompton Hospital, London, United Kingdom; 2University of Freiburg, Freiburg, Germany; 3Imperial College, London, United Kingdom
2729. **Investigation of Spatial Flow Profile Pattern in Branch Pulmonary Arteries After Repaired Tetralogy of Fallot**

Pei-Hsun Wu¹, Hsiao-Wen Chung¹, Cheng-Chieh Cheng¹, Ming-Ting Wu², Cheng-Wen Ko¹

¹Institute of Biomedical Electronics and Bioinformatics, National Taiwan University, Taipei, Taiwan; ²Department of Radiology, Kaohsiung Veterans General Hospital, Kaohsiung, Taiwan

2730. **Patients with Corrected Atrioventricular Septal Defect Demonstrate Regionally Disturbed Left Ventricular Inflow Patterns with Decreased LV Ejection Efficiency : A Quantitative Evaluation by 4DFlow MRI and Particle Tracing**

Emmeline Calkoen¹, Patrick de Koning², Rob van der Geest², Albert de Roos², Arno Roest¹, Jos Westenberg²

¹Pediatric Cardiology, LUMC; Leiden, Netherlands; ²Radiology, LUMC, Leiden, Netherlands

2731. **Beat-To-Beat Stroke Volume Estimation Using Magnetohydrodynamic Voltages Induced in Intra-MRI Electrocardiograms**

T. Stan Gregory¹, John Oshinski², Ehud J. Schmidt³, Mikayel Dabaghyan¹, Raymond Y. Kwong¹, William G. Stevenson⁴, ZIon Tsz Ho Tse¹

¹College of Engineering, The University of Georgia, Athens, GA, United States; ²Department of Radiology, Emory University Hospital, Atlanta, GA, United States; ³Department of Radiology, Brigham and Women's Hospital, Boston, MA, United States; ⁴Department of Cardiology, Brigham and Women's Hospital, Boston, MA, United States

2732. **Sub-Millimeter Motion-Corrected Tissue Phase Mapping for Transmural Analysis of LV Motion**

Jan Paul¹, Stefan Wundrak¹, Heiko Neumann¹, Volker Rasche¹

¹Internal Medicine II, University Hospital Ulm, Ulm, Germany; ²Institute of Neural Information Processing, University of Ulm, Ulm, Germany

2733. **Fast Quantification of Global Cerebral Metabolic Rate of Oxygen (CMRO2)**

Suliman Barhoum¹, Michael C. Langham², Jeremy F. Magland², Chamith S. Rajapakse¹, Cheng Li¹, Felix W. Wehrli¹

¹Radiology, University of Pennsylvania, Philadelphia, PA, United States

2734. **Ventilator Gated 4D Flow MRI in Pediatric Patients with CHD: Initial Feasibility and Internal Validation**

Patrick Magrath¹,², Stanislav Rapacchi², Fei Han¹,³,⁴, Peng Hu², J. Paul Finn², Daniel B. Ennis¹,²

¹Bioengineering, University of California, Los Angeles, CA, United States; ²Radiology, University of California, Los Angeles, CA, United States

2735. **4D Flow Imaging Incorporating a Fluid Dynamics Model**

Anthony G. Christodoulou¹, Rebecca Ramb², Marius Menza³, Jürgen Hennig³, Zhi-Pei Liang¹

¹Beckman Institute and Department of Electrical and Computer Engineering, University of Illinois at Urbana-Champaign, Urbana, IL, United States; ²Department of Radiology, Medical Physics, University Medical Center, Freiburg, Baden-Württemberg, Germany

2736. **Quantitative MRI Reveals Impaired Endothelial Function and Vascular Reactivity in Cigarette Smokers**

Michael Langham¹, Yongxia Zhou¹, Erica N. Chirico¹, Erin K. Englund¹, Emile R. Mohler², Jeremy F. Magland¹, Wensheng Guo¹, Felix W. Wehrli¹

¹Radiology, University of Pennsylvania, Philadelphia, PA, United States; ²Medicine, University of Pennsylvania, Philadelphia, PA, United States; ³Biostatistics and Epidemiology, University of Pennsylvania, Philadelphia, PA, United States

2737. **2D PC-MRI with 3D Flow Encoding Acquisitions Only (FEsO) for Accurate Slice Orientation-Independent Blood Flow Measurement**

Da Wang¹,², Peng Hu²,³

¹Department of Radiological Sciences, David Geffen School of Medicine, University of California Los Angeles, Los Angeles, CA, United States; ²Biomedical Physics Interdepartmental Graduate Program, University of California Los Angeles, Los Angeles, CA, United States
2738. Hemodynamic Assessment Of Pulmonary Artery On Smokers With 3.0T Phase-Contrast MR Imaging: Initial Experience
Ruyi Bao1, Qingwei Song2, Ailian Liu2, Zhiyong Li2
1Radiology department, The First Affiliated Hospital of Dalian Medical University, DaLian, LiaoNing, China; 2Radiology department, The First Affiliated Hospital of Dalian Medical University, DaLian, LiaoNing, China

2739. Cerebrospinal Fluid (CSF) Flow In Pediatric Patients With Type I Chiari Malformation Compared To Control Subjects
Samir Sarda1, Joshua J. Chen1, Nilesh K. Desai2, John Oshinski2, 3
1Pediatric Neurosurgery Associates, Children's Healthcare of Atlanta, Atlanta, GA, United States; 2Department of Radiology and Imaging Sciences, Emory University School of Medicine, Atlanta, GA, United States; 3Department of Biomedical Engineering, Georgia Institute of Technology, Atlanta, GA, United States

2740. Robust Phase Contrast Correction With Parallel Imaging
Ana Beatriz Solana Sánchez1, Piero Ghediri2, Ek Tsoon Tan1, Christopher J. Hardy3, Anja Brau2
1GE Global Research, Garching bei Muenchen, Bayern, Germany; 2GE Healthcare, Garching bei Muenchen, Bayern, Germany; 3GE Global Research, Niskayuna, NY, United States

2741. The More the Merrier? Finding the “Right” Temporal Resolution for Blood Velocity Measurements: A Multimodal Study
Francesco Santini1, Oliver Bieri1, Tilman Schubert2
1Radiological Physics, University of Basel Hospital, Basel, Switzerland; 2Department of Radiology, University of Basel Hospital, Basel, Switzerland

2742. Free-Breathing Motion Corrected Phase Contrast Flow Quantification
Hai Xue1, Peter Kellman1, Kendall O’Brien1, Michael Schacht Hansen1
1Magnetic Resonance Technology Program, National Heart, Lung, and Blood Institute, National Institutes of Health, Bethesda, MD, United States; 2Medical Image and Signal Processing Program, National Heart, Lung, and Blood Institute, National Institutes of Health, Bethesda, MD, United States; 3Children's National Medical Center, Washington, DC, United States

2743. Correlation Mapping Technique for Characterizing Pulsatile Cerebrospinal Fluid (CSF) Motion Obtained by Four Dimensional Velocity Mapping
Satoshi Yatsushiro1, Akihiro Hirayama1, Naokazu Hayashi2, Mitsunori Matsumae2, Nao Kajihara1, Afnizanfizal Abdullah1, Kagayaki Kuroda1
1Course of Information Science and Engineering, Tokai University, Hiratsuka, Kanagawa, Japan; 2Department of Neurosurgery, Tokai University School of Medicine, Isehara, Kanagawa, Japan; 3Department of Radiology, Tokai University Hospital, Isehara, Kanagawa, Japan; 4Faculty of Computer Science and Information Systems, Universiti Teknologi Malaysia, Johor, Malaysia

2744. Effects of Temporal Resolution and Velocity Encoding Strategies on Aortic Flow Measurement With Two-Dimensional Phase-Contrast MRI
Can Wu1, 2, Susanne Schnell2, Michael Markl1, 2
1Biomedical Engineering, Northwestern University, Chicago, IL, United States; 2Radiology, Northwestern University, Chicago, IL, United States

2745. Hemodynamic Abnormalities Reflected by High OSI as a Potential Trigger to Atherosclerosis in Non-Dilated Lower Abdominal Aorta.
Masataka Sugiyama1, Yasuo Takehara2, Naoki Oishi2, Marcus Alley3, Tetsuya Wakayama4, Atsushi Nozaki4, Hiroyuki Kubasawa4, Shuei Yamashita4, Harumi Sawakura4
1Radiology, Hamamatsu University School of Medicine, Hamamatsu, Shizuoka, Japan; 2Radiology, Hamamatsu University Hospital, Shizuoka, Japan; 3Radiology, Stanford University School of Medicine, CA, United States; 4Applied Science Laboratory Asia Pacific, GE Healthcare Japan, Tokyo, Japan
2746. **Accelerated 4D Phase Contrast UTE MRI**

Abdallah G. Motaad, Verena Hoerr, Huiming Dong, Luc M. J. Floraek, Klaas Nicolay, Gustav J. Strijkers

1Biomedical NMR, Department of Biomedical Engineering, Eindhoven University of Technology, Eindhoven, North Brabant, Netherlands; 2Department of Clinical Radiology, University Hospital of Muenster, Muenster, Germany; 3Mathematics and Computer Science, Eindhoven University of Technology, Eindhoven, North Brabant, Netherlands

2747. **Comparison of the Accuracy in 2D and 4D PCMRI to Evaluate Oscillating Flow in Small Diameters**

Gwenael Page, Roger Bouzerar, Dominique Haye, Dong-Joo Kim, Hack-Jin Lee, Anne-Virginie Salsac, Olivier Baledent

1BioFlow Image, CHU Amiens, Amiens, France; 2PFT Innovaltech, France; 3Department of Brain and Cognitive Engineering, Korea; 4Laboratoire de Biomecanique et Bioengenerie, CNRS, France

2748. **Validation of Intravascular Pressure Gradients Derived from Four-Dimensional Flow-Sensitive Magnetic Resonance: In Vitro Intraluminal Catheter Comparison Using an Elastic Phantom**

Amir Awwad, Daniel Rodríguez, Marcus Alley, Shane MacSweeney, Sebastian Kozerke, Dorothée P. Auer

1Sir Peter Mansfield Imaging Centre (SPMIC), University of Nottingham, Nottingham, United Kingdom; 2Radiological Sciences Laboratories, Lucas Centre for Imaging, Stanford University, Palo Alto, CA, United States; 3Vascular & Endovascular Surgery Dept., Nottingham University Hospitals NHS Trust, Nottingham, United Kingdom; 4Institute of Biomedical Engineering, University and ETH Zurich, Zurich, Switzerland

2749. **Evaluation of Cardiac Function in Chronic Kidney and Liver Disease**

Charlotte E. Buchanan, Claire Grant, Eleanor F. Cox, Nick M. Selby, Chris W. McIntyre, Maarten W. Taal, Susan T. Francis

1SPMIC, University of Nottingham, Nottingham, Nottinghamshire, United Kingdom; 2Division of Medical Sciences and Graduate Entry Medicine, Royal Derby Hospital, Nottingham, United Kingdom; 3Department of Renal Medicine, Royal Derby Hospital, Derby, United Kingdom; 4Schulich School of Medicine and Dentistry, University of Western Ontario, London, Ontario, Canada; 5Division of Medical Sciences and Graduate Entry Medicine, Royal Derby Hospital, Nottingham, United Kingdom

2750. **The Effect of Resolution on Viscous Dissipation Measured with 4D-Flow MRI in Patients with Fontan Circulation: Evaluation Using Computational Fluid Dynamics**

Merih Cibis, Kelly Jarvis, Michael Mark, Michael Rose, Cynthia Rigby, Alex J. Barker, Jolanda J. Wentzel

1Biomedical Engineering, Erasmus MC, Rotterdam, Netherlands; 2Radiology, Northwestern University, Chicago, IL, United States; 3Biomedical Engineering, Northwestern University, Chicago, IL, United States; 4Medical Imaging, Ann & Robert H Lurie Children’s Hospital of Chicago, Chicago, IL, United States

2751. **Multi-Venc Measurement of Phase Contrast MRI for Improving Accuracy of Velocity Field**

Hojin Ha, Guk Bae Kim, Jihoon Kweon, Young-Hak Kim, Namkug Kim, Dong Hyun Yang, Sang Joon Lee

1Department of Mechanical Engineering, Pohang University of Science and Technology, Pohang, Gyeongbuk, Korea; 2Asan Institute of Life Science, Asan Medical Center, University of Ulsan College of Medicine, Seoul, Korea; 3Department of Cardiology, Asan Medical Center, University of Ulsan College of Medicine, Seoul, Korea; 4Department of Radiology, Asan Medical Center, University of Ulsan College of Medicine, Seoul, Korea; 5Department of Convergence Medicine, Asan Medical Center, University of Ulsan College of Medicine, Seoul, Korea

2752. **Improved Full Turbulence Tensor Quantification Using ICOSA6 Flow Encoding for Phase-Contrast MRI**

Henrik Haraldsson, Sarah Kefayati, Belén Casas García, Jonas Lantz, Tino Ebbets, David Saloner

1University of California, San Francisco, San Francisco, CA, United States; 2University of Linkoping, Sweden

2753. **Noninvasive Measurement of Intravascular Pressure Gradients Based on 3D Anatomy and 4D Flow Image Fusion**

Hanieh Mirzaee, Anja Hennemuth

1Fraunhofer MEVIS, Bremen, Germany
2754. **Steady-State 4D Flow Using Double Gating: A Healthy Volunteer Study**
Stanislas Rapacchi\(^1\), Yutaka Natsuaki\(^2\), Paul J. Finn\(^3\), Gerhard Laub\(^4\), Daniel Ennis\(^5\), Peng Hu\(^6\)
\(^1\)CRMBM, Aix-Marseille University, Marseille, France; \(^2\)Radiology, UCLA, Los Angeles, CA, United States; \(^3\)Siemens, Los Angeles, CA, United States; \(^4\)Siemens, CA, United States

2755. **Thoracic Aorta Flow Sensitive 4D MR Imaging in Hypertension**
Lizhen Cao\(^1\), Zhiyuan Dong\(^1\), Aurélien F. Stalder\(^2\), Xiangying Du\(^1\), Tianjing Zhang\(^1\), Andreas Greiser\(^1\), Kun Cheng Li\(^1\)
\(^1\)The Department of Radiology, Xuanwu Hospital of Capital Medical University, Beijing, China; \(^2\)Siemens AG Healthcare Sector, Erlangen, Germany; \(^3\)Siemens MR Northeastern Collaboration, Beijing, China

### Traditional Poster
#### Diffusion - Simulation & Validation

**Exhibition Hall Thursday 13:30-15:30**

2756. **Monte Carlo Diffusion Simulations Disambiguate the Biophysical Mechanisms of Diffusion Hinderance Along Tracts**
Michiel Kleinnijenhuis\(^1\), Jeroen Mollink\(^1\), Paul Kinchesh\(^1\), Wilfred W. Lam\(^1\), Vitaly L. Galinsky\(^1\), Lawrence R. Frank\(^1\), Sean C. Smart\(^2\), Saad Jbabdi\(^1\), Karla L. Miller\(^1\)
\(^1\)FMRI Centre, University of Oxford, Oxford, United Kingdom; \(^2\)Department of Oncology, University of Oxford, Oxford, United Kingdom; \(^3\)Center for Scientific Computation in Imaging, University of California San Diego, La Jolla, United States

2757. **Theoretical Study of the Free Water Elimination Model**
Quinten Collier\(^1\), Jelle Veraart\(^1,2\), Ben Jeurissen\(^1\), Arnold J. den Dekker\(^1,3\), Jan Sijbers\(^1\)
\(^1\)iMinds-Vision Lab, University of Antwerp, Antwerp, Belgium; \(^2\)Center for Biomedical Imaging, New York University Langone Medical Center, New York, United States; \(^3\)Delft Center for System and Control, Delft University of Technology, Delft, Netherlands

2758. **Quantitative Evaluation of Eddy Current Distortion as Part of Quality Assurance Protocol for Multicenter DTI Trial at 3T**
Xiaopeng Zhou\(^1\), Ken Sakaie\(^1\), Robert Fox\(^1\), Mark Lowe\(^1\)
\(^1\)The Cleveland Clinic, Cleveland, OH, United States

2759. **Calibrating High Q-Value Diffusion MRI Methods with a Novel Anisotropic Phantom**
Michal Komlósh\(^1\), Dan Benjamini\(^2\), Alan S. Barnett\(^3\), Ferenc Horkay\(^3\), Peter J. Basser\(^3\)
\(^1\)NICHD/NIH, Bethesda, MD, United States; \(^2\)CNRM/USUHS, Bethesda, MD, United States; \(^3\)NICHD/NIH, MD, United States; \(^4\)The Iby and Aladar Fleischman Faculty of Engineering, Tel-Aviv University, Israel

2760. **A Highly Standardized, Easy to Produce and Cost-Effective Isotropic PVP Diffusion Phantom for Quality Assessment and Multi-Center Studies**
Pim Pullens\(^1\), Piet Bladt\(^1\), Paul M. Parizel\(^1\)
\(^1\)Radiology, University Hospital Antwerp & University of Antwerp, Antwerp, Belgium

2761. **Diffusion Tensor Imaging of Thirty-Five Anisotropic DTI Phantoms for CENTER-TBI**
Pim Pullens\(^1\), Michael Bach\(^1\), Bram Stieltjes\(^1\), Dirk Smeets\(^1\), Paul M. Parizel\(^1\)
\(^1\)Radiology, University Hospital Antwerp & University of Antwerp, Antwerp, Belgium; \(^2\)Medical Physics in Radiology, German Cancer Research Center (DKFZ), Heidelberg, Germany; \(^3\)Radiology, Universitätsspital Basel, Basel, Switzerland; \(^4\)icometrix, Leuven, Belgium

2762. **Quantitative Quality Assurance Metrics in a High Angular Resolution Diffusion Imaging (HARDI) Multicenter Study**
Xiaopeng Zhou\(^1\), Ken Sakaie\(^1\), Josef Debbins\(^2\), Robert Fox\(^1\), Mark Lowe\(^1\)
Traditional Poster

2763. Efficient Gradient Calibration Based on Diffusion MRI
Irvin Teh1, Mahon L. Maguire1, Jürgen E. Schneider1
1Division of Cardiovascular Medicine, Radcliffe Department of Medicine, University of Oxford, Oxford, United Kingdom

2764. Gradient Nonlinearity Correction on ADC Measurement: A Multi-Platform Study on Diffusion Weighted Imaging
Chien-Lin Yeh1, 2, Ruoyun Ma1, 2, Brain Dale1, Thomas L. Chenevert1, Michael A. Boss1, Chen Lin2
1School of Health Sciences, Purdue University, West Lafayette, IN, United States; 2Radiology and Imaging Sciences, Indiana University School of Medicine, Indianapolis, IN, United States; 3Siemens Medical Solutions, NC, United States; 4Department of Radiology, University of Michigan Health System, MI, United States; 5Electromagnetics Division, National Institute of Standards and Technology, CO, United States

2765. Evaluation of MR Contrast in Cleared Tissue
Christoph Leuze1, Raju Tomer3, Qiuyan Tian1, Emily Ferenczi2, Dan Spielman1, Michael Zeineh1, Karl Deisseroth2, 3, Jennifer A. McNab1
1Radiology, Stanford University, Stanford, CA, United States; 2Bioengineering, Stanford University, Stanford, CA, United States; 3Psychiatry and Behavioural Sciences, Stanford University, Stanford, CA, United States

2766. Quantification of 3D Microscopic Tissue Features in CLARITY Data for Comparison with Diffusion MRI
Qiuyan Tian1, Christoph W.U. Leuze1, Raju Tomer3, Emily Ferenczi2, Michael Zeineh1, Karl Deisseroth2, 3, Jennifer McNab1
1Electrical Engineering, Stanford University, Stanford, CA, United States; 2Radiology, Stanford University, Stanford, CA, United States; 3Bioengineering, Stanford University, Stanford, CA, United States; 4Bioengineering, Stanford University, Stanford, CA, United States; 5Psychiatry and Behavioral Sciences, Stanford University, Stanford, CA, United States

Traditional Poster
Modeling & Microstructure
Exhibition Hall Thursday 13:30-15:30

2767. In Vivo Mouse Brain NODDI Acquired at 9.4T Using Cryogenic Probe
Van Thu Nguyen1, Farshid Sepehrband2, Othman Alomair1, Suyinn Chong2, Karine Mardon1, Quang Tieng1, Graham Galloway1, Nyoman Kurniawan1
1Centre for Advanced Imaging, The University of Queensland, Brisbane, QLD, Australia; 2Mater Research Institute, The University of Queensland, Brisbane, QLD, Australia

2768. ABTIN: Absolute Tissue Density from NODDI, Focusing on Myelin Density
Farshid Sepehrband1, 2, Kristi A. Clark3, Jeremy F. P Ullmann1, Nyoman D. Kurniawan1, Gayeshika Leanage1, David C. Reutens1, Zhengyi Yang1, 4
1Centre for Advanced Imaging, University of Queensland, Brisbane, Queensland, Australia; 2Queensland Brain Institute, University of Queensland, Brisbane, Queensland, Australia; 3Institute for Neuroimaging and Informatics, University of Southern California, Los Angeles, CA, United States; 4School of Information Technology and Electrical Engineering, University of Queensland, Brisbane, Queensland, Australia

2769. MRI Measurement of Three-Dimensional Morphological Features of Axons
Dan Benjamini1, 2, Peter J. Basser3
1National Institute of Health, Bethesda, MD, United States; 2Tel Aviv University, Tel Aviv, Israel

2770. In-Vivo Measurements of Axon Radius and Density in the Corpus Callosum Using Anomalous Diffusion from Diffusion MRI
Qiang Yu1, Viktor Vegh1, Kieran O'Brien2, 3, Thorsten Feiweier1, David Reutens1
2771. Reconstruction of Size Distribution of Cellular-Sized Pores Using DWI with Clinically Applicable Gradients
Yaniv Katz1, Dan Benjamin1, 2, Peter J. Bassett1, Uri Nevo1
1Biomedical Engineering, Tel Aviv University, Ramat Aviv, Tel Aviv, Israel; 2Eunice Kennedy Shriver National Institute of Child Health and Human Development (NICHD), National Institutes of Health, Bethesda, MD, United States

Björn Lampinen1, Danielle van Westen1, 2, Freddy Stählberg1, 2, Jimmy Lätt1, Oskar Hansson1, Markus Nilsson1
1Dpt. of Medical Radiation Physics, Lund University, Lund, Sweden; 2Dpt. of Diagnostic Radiology, Lund University, Lund, Sweden; 3Imaging and function, Skane University Health Care, Lund, Sweden; 4Clinical Memory Research Unit, Clinical Sciences, Malmö, Lund University, Lund, Sweden; 5Lund University Bioimaging Center, Lund University, Lund, Sweden

2773. Cell Size, Intracellular Volume Fraction and Membrane Permeability Weighted Imaging: A Monte Carlo Study
Damien J. McHugh1, 2, Penny L. Hubbard Cristinacce1, 2, Josephine H. Naish1, 2, Geoff J M Parker1, 2
1Centre for Imaging Sciences, The University of Manchester, Manchester, United Kingdom; 2Biomedical Imaging Institute, The University of Manchester, Manchester, United Kingdom

2774. ActiveAx Using Dictionary Learning with Electron Microscopy Validation
Farshid Sepehrband1, 2, Daniel C. Alexander1, Nyoman D. Kurniawan1, David C. Reuten1, Zhengyi Yang1, 2
1Centre for Advanced Imaging, University of Queensland, Brisbane, Queensland, Australia; 2Centre for Medical Image Computing, University College London, London, United Kingdom; 3School of Information Technology and Electrical Engineering, University of Queensland, Brisbane, Queensland, Australia

2775. Validation of Extra-Axonal Diffusion Spectrum Model with Frequency-Dependent Restriction
Wilfred W. Lam1, Bernard Siow1, 2, Lauren Burcaw1, Daniel C. Alexander1, 2, Mark F. Lythgoe1, Karla L. Miller1, Saad Jhabli1
1FMRIB Centre, University of Oxford, Oxford, United Kingdom; 2Centre for Advanced Biomedical Imaging, University College London, London, United Kingdom; 3Centre for Medical Image Computing, University College London, London, United Kingdom; 4Department of Radiology, New York University School of Medicine, New York, NY, United States

2776. Longitudinally Hindered Diffusion of In Vivo Human White Matter at Long Diffusion Time
Wilfred W. Lam1, Karla L. Miller1, Michiel Kleinnijenhuis1, Saad Jhabli1
1FMRIB Centre, University of Oxford, Oxford, United Kingdom

2777. Low-Pass Filter Effect of Finite Gradient Duration on Time-Dependent Diffusion in the Human Brain
Hong-Hsi Lee1, Lauren M. Burcaw1, Jelle Veraart1, Els Fieremans1, Dmitry S. Novikov1
1Center for Biomedical Imaging, NYU Langone Medical Center, New York, United States

2778. Can We Make QSI Clinically Feasible? : A Study of Short Step QSI
Koji Sakai1, Jun Tazoe2, Hajime Yokota2, Thorsten Feiweier4, Kenzato Akazawa2, Hiroyasu Ikeno2, Kei Yamada2
1Kyoto University, Kyoto, Japan; 2Kyoto Prefectural University of Medicine, Kyoto, Japan; 3Siemens AG, Erlangen, Germany; 4Johns Hopkins University, MD, United States

2779. Cellular-Level Investigation of a Diffusion Time Dependent Contrast Enhancement Technique for Oncological Imaging
Jeremy J. Flint1, 2, Brian Hansen3, Stephen J. Blackband1, 4
1Centre for Advanced Imaging, University of Queensland, Brisbane, Queensland, Australia; 2Healthcare Sector, Siemens Ltd, Brisbane, Queensland, Australia; 3Siemens Healthcare, Erlangen, Germany
Oscillating Gradient Diffusion MRI as a Biomarker for Early Detection of Radiation Therapy Response

Andres Bongers1, Han Shen1, Erika Davies1, Eric Hau.2

1Mark Wainwright Analytical Centre, University of New South Wales, Sydney, NSW, Australia; 2Adult Cancer Program, University of New South Wales, Sydney, NSW, Australia

NODDI Analyses Can Demonstrate Differences of Tissue Microstructure Between Brain Metastasis and Meningioma

Yuichi Suzuki1, Kouhei Kamiya1, Masaki Katsura1, Harushori Mori1, Akira Kunimatsu1, Aktake Mukasa2, Katsuya Maruyama1, Yasushi Watanabe1, Takeo Sarashina1, Kenji Ino1, Masami Goto1, Jiro Sato1, Keiichi Yano1, Nobuhto Saito2, Kuni Ohtomo1

1Department of Radiology, The University of Tokyo Hospital, Bunkyo-ku, Tokyo, Japan; 2Department of Neurosurgery, The University of Tokyo Hospital, Bunkyo-ku, Tokyo, Japan; 3Siemens Japan K.K., Tokyo, Japan

Neurite Orientation Dispersion and Density Imaging Could Show the Microstructural Changes of Cortico-Spinal Tract in Patients with Idiopathic Normal Pressure Hydrocephalus

Kohei Tsuruta1, 2, Ryusuke Irie1, Masaki Katsura1, Harushori Mori1, Akira Kunimatsu1, Aktake Mukasa2, Katsuya Maruyama1, Yasushi Watanabe1, Takeo Sarashina1, Kenji Ino1, Masami Goto1, Jiro Sato1, Keiichi Yano1, Nobuhto Saito2, Kuni Ohtomo1

1Tokyo Metropolitan University, Arakawa-ku, Tokyo, Japan; 2Juntendo University School of Medicine, Bunkyo-ku, Tokyo, Japan; 3Faculty of Information Sciences and Graduate School of Information Sciences, Hiroshima City University, Hiroshima, Japan; 4Radiology, The University of Tokyo Hospital, Tokyo, Japan

Diffusion Restriction Along Fibres: How Coherent Is the Corpus Callosum?

Jeroen Mollink1, Michiel Kleinnijenhuis1, Stamatios N. Sotiropoulos2, Olaf Ansorge2, Saad Jbabdi1, Karla L. Miller1

1Nuffield Department of Clinical Neurosciences, Neuropathology, University of Oxford, Oxford, Oxfordshire, United Kingdom; 2Nuffield Department of Clinical Neurosciences, Neuropathology, University of Oxford, Oxford, Oxforshire, United Kingdom

Can Diffusion Weighted Spectroscopy (DWS) in Brain White Matter Become a Viable Clinical Tool? a Re-Productibility/robustness Study at 3T and 7T

Ece Ercan1, Emily T. Wood1, 2, Andrew Webb1, Daniel S. Reich2, Itamar Ronen1

1C. J. Gorter Center for High Field MRI, Department of Radiology, Leiden University Medical Center, Leiden, Netherlands; 2Translational Neuroradiology Unit (NINDS), National Institutes of Health, Bethesda, MD, United States; 3Department of Neuroscience, Johns Hopkins University School of Medicine, Baltimore, MD, United States

Estimation of Microstructural Properties of Fixed Corpus Callosum from OGSE Measurements

Wilfred W. Lam1, Bernard Sliv2, 3, Sean Foxley1, Steven A. Chance1, Rogier B. Mars3, 4, Daniel C. Alexander2, 4, Mark F. Lutge1, Karla L. Miller1, Saad Jbabdi1

1FMRIB Centre, University of Oxford, Oxford, United Kingdom; 2Centre for Advanced Biomedical Imaging, University College London, London, United Kingdom; 3Centre for Medical Image Computing, University College London, London, United Kingdom; 4Division of Clinical Neurology, University of Oxford, Oxford, United Kingdom; 5Department of Experimental Psychology, University of Oxford, Oxford, United Kingdom

Investigating the Extracellular Contribution to the Double-Wave-Vector Diffusion-Weighted Signal

Patricia Ulloa1, Viktor Wottschel2, Martin A. Koch1

1Institute of Medical Engineering, University of Lübeck, Lübeck, Germany; 2Queen Square MS Centre, UCL Institute of Neurology, University College London, London, United Kingdom
2787. Simultaneous Determination of Pore Sizes and Direction in Tilted Microcapillaries by Angular-Double-Pulsed-Field-Gradient (D-PFG) NMR.
Darya Morozov¹, Leah Bar¹, Nir Sochen¹, Yoram Cohen¹
¹The Raymond and Beverly Sackler Faculty of Exact Science, Tel-Aviv University, Tel-Aviv Yaffo, Israel

2788. Isotropic Diffusion Weighting Provides Insight on Diffusion Compartments in Human Brain White Matter In Vivo
Bibek Dhital¹, ², Elias Kellner, Marco Reisert, Valerij G. Kiselev
¹German Cancer Consortium (DKTK), Heidelberg, Baden, Germany; ²Department of Diagnostic Radiology, University Medical Center, Freiburg, Baden, Germany

2789. Multi-Exponential Characteristics of Acetate Diffusion-Weighted MRS Signal in the In Vivo Rat Brain at 14.1T
Masoumeh Dehghani M. ¹, Nicolas Kunz², Bernard Lanz³, Rolf Gruetter,² ³
¹Laboratory for Functional and Metabolic Imaging, École Polytechnique Fédérale de Lausanne, Lausanne, Vaud, Switzerland; ²Centre d’Imagerie Biomédicale, École Polytechnique Fédérale de Lausanne, Lausanne, Vaud, Switzerland; ³Laboratory for Functional and Metabolic Imaging, École Polytechnique Fédérale de Lausanne, Lausanne, Vaud, Switzerland

2790. Investigation of NODDI Estimates at Two Different Magnetic Fields Along the Rat Corpus Callosum
Nicolas Kunz¹, Stéphane Sizonenko², Petra Susan Hipp³, Rolf Gruetter,² ³, Yohan van de Looij⁴
¹CBM-AIT, EPFL, Lausanne, Vaud, Switzerland; ²Division of Child Growth and Development, University of Geneva, Geneva, Switzerland; ³Department of Radiology, University of Geneva and Lausanne, Lausanne, Switzerland; ⁴University of Geneva, Division of Child Growth and Development, Geneva, Switzerland

Traditional Poster

Exhibition Hall Thursday 13:30-15:30

2791. Minimizing Diffusion Encoding of Slice Selection in Stimulated Echo Imaging
Paul Kinchesh¹, Michiel Kleinnijenhuis², Karla L. Miller², Sean C. Smart¹
¹Department of Oncology, University of Oxford, Oxford, United Kingdom; ²FMRIB Centre, Nuffield Department of Clinical Neurosciences, University of Oxford, United Kingdom

2792. Confounding Effects of Imaging Gradients in Stimulated Echo: Case of Diffusion Exchange Imaging
Samo Lasic¹, Henrik Lundell², Casper Kaas Sonderby², Daniel Topgaard³, Tim B. Dyrby²
¹CR Development, Lund, Skåne, Sweden; ²Danish Research Centre for Magnetic Resonance, Copenhagen University Hospital, Hvidovre, Denmark; ³Physical Chemistry, Lund University, Lund, Skåne, Sweden

2793. A Crusher Gradient Scheme for Stimulated Echo Double Wave Vector Diffusion Imaging for 7T Human MRI
Grant Kaijuin Yang¹, ², Christoph W.U. Leuze², Jennifer McNab²
¹Electrical Engineering, Stanford University, Stanford, CA, United States; ²Radiology, Stanford University, Stanford, CA, United States

Yogesh Rathi¹, Samo Lasic², Tim Dyrby¹, Carl-Fredrik Westin³
¹Harvard Medical School, Boston, MA, United States; ²Colloidal Resource, Sweden; ³Danish Research Centre for Magnetic Resonance, Denmark; ⁴Harvard Medical School, MA, United States

2795. Characterizing Diffusion Anisotropy for Molecules Under the Influence of a Parabolic Potential: A Plausible Alternative to DTI
Maryam Afzali¹, Cem Yolcu², ³, Evren Ozarslan¹
¹Harvard Medical School, Boston, MA, United States; ²Danish Research Centre for Magnetic Resonance, Copenhagen, Denmark; ³Harvard Medical School, MA, United States
2796. **Real Diffusion Weighted MRI Enabling True Signal Averaging and Increased Diffusion Contrast**


1Martinos Center for Biomedical Imaging, Boston, MA, United States; 2Max Planck Institute for Human Cognitive and Brain Sciences, Leipzig, SX, Germany; 3École Polytechnique, University of Montreal, Montreal, QC, Canada

2797. **Reduced Blurring in Diffusion-Weighted EPI Using a Dual-Shot, Reverse-Gradient Sequence with Asymmetric K-Space Splicing and Inherent Distortion Correction**

*Wei Liu*, 1, *Kun Zhou*, 1, *David A. Porter* 2

1Siemens Shenzhen Magnetic Resonance Ltd., Shenzhen, Select, China; 2Fraunhofer MEVIS, Institute for Medical Image Computing, Bremen, Germany

2798. **Slice Acceleration Without Parallel Imaging for Diffusion-Weighted Echo-Planar Imaging of the Cervical Spinal Cord**

*Jürgen Finsterbusch* 1, 2

1Department of Systems Neuroscience, University Medical Center Hamburg-Eppendorf, Hamburg, Germany; 2 Neuroimage Nord, University Medical Centers Hamburg-Kiel-Lübeck, Hamburg-Kiel-Lübeck, Germany

2799. **High Resolution Spine Diffusion Imaging Using 2D-Navigated Interleaved EPI with Shot Encoded Parallel-Imaging Technique (SEPARATE)**

*Xiaodong Ma*, 1, *Zhe Zhang*, 1, *Yishi Wang*, 1, *Erpeng Dai*, 1, *Hua Guo* 1

1Center for Biomedical Imaging Research, Department of Biomedical Engineering, School of Medicine, Tsinghua University, Beijing, China

2800. **Motion-Compensated Iterative Self-Consistent Parallel Imaging (SPIRiT) and Analytical Q-Ball Imaging Reconstruction for High Spatial and Angular Resolution Diffusion Imaging with Multi-Shot Multi-Channel Non-Cartesian Data**


1Center for Brain Imaging Science and Technology, Zhejiang University, Hangzhou, Zhejiang, China; 2University of Iowa, IA, United States

2801. **Regularized SENSE+CG with a Fast and Stable Convergence for Reconstruction in Multi-Shot Navigator-Free Diffusion Weighted Spiral Imaging**


1Department of Biomedical Engineering, Tsinghua University, Beijing, China; 2Healthcare Department, Philips Research China, Shanghai, China; 3Brain Imaging and Analysis Center, Duke University, Durham, NC, United States

2802. **Enhancing Diffusion Weighted Image (DWI) Quality with Navigator-MUSE**

*Mark H. Sundman*, 1, *Hing-Chiu Chang*, 1, *Dan Xu*, 1, *Arnaud Guidon*, 1, *Nan-kuai Chen* 1

1Brain Imaging and Analysis Center, Duke University Medical Center, Durham, NC, United States; 2Global MR Applications and Workflow, GE Healthcare, Waukesha, WI, United States; 3Global MR Applications and Workflow, GE Healthcare, Boston, MA, United States

2803. **Evidence of Rotational Dependency on Standard DTI Measurements**


1Brain plasticity and neurodegeneration, German Center for Neurodegenerative Diseases (DZNE), Magdeburg, Germany; 2Department of Neurology, Otto-von-Guericke University, Magdeburg, Germany; 3German Center for Neurodegenerative Diseases (DZNE), Rostock, Germany
2804. Reproducibility and Variation in Diffusion Measures of the In Vivo and Ex Vivo Squirrel Monkey Brain
Kurt Schilling¹, Yurui Gao¹, Iwona Stepniewska², Ann S. Choe¹, Bennett A. Landman³, Adam W. Anderson¹
¹VUHIS, Vanderbilt University, Nashville, TN, United States; ²Psychology, Vanderbilt University, Nashville, United States; ³Electrical Engineering, Vanderbilt University, Nashville, TN, United States

Traditional Poster
Diffusion Processing & Analysis
Exhibition Hall Thursday 13:30-15:30

2805. Why Should Standard Eddy-Current Distortion Correction Techniques Be Avoided Even for Moderately High B-Value Data?
Mark S. Graham¹, Ivana Drobnjak¹, Hui Zhang¹
¹Department of Computer Science and Centre for Medical Image Computing, UCL, London, United Kingdom

2806. DTI Geometric Distortion Correction by Non-Linear Registration and Field Map Correction: Quantitative Analysis of DTI Tractography and Fractional Anisotropy
David Rotenberg², Peter Savadjiev², Yogesh Rathi², Aristotle Voinoseskos³, ⁴, M. Mallar Chakravarty⁵, ⁶
¹Research Imaging Centre, Centre for Addiction and Mental Health, Toronto, Ontario, Canada; ²Laboratory of Mathematics and Imaging, Harvard Medical School, MA, United States; ³Centre for Addiction and Mental Health, Ontario, Canada; ⁴Department of Psychiatry, University of Toronto, Ontario, Canada; ⁵Cerebral Imaging Centre, Douglas Mental Health University Institute, Quebec, Canada; ⁶Department of Psychiatry, McGill University, Quebec, Canada

2807. Investigations on Motion Corruption for Diffusion Weighted Imaging from Population Analysis
Yishi Wang², Zhe Zhang³, Xue Zhang³, Xuesong Li³, Sheng Xie³, Chun Yuan¹, ², Hua Guo¹
¹Center for Biomedical Imaging Research, Department of Biomedical Engineering, School of Medicine, Tsinghua University, Beijing, China; ²Department of Radiology, China-Japan Friendship Hospital, Beijing, China; ³Department of Radiology, University of Washington, Seattle, WA, United States

2808. Ghost Artifact Removal Using Texture Analysis in Spinal Cord Diffusion Tensor Images
Mahdi Alizadeh¹, ², Pallav Shah², Devon M. Middleton¹, ², Chris J. Conklin, ³, ⁴, Sona Saksena², Scott H. Faro, ¹, ², MJ Mulcahey¹, Jürgen Finsterbusch³, ⁴, Feroze B. Mohamed, ¹, ²
¹Bioengineering, Temple university, Philadelphia, PA, United States; ²Radiology, Temple university, PA, United States; ³Electrical Engineering, Temple university, PA, United States; ⁴Occupational Therapy, Thomas Jefferson University, PA, United States; ⁵Systems Neuroscience, University Medical Center Hamburg-Eppendorf, Hamburg, Germany

2809. Gibbs Ringing Removal in Diffusion MRI Using Second Order Total Variation Minimization
Jelle Veraart¹, Florian Knoll¹, Jan Sijbers², Els Fieremans¹, Dmitry S. Novikov¹
¹Center for Biomedical Imaging, NYU Langone Medical Center, New York, NY, United States; ²iMinds - Vision Lab, University of Antwerp, Antwerp, Belgium

2810. Connectome-Like Quality Diffusion MRI in 13 Minutes - Improving Diffusion MRI Spatial Resolution with Denoising
Samuel St-Jean¹, Guillaume Gilbert², Maxime Descoteaux¹
¹Sherbrooke Connectivity Imaging Lab (SCIL), Université de Sherbrooke, Sherbrooke, Québec, Canada; ²MR Clinical Science, Philips Healthcare, Markham, Ontario, Canada

2811. Model-Based Diffusion Tensor Denoising with Tensor and FA Smoothness Constraints
Xi Peng¹, Shanshan Wang¹, Yuanyuan Liu¹, Dong Liang¹
¹Paul C. Lauterbur Research Centre for Biomedical Imaging, Shenzhen Institutes of Advanced Technology, Shenzhen, Guangdong, China
We demonstrate coherent patterns of crossing fibers in the in vivo human cerebral cortex using high-angular resolution and high spatial resolution diffusion imaging.

**2812. High Resolution IVIM Parameter Maps in the Presence of Rician Noise**
Alexander M. Cerjanic1, 2, Joseph L. Holtrop1, 2, Bradley P. Sutton1, 2
1Bioengineering, University of Illinois at Urbana-Champaign, Urbana, IL, United States; 2Beckman Institute of Advanced Science and Technology, University of Illinois at Urbana-Champaign, Urbana, IL, United States

**2813. Denoising Diffusion-Weighted Images by Using Higher-Order Singular Value Decomposition**
Xinyuan Zhang1, Man Xu1, Zhe Zhang2, Hua Guo2, Fan Lam1, Zhipeng Liang1, Qianjin Feng1, Wufan Chen1, Yanqiu Feng2
1Biomedical Engineering, Guangdong Provincial Key Laboratory of Medical Image Processing, Southern Medical University, Guangzhou, Guangdong, China; 2Biomedical Engineering, Center for Biomedical Imaging Research, Tsinghua University, Beijing, China; 3Electrical and Computer Engineering, University of Illinois at Urbana-Champaign, Urbana, IL, United States

**2814. Accelerated Microstructure Imaging Via Convex Optimization (AMICO) in Crossing Fibers**
Anna Auria1, Eric Canales-Rodriguez2, 3, Yves Wiaux4, Tim Dirby5, Daniel Alexander6, Jean-Philippe Thiran7, 8, Alessandro Daducci4, 6
1Signal Processing Lab (LTS5), EPFL, Lausanne, Switzerland; 2FIDMAG Germans Hospitalàries, Barcelona, Spain; 3Centro de Investigacion Biomédica en Red de Salud Mental, CIBERSAM, Spain; 4Institute of Sensors, Signals and Systems, Heriot-Watt University, Edinburgh, United Kingdom; 5Danish Research Centre for Magnetic Resonance, Copenhagen University Hospital Hvidovre, Denmark; 6Department of Computer Science and Centre for Medical Image Computing, University College London, United Kingdom; 7Signal Processing Lab (LTS5), EPFL, Switzerland; 8University Hospital Center (CHUV) and University of Lausanne (UNIL), Switzerland

**2815. Diffusion in Realistic Biophysical Systems May Lead to Aliasing Effects in Diffusion Spectrum Imaging**
Luis Miguel Lacerda1, Jonathan I. Sperl1, Marion I. Menzel1, Gareth Barker1, Flavio Dell’Acqua1
1Department of Neuroimaging, The Institute of Psychiatry, Psychology & Neuroscience, King's College London, London, Denmark Hill, United Kingdom; 2GE Global Research, Munich, BY, Germany

**2816. A New Linear Transform Approach for Estimating ODFs from Multi-Shell Diffusion Data**
Divya Varadarajan1, Justin P. Haldar1
1Electrical Engineering, University of Southern California, Los Angeles, CA, United States

**2817. Diffusion Spectrum Imaging from Undersampled Data Using Tensor Fitting**
Gabriel Varela-Mattatall1, 2, Alexandra Tobisch2, 3, Tony Stoecker4, 5, Pablo Irarrazaval6, 5
1Biomedical Imaging Center, Pontificia Universidad Catolica de Chile, Santiago, Metropolitan District, Chile; 2German Center for Neurodegenerative Diseases, North Rhine-Westphalia, Germany; 3Department of Computer Science, University of Bonn, North Rhine-Westphalia, Germany; 4Department of Physics and Astronomy, University of Bonn, North Rhine-Westphalia, Germany; 5Biomedical Imaging Center, Pontificia Universidad Catolica de Chile, Metropolitan District, Chile; 6Department of Electrical Engineering, Pontificia Universidad Catolica de Chile, Metropolitan District, Chile

**2818. Diffusion Textures: A Novel Way to Represent Brain Tissue Microstructure**
Marco Reisert1, Katharina Göbel1, Bibek Dhiwal1
1Medical Physics, University Medical Center Freiburg, Freiburg, Germany

**2819. In Vivo Measurement of Intra-Voxel Crossing Fibers in the Cerebral Cortex Using Diffusion MRI**
Qiyuan Tian1, Christoph W.U. Leue2, Ariel Rokem1, Jennifer A. McNab1
1Department of Electrical Engineering, Stanford University, Stanford, CA, United States; 2Department of Radiology, Stanford University, CA, United States; 3Psychology, Stanford University, CA, United States

**2820. Diffusion Reconstruction by Combining Spherical Harmonics and Generalized Q-Sampling Imaging**
Sudhir K. Pathak1, Catherine Fissell2, Deepa Krishnaswamy1, Sowmya Aggarwal1, Rebecca Hachey2, Walter Schneider2
1Biomedical Engineering, University of Illinois at Urbana-Champaign, Urbana, IL, United States; 2Psychology, Stanford University, CA, United States
Reconstruction of Convex Polynomial Diffusion MRI Models Using Semi-Definite Programming

Tom Dela Haije\textsuperscript{1}, Andrea Fuster\textsuperscript{1}, Luc Florack\textsuperscript{1}

\textsuperscript{1}Mathematics and Computer Science, Eindhoven University of Technology, Eindhoven, Noord-Brabant, Netherlands

The Diffusion-ODF as a Band-Pass Filter - Selecting the Right Diffusion and Improving Angular Resolution

Luis Miguel Lacerda\textsuperscript{1}, Jonathan I. Sperl\textsuperscript{2}, Marion I. Menzel\textsuperscript{2}, Gareth Barker\textsuperscript{1}, Flavio Dell’Acqua\textsuperscript{1}

\textsuperscript{1}Department of Neuroimaging, The Institute of Psychiatry, Psychology & Neuroscience, King’s College London, London, Denmark Hill, United Kingdom; \textsuperscript{2}GE Global Research, Munich, BY, Germany

Analysis of Neuronal Fiber Orientation Distribution in Gray Matter and at Gray-White Matter Borders Using Spherical Deconvolution of High-Resolution (1.4 Mm) 7T DWI Data

Ralf Luetzkendorf\textsuperscript{1}, Robin M. Heidemann\textsuperscript{2}, Thorsten Feiweier\textsuperscript{2}, Joerg Stadler\textsuperscript{3}, Sebastian Baecke\textsuperscript{1}, Michael Luchtmann\textsuperscript{4}, Johannes Bernarding\textsuperscript{1}

\textsuperscript{1}Department for Biometry and Medical Informatics, University of Magdeburg, Magdeburg, Germany; \textsuperscript{2}Siemens Healthcare, Erlangen, Germany; \textsuperscript{3}Leibniz Institute for Neurobiology, Magdeburg, Germany; \textsuperscript{4}Department of Neurosurgery, University of Magdeburg, Magdeburg, Germany

Tissue Separation of Multi-Shell DW-MRI with a Physiologically Constrained Multi Compartment Model and Spherical Deconvolution

Alberto De Luca\textsuperscript{1,2}, Marco Castellaro\textsuperscript{3}, Stefania Montemezzi\textsuperscript{4}, Massimiliano Calabrese\textsuperscript{5}, Alessandra Bertoldo\textsuperscript{1}

\textsuperscript{1}Department of Information Engineering, University of Padova, Padova, PD, Italy; \textsuperscript{2}Department of Neuroimaging, Scientific Institute IRCCS “Eugenio Medea”, Bosisio Parini, LC, Italy; \textsuperscript{3}Radiology Unit, Azienda Ospedaliera di Verona, Verona, Italy; \textsuperscript{4}Neurology Section, Department Of Neurological and Movement Sciences, University Hospital of Verona, Verona, Italy

Novel Robust Segmentation of the Thalamic Nuclei – Validation on Healthy Subjects and Patients

Elena Najdenovska\textsuperscript{1,2}, Giovanni Battistella\textsuperscript{1,4}, Constantin Tuleasca\textsuperscript{1,5}, Philippe Maeder\textsuperscript{4}, Alessandro Daducci\textsuperscript{2,5}, Jean-Philippe Thiran\textsuperscript{4,5}, Marc Levivier\textsuperscript{1}, Eleonora Fornari\textsuperscript{1,2}, Meritxell Bach Cuadra\textsuperscript{2,4}

\textsuperscript{1}Department of Clinical Neuroscience, Neurosurgery Service and Gamma Knife Center, Centre Hospitalier Universitaire Vaudois (CHUV), Lausanne, Switzerland; \textsuperscript{2}Centre d'Imagerie BioMédicale (CIBM), Lausanne, Switzerland; \textsuperscript{3}Department of Neurology, Mount Sinai School of Medicine, NY, United States; \textsuperscript{4}Department of Radiology, Centre Hospitalier Universitaire Vaudois (CHUV), Lausanne, Switzerland; \textsuperscript{5}Signal Processing Laboratory (LTSS), Ecole Polytechnique Fédérale de Lausanne (EPFL), Switzerland

LASADD: Linear Acceleration Method for Adapting Diffusion Dictionaries

Ana Karen Loya-Olivas\textsuperscript{1}, Mariano Rivera\textsuperscript{1}, Ramon Aranda\textsuperscript{1}

\textsuperscript{1}Computer Science Department, Centro de Investigación en Matemáticas, Guanajuato, Mexico

Multi-Kernel Estimation of Fiber Orientation Distribution Functions with L0-Norm Induced Group Sparsity

Pew-Thian Yap\textsuperscript{1}, Yong Zhang\textsuperscript{2}, Dinggang Shen\textsuperscript{1}

\textsuperscript{1}Department of Radiology, University of North Carolina, Chapel Hill, NC, United States; \textsuperscript{2}Department of Psychiatry & Behavioral Sciences, Stanford University, CA, United States

Construction of a High Angular Resolution Diffusion MRI Atlas Using the Human Connectome Project Data

Fang-Cheng Yeh\textsuperscript{1}, Timothy Verstynen\textsuperscript{1}

\textsuperscript{1}Department of Psychology, Carnegie Mellon University, Pittsburgh, PA, United States

Recovering Detailed Intra-Voxel White Matter Structure by Using an Adaptive Diffusion Dictionary

Ramon Aranda\textsuperscript{1}, Mariano Rivera\textsuperscript{1}, Alonso Ramirez-Manzanares\textsuperscript{1}
2830. **Diffusivity Anomaly at Midline of Transcallosal Motor Pathway**  
*Ken Sakaie¹, Lael Stone¹, Lowe Mark¹*  
¹The Cleveland Clinic, Cleveland, OH, United States

**Traditional Poster**

**Diffusion Kurtosis**

**Exhibition Hall**  
**Thursday 13:30-15:30**

2831. **Improving Visibility of Tissue Heterogeneity in Diffusion Kurtosis Imaging Using Vector-Based Non-Local Means Filter**  
*Minsiong Zhou¹, ², Xu Yan¹, Guang Yang²*  
¹Shanghai Medical Instrumentation College, University of Shanghai for Science and Technology, Shanghai, China; ²Key Laboratory of Magnetic Resonance, East China Normal University, Shanghai, China; ³MR Collaboration NE Asia, Siemens Healthcare, Shanghai, China

2832. **Detection of Microstructural Changes of Nigra-Striatum Dopaminergic Neurons in Parkinson's Disease Using High Resolution DWI**  
*Akira Nishikori¹, ², Kohei Tsuruta¹, ², Koji Kamagata², Taku Hatano², Fumi Okazumi², Masaaki Hori², Michimasa Suzuki², Shigeki Aoki², Atsushi Seno¹*  
¹Tokyo Metropolitan University, Arakawa-ku, Tokyo, Japan; ²Juntendo University School of Medicine, Bunkyo-ku, Tokyo, Japan

2833. **The Mean Kurtosis Evaluation Measurements Show a Considerable Disparity from the Analytically Evaluated Ones for a Clinically Used Range of B-Values**  
*Andrey Chuhutin¹, Ahmad Raza Khan¹, Brian Hansen¹, Sune Norhaj Jespersen¹, ²*  
¹Center of Functionally Integrative Neuroscience, Aarhus University, Aarhus, Denmark; ²Dept. of Physics and Astronomy, Aarhus University, Denmark

2834. **Assessing Inter-Subject Variability of White Matter Response Functions Used for Constrained Spherical Deconvolution**  
*Ben Jeurissen¹, Jan Sijbers¹, Jacques-Donald Tournier³, ⁴*  
¹iMinds-Vision Lab, Dept. of Physics, University of Antwerp, Antwerp, Belgium; ²Centre for the Developing Brain, King's College London, London, United Kingdom; ³Dept. of Biomedical Engineering, King's College London, London, United Kingdom

2835. **Simultaneous Measurement of Cerebral Blood Volume and Diffusion Heterogeneity Using Two-Compartment-Model-Based Diffusion Kurtosis Imaging**  
*Wen-Chau Wu¹, ², Han-Min Tseng¹, Ya-Fang Chen²*  
¹Graduate Institute of Oncology, National Taiwan University, Taipei, Taiwan; ²Graduate Institute of Clinical Medicine, National Taiwan University, Taipei, Taiwan; ³Department of Neurology, National Taiwan University Hospital, Taipei, Taiwan; ⁴Department of Medical Imaging, National Taiwan University Hospital, Taipei, Taiwan

2836. **Non-Gaussian Diffusion in the Rat Spinal Cord In Vivo with Phase and Susceptibility Corrected Segmented EPI**  
*Elizabeth Zakrzewska¹, Nathan Skinner¹, Shekar Kurpad¹, Brian Schmit¹, Matthew Budde¹*  
¹Neurosurgery, Medical College of Wisconsin, Milwaukee, WI, United States; ²Biophysics, Medical College of Wisconsin, Milwaukee, WI, United States; ³Biomedical Engineering, Marquette University, Milwaukee, WI, United States

2837. **Cortical Profile of Mean Kurtosis and Fractional Anisotropy with High Resolution DKI and DTI of Macaque Brains**  
*Austin Ouyang¹, Mihovil Pletikos², Nenad Sestan², Hao Huang¹*  
¹Advanced Imaging Research Center, University of Texas Southwestern Medical Center, Dallas, TX, United States; ²Department of Neurobiology, Yale University, CT, United States
Traditional Poster

Diffusion - Tractography

Thursday 13:30-15:30

Exhibition Hall

2838. Probabilistic Fiber Tractography Using Neighborhood Information
Helen Schomburg1, Thorsten Hofage1, Christoph Rügge1, Sabine Hofer2, 3, Jens Frahm2
1Institute for Numerical and Applied Mathematics, Georg-August-Universität Göttingen, Göttingen, Germany; 2Biomedizinische
NMR Forschungs GmbH, Max-Planck-Institut für biophysikalische Chemie, Göttingen, Germany; 3Bernstein Center for
Computational Neuroscience, Göttingen, Germany

2839. Parallel Global Tractography
Haiyong Wu1, Dinggang Shen1, Pew-Thian Yap1
1Department of Radiology, University of North Carolina, Chapel Hill, NC, United States

2840. Surface Tracking from the Cortical Mesh Complements Diffusion MRI Fiber Tracking Near the Cortex
Etienne St-Onge1, Gabriel Girard1, Kevin Whittingstall2, Maxime Descoteaux3
1Sherbrooke Connectivity Imaging Lab, Université de Sherbrooke, Sherbrooke, Québec, Canada; 2Department of Diagnostic
Radiology, Faculty of Medicine and Health Science, Université de Sherbrooke, Sherbrooke, Québec, Canada

2841. Tract Specifics Without the Tears: Fully Automated Tract Segmentation and Quantification
Greg Parker1, Mark Postans1, Derek Jones3
1CUBRIC, School of Psychology, Cardiff University, Cardiff, South Glamorgan, United Kingdom

2842. Line Graphs and Vector Weights: A Novel Paradigm for Brain Network Analysis
Peter Savadjiev1, Carl-Fredrik Westin2, Yogesh Rathi2
1Psychiatry Neuroimaging Laboratory, Brigham and Women's Hospital, Harvard Medical School, Boston, MA, United States;
2Laboratory for Mathematics in Imaging, Brigham and Women's Hospital, Harvard Medical School, Boston, MA, United States

2843. Megatrack: A Fast and Effective Strategy for Group Comparison and Supervised Analysis of Large-Scale
Tractography Datasets
Flavio Dell'Acqua1, Luis Lacerda1, Rachel Barrett1, Lucio D'Anna2, Stella Tsermentseli3, Laura Goldstein4, Marco Catani5
1Dept of Neuroimaging, King's College London, London, United Kingdom; 2Dept of Forensic and Neuropsychiatric Sciences,
King's College London, London, United Kingdom; 3Dept of Psychology, University of Greenwich, London, United Kingdom;
4Dept of Psychology, King's College London, London, United Kingdom

2844. Cleaning Up the Mess: Tractography Outlier Removal Using Hierarchical QuickBundles Clustering
Marc-Alexandre Côté1, Eleftherios Garyfallidis1, Hugo Larochelle1, Maxime Descoteaux3
1Université de Sherbrooke, Sherbrooke, Québec, Canada

2845. Joint Brain Connectivity Estimation from Diffusion and Functional MRI Using a Network Flow Model
Shu-Hsien Chu1, Keshab K. Parhi1, Christophe Lenglet2
1University of Minnesota, Minneapolis, MN, United States

2846. A Novel Threshold-Free Network-Based Statistical Method: Demonstration and Parameter Optimisation Using
In Vivo Simulated Pathology
Lea Vinokur1, 2, Andrew Zalesky3, 4, David Raffelt1, Robert Smith1, Alan Connelly1, 2
1The Florey Institute of Neuroscience and Mental Health, Heidelberg, Victoria, Australia; 2Department of Florey Neuroin
vivo, Melbourne, Melbourne, Victoria, Australia; 3Melbourne School of Engineering, University of Melbourne, Melbourne,
Victoria, Australia; 4Melbourne Neuropsychiatry Centre, University of Melbourne, Melbourne, Victoria, Australia
2847. Pushing the Limits of Ex-Vivo Diffusion MRI and Tractography of the Human Brain

Christian Wieseotto, Thomas Witzel, Jon Polinment, Aapo Nummenmaa, Bernhard Gruber, Laura Schreiber, Lawrence Wald

1Department of Radiology, Section of Medical Physics, Johannes Gutenberg University Medical Center, Mainz, Germany; 2Max Planck Graduate Center, Mainz, Germany; 3Department of Radiology, Massachusetts General Hospital, Athinoula A. Martinos Center for Biomedical Imaging, Boston, MA, United States; 4Department of Medical Engineering, University of Applied Sciences Upper Austria, Linz, Austria; 5Department of Cellular and Molecular Imaging, Comprehensive Heart Failure Center, Würzburg, Germany; 6Department of Radiology, Massachusetts General Hospital, Athinoula A. Martinos Center for Biomedical Imaging, Boston, MA, United States

2848. Real Time Interaction with Millions of Streamlines

François Rheault, Jean-Christophe Houde, Maxime Descoteaux

1Université de Sherbrooke, Sherbrooke, Quebec, Canada

2849. Comparison of Diffusional Kurtosis Imaging (DKI) and Diffusion Spectrum Imaging (DSI) for White Matter Fiber Tractography

G. Russell Glenn, Jens H. Jensen, Yi-Ping Chao, Chu-Yu Lee, Joseph A. Helpern, Li-Wei Kuo

1Neurosciences & Center for Biomedical Imaging, Medical University of South Carolina, Charleston, SC, United States; 2Radiology & Center for Biomedical Imaging, Medical University of South Carolina, SC, United States; 3Computer Science and Information Engineering, Chang Gung University, Taoysuan, Taiwan; 4Radiology, Neurosciences, & Center for Biomedical Imaging, Medical University of South Carolina, SC, United States; 5Institute of Biomedical Engineering and Nanomedicine, National Health Research Institutes, Miaoli County, Taiwan

2850. Investigating the Consequences for Connectomic Metrics of Methods to Correct Fibre Tracking Biases

Chun-Hung Yeh, Robert Smith, Xiaoyan Liang, Fernando Calamante, Alan Connelly

1The Florey Institute of Neuroscience and Mental Health, Heidelberg, Victoria, Australia; 2Department of Medicine, Austin Health and Northern Health, University of Melbourne, Melbourne, Victoria, Australia

2851. Automatic Classification of Brain Tractography Data

Esha Datta, Kesshi Jordan, Eduardo Caverzasi, Roland Henry

1University of California, San Francisco, San Francisco, CA, United States

2852. A Non-Rigid Fiber Registration Method for Tractography Level DTI Analysis

Yishan Luo, Lin Shi, Winnie CW Chu, Vincent CT Mok, Defeng Wang

1Département d’informatique, Faculté des Sciences, Université de Sherbrooke, Sherbrooke, Quebec, Canada; 2GIN UMR5296 CNRS CEA, Université de Bordeaux, France; 3Research Center on Aging and Department of Medicine, Université de Sherbrooke, Quebec, Canada

2853. Recognition of Bundles in Healthy and Severely Diseased Brains

Eleftherios Garyfallidis, Marc-Alex Côté, Janice Hau, Guy Perchey, Laurent Petit, Stephen C. Cunnanne, Maxime Descoteaux

1Département d’informatique, Faculté des Sciences, Université de Sherbrooke, Sherbrooke, Quebec, Canada; 2Institute of Biomedical Engineering and Nanomedicine, National Health Research Institutes, Miaoli County, Taiwan

2854. Studying White Matter Tractography Reproducibility Through Connectivity Matrices

Gabriel Girard, Kevin Whittingstall, Rachid Deriche, Maxime Descoteaux

1Sherbrooke Connectivity Imaging Lab (SCIL), Université de Sherbrooke, Sherbrooke, Quebec, Canada; 2Project Team Athena - INRIA, Sophia Antipolis, France; 3Department of Diagnostic Radiology, Faculty of Medicine and Health Science, Université de Sherbrooke, Sherbrooke, Quebec, Canada; 4Project Team Athena - INRIA, Sophia Antipolis, France
2855. A New Fiber Bundle Pathway Identified with Diffusion MRI Fiber Tractography: Fact or Fantasy?
Annetriet M. Heemskerk1, Michel Thiebaut de Schotten2, Marco Catani1, Silvio Sarubbo1, Laurent Petit2, Max Viergever1, Derek K. Jones3, John Evans3, Tomás Paus4,5, Alexander Leemans6
1Image Sciences Institute, University Medical Center Utrecht, Utrecht, Netherlands; 2King's College London, United Kingdom; 3Santa Chiara Hospital, Italy; 4GIN-UMR5296, CNRS, CEA, University of Bordeaux, Bordeaux, France; 5Cardiff University, United Kingdom; 6Rotman Research institute, Baycrest, Toronto, Canada; 7Departments of Psychology and Psychiatry, University of Toronto, Toronto, Canada

2856. Creating a Child Brain Connectivity Atlas for Reliable Bundle Identification in Developmental Studies
Sofya Kulikova5, Jessica Dubois2, Pamela Guevard4, Jean-François Mangin5, Catherine Chiron5, Nicole Chemaly5, Silvia Napuri6, Cyril Poupon7, Lucie Hertz-Pannier1
5INSERM UMR1129, CEA/Neurospin/UNIACT, Université Paris Descartes, Sorbonne Paris Cité, Paris, France; 6INSERM UMR992, CEA/Neurospin/UNICOG, Université Paris Sud, Paris, France; 7University of Concepción/Departamento de Ingeniería Eléctrica, Chile; 8CEA/Neurospin/UNATI, GIF-sur-Yvette, France; 9INSERM UMR1129, Université Paris Descartes, Sorbonne Paris Cité, Paris, France; 10Pediatric Department, CHU Hôpital Sud, Rennes, France; 11CEA/Neurospin/UNIRS, GIF-sur-Yvette, France

David Raffelt1, Robert E. Smith1, J-Donald Tournier2,3, Gerard R. Ridgway4,5, David Vaughan1,6, Alan Connelly1,7
1Florey Institute of Neuroscience and Mental Health, Melbourne, VIC, Australia; 2Centre for the Developing Brain, King's College London, London, United Kingdom; 3Department of Biomedical Engineering, King's College London, London, United Kingdom; 4FMRIB Centre, University of Oxford, Oxford, United Kingdom; 5UCL Institute of Neurology, University College London, London, United Kingdom; 6Department of Medicine, University of Melbourne, Melbourne, Australia; 7The Department of Florey Neuroscience and Mental Health, University of Melbourne, Melbourne, VIC, Australia

2858. The Structural Connectivity Basis for Supporting Functional Connectivity in Mice
Joanes Grandjean1, Zsófia Pröhle2, Markus Rudin3,4
1Institute for Biomedical Engineering, ETH and University Zurich, Zurich, Switzerland; 2Department of Physics, ETH Zurich, Zurich, Switzerland; 3Institute of Pharmacology and Toxicology, University Zurich, Zurich, Switzerland

2859. Longitudinal Change of Cortically Transcallosal Connectivity in Macaque Monkeys Revealed by Diffusion Spectrum Imaging Tractography
Yuguang Meng1, Xiaodong Zhang2
1Yerkes Imaging Center, Yerkes National Primate Research Center, Emory University, Atlanta, GA, United States; 2Division of Neuropharmacology and Neurologic Diseases, Yerkes National Primate Research Center, Emory University, Atlanta, GA, United States

2860. Improved In-Vivo Reconstruction of the Auditory Pathway Using High Spatial Resolution Diffusion MRI
Tyler Rehbein1, Michelle Moerel2, Frederico De Martino3, An Vu4, Essa Yacoub2, Christophe Lenglet2
1University of Minnesota Medical School, Minneapolis, MN, United States; 2Center for Magnetic Resonance Research, Department of Radiology, University of Minnesota, Minneapolis, MN, United States; 3Department of Psychology and Neuroscience, Maastricht University, Maastricht, Netherlands

2861. Combination of Super-Resolution Reconstruction Diffusion Tensor Imaging and Track Density Imaging Reveals Song Control System Connectivity in Zebra Finches
Gwendolyn Van Steenkiste1, Julie Hamaide1, Ben Jeurissen1, Dirk H.J. Poot4, Johan Van Audekerke2, Jan Sijbers1, Marleen Verhoye1
1Minds-Vision Lab, University of Antwerp, Antwerp (Wilrijk), Antwerp, Belgium; 2Bio-Imaging Lab, University of Antwerp, Antwerp, Belgium; 3BGR (Medical informatics and Radiology), Erasmus Medical Center Rotterdam, Rotterdam, Netherlands; 4Imaging Science and Technology, Delft University of Technology, Delft, Netherlands
2862. Perfusion Fraction Tensor Imaging of the Kidney
Fabian Hilbert¹, Simon Veldhoen¹, Tobias Wech¹, Henning Neubauer¹, Thorsten Bley¹, Herbert Köstler¹
¹Department of Radiology, University of Würzburg, Würzburg, Germany

2863. Diffusion Weighting Bias Correction for Quantitative IVIM Metrics in Kidney
Dariya Malyarenko¹, Yuxi Pang¹, Julien Senegas², Marko Ivancevic³, Brian D. Ross¹, Thomas L. Chenevert¹
¹Radiology, University of Michigan, Ann Arbor, MI, United States; ²Philips Research Laboratories, Hamburg, Germany; ³Philips Healthcare, Best, Netherlands

2864. Use of a Multi-Exponential Attenuation Model for Sequential Registration of Diffusion Weighted Imaging in the Abdomen and Pelvis
Matthew R. Orton¹, Neil Peter Jerome², Evangelia Kaza³, David J. Collins¹, Dow-Mu Koh², Bernd Kuehn³, Martin O. Leach⁴
¹Radiotherapy and Imaging Department, Institute of Cancer Research, Sutton, Surrey, United Kingdom; ²Department of Radiology, Royal Marsden Hospital, Sutton, Surrey, United Kingdom; ³Siemens Medical Solutions, Erlangen, Germany

2865. Intravoxel Incoherent Motion Imaging of Renal Fibrosis: A Murine Model Study of Unilateral Ureteral Obstruction
Tong San Koh¹, Septian Hartono¹, Tiffany P. Hennedige¹, Yet Yen Yan¹, In Chin Song¹, Lin Zheng¹, Wing Sum Lee¹, Helmut Rumpel¹, Laurent Martarelo¹, James B.K. Khoo¹, Dow-Mu Koh¹, Choon Hua Thng¹
¹National Cancer Centre Singapore, Singapore, Singapore; ²Singapore General Hospital, Singapore, Singapore; ³Roche-Singapore Translational Medicine Hub, Singapore, Singapore; ⁴Royal Marsden Hospital, Surrey, United Kingdom

2866. Double-Pulsed Gradient Spin-Echo from DTI in the Fibromuscular Stroma of the Prostate
Scott A. Willis¹, Timothy Stait-Gardner¹, William S. Price¹, Roger Bourne²
¹Nanoscale Organisation and Dynamics Group, School of Science and Health, University of Western Sydney, Sydney, NSW, Australia; ²Discipline of Medical Radiation Sciences, Faculty of Health Sciences, University of Sydney, Sydney, NSW, Australia

2867. Comparison of Seven Compartment Models of Diffusion in Prostate Tissue
Sisi Liang¹, Eleftheria Panagiotaki², Peng Shi³, Roger Bourne⁴
¹College of Engineering and Science, Victoria University, Melbourne, Vic, Australia; ²Centre for Medical Image Computing, University College London, London, England, United Kingdom; ³College of Engineering and Science, Victoria University, Melbourne, Vic, Australia; ⁴Discipline of Medical Radiation Sciences, Faculty of Health Sciences, University of Sydney, Sydney, NSW, Australia

2868. Intra-Voxel Incoherent Motion Modelling of Diffusion Weighted MRI Data Is Feasible in 5 Minutes Scan Time
Oliver Gurney-Champion¹, ², Martijn Froeling¹, Remy Klaassen¹,², Hanneke W.M. van Laarhoven², Jaap Stoker¹, Arjan Bel¹, Aart J. Nederveen¹
¹Radiology, Academic Medical Center, Amsterdam, Netherlands; ²Radiation Oncology, Academic Medical Center, Amsterdam, Netherlands; ³Radiology, University Medical Center Utrecht, Utrecht, Netherlands; ⁴Department of Medical Oncology, Academic Medical Center, Amsterdam, Netherlands; ⁵Laboratory for Experimental Oncology and Radiobiology, Academic Medical Center, Amsterdam, Netherlands

2869. Multi-Site Liver Tumour ADC Reproducibility at 1.5 T
Ryan Pathak¹, Hossein Ragheb¹, Neil A. Thacker¹, David Morris², Alan Jackson¹
¹The Wolfson Molecular Imaging Centre, University of Manchester, Manchester, United Kingdom; ²Centre for Imaging Sciences, University of Manchester, Manchester, United Kingdom
2870. Longitudinal Reproducibility of Quantitative Diffusion Weighted MRI Improved by Spatially Constrained Probability Distribution Model of Incoherent Motion (SPIM)
Feifei Qu1, Moti Freiman1, Onur Afacan1, Sean Clancy2, Simon K. Warfield2
1Radiology, Boston Children's Hospital and Harvard Medical School, Boston, MA, United States

2871. Changes in Tissue Components with Distinct Diffusivities Rather Than ‘cellularity’ Is the Major Contributor to Clinically Observed Variations of ADC in Prostate Tissue
Aritrick Chatterjee1, Geoff Watson2, Esther Myint3, Paul Sved2, Mark McEntee1, Roger Bourne1
1Faculty of Health Sciences, University of Sydney, Sydney, New South Wales, Australia; 2Royal Prince Alfred Hospital, Sydney, New South Wales, Australia; 3Douglas Hanly Moir Pathology, Sydney, New South Wales, Australia

2872. Optimised VERDICT MRI Protocol for Prostate Cancer Characterisation
Eleftheria Panagiotaki1, Andrada Ianus1, Edward Johnston2, Rachel W. Chan2, Nicola Stevens2, David Atkinson2, Shoniit Punnwan2, David J. Hawkes1, Daniel C. Alexander1
1Centre for Medical Image Computing, University College London, London, United Kingdom; 2Centre for Medical Imaging, University College London, London, United Kingdom

2873. Title: Importance of T2 Correction in Intravoxel Incoherent Motion (IVIM) Based Quantitation of the Necrosed Region Post Thermal Ablation of Uterine Fibroid
Feifei Qu1, Ramkumar Krishnamurthy2, Pei-Heng Hor1, John Fisher4, Claudio Arena4, Debra Dees4, Raja Muthupillar4
1Physics Department, University of Houston, Houston, TX, United States; 2Radiology Department, Texas Children's Hospital, Houston, TX, United States; 3Texas Center for Superconductivity, Houston, TX, United States; 4Diagnostic and Interventional Radiology, St. Luke's Medical Center, Houston, TX, United States

2874. Histogram Analysis of Apparent Diffusion Coefficient Maps Reveals Differences Among the Different Types of Uterine Fibroids Based on T2WIs
Hao Fu1, Chenxia Li1, Rong Wang1, Jianxin Guo1, Jian Yang1
1Department of Radiology, the First Affiliated Hospital of Xi'an Jiaotong University, Xi'an, Shaanxi, China

2875. Characterization of High Performance Human Gradient System for Spin Echo Cardiac DTI
Konrad Schieber1, Timothy G. Reese2, Christian T. Stoeck1, David E. Sosnovik2, Sebastian Kozerke1, Choukri Mekkaoui1
1Institute for Biomedical Engineering, ETH Zurich, Zurich, Switzerland; 2Radiology, Harvard Medical School, Massachusetts General Hospital, Martinos Center for Biomedical Imaging, Charlestown, MA, United States; 3Division of Imaging Sciences, King's College London, London, United Kingdom

2876. Evaluation of Diffusion-Weighted Imaging Apparent Diffusion Coefficient Histogram for the Differential Diagnosis Between Lipoma and Liposarcoma
Haiyan Sun1, Shaowu Wang2, Ziheng Zhang1, Weisheng Zhang1, Lina Zhang1, Minting Zheng1, Meiyu Sun1, Qingwei Song1, Dianxu Ning1
1Radiology department, The first hospital affiliated to Dalian Medical University, Dalian, Liaoning, China; 2Radiology department, The second hospital affiliated to Dalian Medical University, Dalian, Liaoning, China; 3GE Healthcare China,Beijing, Beijing, China

2877. Investigation of the Presence and Repeatability of Intravoxel Incoherent Motion (IVIM) in Breast Parenchyma of Healthy Volunteers Using an Optimised B-Value Scheme
Nina L. Purvis1, Peter Gibbs2, Martin D. Pickles2, Lindsay W. Turnbull2
1Centre for MR Investigations, Hull York Medical School, Hull, East Yorkshire, United Kingdom; 2Centre for MR Investigations, University of Hull at HYMS, Hull, East Yorkshire, United Kingdom
2878. The Use of Quantitative T2 to Enhance Computed Diffusion Weighted Imaging

Lin Cheng¹, Matthew D. Blackledge¹, David J. Collins¹, Nina Tunariu¹, Martin O. Leach¹, Dow-Mu Koh¹

¹Institute of Cancer Research, Sutton, London, United Kingdom
### Electronic Poster

#### Diffusion Sequences & Sampling

<table>
<thead>
<tr>
<th>Computer</th>
<th>Title</th>
<th>Authors</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>In Vivo Diffusion Tensor Imaging and Tractography of Human Brain at Submillimeter Isotropic Resolution on a Clinical MRI Scanner</td>
<td>Mark Sundman(^1), Hing-Chiu Chang(^2), Laurent Petit(^1), Shayan Gahaniyogy(^1), Christopher Petty(^1), Allen Song(^1), Nan-kuei Chen(^1)</td>
</tr>
<tr>
<td></td>
<td>1Brain Imaging and Analysis Center, Duke University Medical Center, Durham, NC, United States; (^2)Groupe d'Imagerie Neurofonctionnelle (GIN) - UMR5296, CNRS, CEA, Université de Bordeaux, Bordeaux, France</td>
<td></td>
</tr>
<tr>
<td>2</td>
<td>Diffusion MRI of Crossing Fibers Combining Double Pulsed Field Gradient (DPFG) Eccentricity and Q-Ball Imaging</td>
<td>Thomas Witzel(^1), Aapo Nummenmaa(^1), Qiuyan Fan(^1), Sasie Yi Huang(^1), Lawrence Leroy Wald(^1,2)</td>
</tr>
<tr>
<td></td>
<td>(^1)Department of Radiology, Harvard Medical School, A.A.Martinos Center for Biomedical Imaging, Massachusetts General Hospital, Charlestown, MA, United States; (^2)Harvard-MIT Division of Health Sciences and Technology, Cambridge, MA, United States</td>
<td></td>
</tr>
<tr>
<td>3</td>
<td>Eddy Current Compensation for Double Wave Vector Diffusion MRI</td>
<td>Lars Møller(^1), Andreas Wetscherk(^1), Frederik Bernd Laun(^1)</td>
</tr>
<tr>
<td></td>
<td>(^1)Medical Physics in Radiology, German Cancer Research Center (DKFZ), Heidelberg, Germany</td>
<td></td>
</tr>
<tr>
<td>4</td>
<td>Accelerated Motion-Robust Non-Cartesian Multi-Shot Diffusion-Weighted Imaging with Reconstruction in the Image Space</td>
<td>Benoit Scherrer(^1), Ali Gholipour(^1), Onur Afacan(^1), Sanjay P. Prabhu(^1), Simon K. Warfield(^1)</td>
</tr>
<tr>
<td></td>
<td>(^1)Harvard Medical School, Boston Children's Hospital, Boston, MA, United States</td>
<td></td>
</tr>
<tr>
<td>5</td>
<td>Variable Sample Density at High B-Values for Radial Diffusion Spectrum Imaging Improves Angular Resolution</td>
<td>Steven Baete(^1,2), Fernando Emilio Boada(^1,2)</td>
</tr>
<tr>
<td></td>
<td>(^1)Center for Advanced Imaging Innovation and Research (CAI2R), NYU School of Medicine, New York, NY, United States; (^2)Center for Biomedical Imaging, Dept. of Radiology, NYU School of Medicine, New York, NY, United States</td>
<td></td>
</tr>
<tr>
<td>6</td>
<td>Comparison of NQGSE and PGSE Sequences for Axon Diameter Estimation</td>
<td>William Perrault(^1), Tanguy Duval(^1), Julien Cohen-Adad(^1,2)</td>
</tr>
<tr>
<td></td>
<td>(^1)Polytechnique de Montreal, Montreal, Quebec, Canada; (^2)Functional Neuroimaging Unit, CRIUGM, University of Montreal, Montreal, Quebec, Canada</td>
<td></td>
</tr>
<tr>
<td>7</td>
<td>Ghost and Distortion Correction in DW-EPI Using Phase Labeling Approach</td>
<td>Victor B. Xie(^1,2), Ed X. Wu(^1)</td>
</tr>
<tr>
<td></td>
<td>(^1)The University of Hong Kong, Laboratory of Biomedical Imaging and Signal Processing, Hong Kong SAR, China; (^2)The University of Hong Kong, Department of Electrical and Electronic Engineering, Hong Kong SAR, China</td>
<td></td>
</tr>
<tr>
<td>8</td>
<td>Diffusion-Weighted Matched-Phase Adiabatic Spin Echo (DW-MASE) Sequence for Ultrahigh Field Brain Diffusion-Weighted Imaging</td>
<td>Hadrien Dyvorne(^1), Rafael O'Halloran(^1), Priit Balchandani(^1)</td>
</tr>
<tr>
<td></td>
<td>(^1)Radiology, Icahn School of Medicine at Mount Sinai, New York, NY, United States</td>
<td></td>
</tr>
<tr>
<td>9</td>
<td>Generalized Blipped CAIPI for Interleaved EPI Diffusion Weighted Imaging</td>
<td>Erpeng Dai(^1), Zhe Zhang(^1), Xiaodong Ma(^1), Bida Zhang(^1), Bin Xie(^2), Chun Yuan(^1,3), Hua Guo(^1)</td>
</tr>
<tr>
<td></td>
<td>(^1)Center for Biomedical Imaging Research, Department of Biomedical Engineering, School of Medicine, Tsinghua University, Beijing, China; (^2)Healthcare Department, Philips Research China, Shanghai, China; (^3)Department of Radiology, University of Washington, Seattle, WA, United States</td>
<td></td>
</tr>
<tr>
<td>10</td>
<td>The High Resolution 3D Rat Spine Diffusion Study by Utilizing Wideband MRI Technique</td>
<td>Po Wei Cheng(^2), Yung Hao Chiang(^2), Yan An Huang(^2), Edzer L. Wu(^1), Tzi Dar Chiueh, Jyh Horng Chen(^1)</td>
</tr>
<tr>
<td></td>
<td>(^1)Medical Physics in Radiology, German Cancer Research Center (DKFZ), Heidelberg, Germany; (^2)Healthcare Department, Philips Research China, Shanghai, China</td>
<td></td>
</tr>
</tbody>
</table>
Electronic Poster

Computer 11  2889. Feasibility of In Vivo Dynamic Diffusion Tensor Imaging on a 3T Clinical Scanner with a Multi Echo Sequence and Compressed Sensing Reconstruction

Steven Bainte1, Jose Ray2, Florian Knoll1, Gene Young Cho3, Prodromos Parasoglu1, Ryan Brown1, 2, Tobias Block1, 2, Ricardo Otaoz1, 2, Jenny Bencardino, Eric Sigmund2
1Center for Advanced Imaging Innovation and Research (CAI2R), NYU School of Medicine, New York, NY, United States; 2Department of Radiology, NYU School of Medicine, New York, NY, United States; 3Sackler Institute of Graduate Biomedical Sciences, NYU School of Medicine, New York, United States

Computer 12  2890. Undersampled Simultaneous Multi-Slice Readout-Segmented EPI Diffusion Acquisition with a Patch-Based Low Rank Constraint

Ganesh Adluru1, Bradley D. Bolster Jr2, Robert Frost3, Lorie Richards4, Edward V.R. DiBella1
1Radiology, University of Utah, Salt Lake City, UT, United States; 2Siemens Healthcare, Salt Lake City, UT, United States; 3FMRRID Centre, Nuffield Department of Clinical Neurosciences, University of Oxford, Oxford, United Kingdom; 4Occupational Therapy, University of Utah, Salt Lake City, UT, United States


Xia Zhao1, Michael Langham1, Cheng Li1, Hee Kwon Song1
1Laboratory for Structural NMR Imaging, University of Pennsylvania, Philadelphia, PA, United States

Computer 14  2892. Novel Single and Multiple Shell Gradient Sampling Schemes for Diffusion MRI Using Spherical Codes

Jian Cheng1, Dinggang Shen1, Pew-Thian Yap1, Peter Basser2
1Section on Tissue Biophysics and Biomimetics (STBB), PPITS, NICHD, NIH, Bethesda, MD, United States; 2The Intramural Research Program (IRP), NIBIB, Bethesda, MD, United States; 3Department of Radiology and BRIC, The University of North Carolina at Chapel Hill, NC, United States

Computer 15  2893. Diffusion Weighted Imaging Using Multi-Shot Spiral with a Simultaneous Multi-Slice Excitation

Joseph L. Holtrop1, 2, Bradley P. Sutton1, 2
1Bioengineering, University of Illinois Champaign-Urbana, Urbana, IL, United States; 2Beckman Institute, University of Illinois at Urbana-Champaign, Urbana, IL, United States

Computer 16  2894. Effects of Maximal B Value and Sampling Interval on Water Displacement Profile in Q-Space Imaging

Ping-Huei Tsai1, 2, Hua-Shan Liu2, 3, Hsiao-Wen Chung1, Chia-Feng Liu1, Fei-Ting Hsu1, Li-Chun Hsieh1, Cheng-Yu Chen1
1Department of Radiology, School of Medicine, College of Medicine, Taipei Medical University, Taipei, Taiwan; 2Imaging Research Center and Department of Medical Imaging, Taipei Medical University Hospital, Taipei Medical University, Taipei, Taiwan; 3Graduate Institute of Clinical Medicine, National Taiwan University, Taipei, Taiwan

Computer 17  2895. Optimisation of Single-Shell HARDI for Neonatal Imaging

Jacques-Donald Tournier1, Emer Hughes1, Nora Tusor1, A. David Edwards1, Joseph V. Hajnal1
1Centre for the Developing Brain, Kings College London, London, United Kingdom

Computer 18  2896. Joint Reconstruction of Quantitative T2 and ADC Maps in the Brain Using Spin Echo Diffusion Weighted Imaging

Eric Aliotta1, 2, Daniel B. Ennis1, 2
1Radiological Sciences, UCLA, Los Angeles, CA, United States; 2Biomedical Physics IDP, UCLA, Los Angeles, CA, United States

Computer 19  2897. Data-Driven Optimisation of Multi-Shell HARDI

Jacques-Donald Tournier1, Emer Hughes1, Nora Tusor1, Stamatis N. Sotropoulos4, Saad Jabadi5, Jesper Andersson5, Daniel Rueckert5, A. David Edwards1, 3, Joseph V. Hajnal1, 2
1Centre for the Developing Brain, Kings College London, London, United Kingdom; 2Department of Biomedical Engineering, Kings College London, London, United Kingdom; 3Department of Perinatal Imaging & Health, Kings College London, London, United Kingdom; 4Department of Health Informatics, University of Manchester, Manchester, United Kingdom; 5Department of Computer Science, Imperial College London, London, United Kingdom
Computer 20 2898. Acquisition Strategies for Highly Accelerated Diffusion Weighted Imaging
Pavan Poojar², Bikkemane Jayadev Nutandev¹, Arush Honnedevasthana Arun¹, Antharikshanagar Bellappa Sachin Anchan¹, Ramesh Venkatesan², Sairam Geethanath¹
¹Dayananda Sagar Institutions, Bangalore, Karnataka, India; ²Wipro-GE Healthcare, Karnataka, India

Computer 21 2899. Quantitative Evaluation of Rotating Short-Axis (RSA) EPI for High Spatial Resolution Diffusion MRI
Yu-Chien Wu¹
¹Radiology and Imaging Sciences, Indiana University School of Medicine, Indianapolis, IN, United States

Computer 22 2900. Retrospective Motion Correction in Diffusion-Weighted Imaging by Using Optimum Order for Measuring Diffusion Directions
Suguru Yokosawa¹, Hisaaki Ochi¹, Yoshitaka Bito²
¹Central Research Laboratory, Hitachi, Ltd., Kokubunji-shi, Tokyo, Japan; ²Hitachi Medical Corporation, Kashiwa, Chiba, Japan

Computer 23 2901. Comparison of Three Different Diffusion Weighted Imaging Acquisitions of the Upper Abdomen Between 1.5 T and 3 T
Zhuo Shi¹, Xinming Zhao¹, Han Ouyang¹, Lizi Xie²
¹Department Of Imaging Diagnosis, Cancer Hospital, Chinese Academy of Medical Sciences & Peking Union, Beijing, China; ²GE Healthcare China, Beijing, China

Computer 24 2902. A Framework to Calculate the IVIM Signal for Different Diffusion Gradient Profiles
Andreas Wetscherek¹, Frederik Bernd Laun¹
¹Medical Physics in Radiology, German Cancer Research Center (DKFZ), Heidelberg, Germany

Electronic Poster
Diffusion: Non Gaussian

Exhibition Hall  Monday 10:45-11:45

Shota Ishida¹, Tosiaki Miyati¹, Naoki Ohno¹, Tomohiro Chigusa², Hikari Usui², Masaaki Hattori¹, Yuki Hiramatsu¹, Satoshi Kohayashi¹, Toshiyuki Gabata³
¹Division of Health Sciences, Graduate School of Medical Sciences, Kanazawa University, Kanazawa, Ishikawa, Japan; ²Okazaki City Hospital, Okazaki, Aichi, Japan; ³Yokohama City University Hospital, Yokohama, Kanagawa, Japan; ¹School of Health sciences, College of Medical, Pharmaceutical and Health sciences, Kanazawa University, Kanazawa, Ishikawa, Japan; ¹Department of Radiology, Kanazawa University School of Medicine, Kanazawa, Ishikawa, Japan

Computer 26 2904. Identification of the Vascular and Avascular Zones of Human Meniscus with Intravoxel Incoherent Motion Reduced FOV Diffusion Weighted MR Imaging
Tan Guo¹, Dandan Zheng², Min Chen³, Juan Chen¹
¹Department of Radiology, Beijing Hospital, Beijing, China; ²GE Healthcare, China, Beijing, China

Computer 27 2905. A Time Efficient IVIM Analysis Method Using Fuzzy Clustering Algorithm
Kaining Shi¹, He Wang¹, Guang Cao¹, Ying Qi¹, Xiaoming Wang¹
¹Imaging Systems Clinical Science, Philips Healthcare (China), Beijing, China; ²Philips Research (China), Shanghai, China; ³Imaging Systems Clinical Science, Philips Healthcare (China), Hongkong, China; ¹Radiology Department, Shengjing Hospital of China Medical University, Shenyang, Liaoning, China

Computer 28 2906. Biexponential Modeling of the Diffusion Weighted MRI Signal in a U87 Brain Tumor Model: A Comparison of Least Squares and Bayesian Modeling
Alexander D. Cohen¹, Kimberly R. Peckman¹, Mona Al-Gizawi², Kathleen M. Schmainda¹, ²
¹Radiology, Medical College of Wisconsin, Milwaukee, WI, United States; ²Biophysics, Medical College of Wisconsin, Milwaukee, WI, United States
Computer 29 2907. Anomalous Diffusion Stretched Exponential γ-Imaging Model Provides New Information on Spinal Cord Microstructure
Alessandra Caporale1,2, Marco Palombo,2, Silvia Capuani2,4
1Physics Department, University 'Sapienza', Rome, ITALY, Italy; 2Physics Department, CNR-IPCF Roma Sapienza University of Rome, Rome, ITALY, Italy; 3CEA/DSV/12BM/MIRCen, Fontenay-aux-Roses, FRANCE, France; 4Center for Life NanoScience@LaSapienza, Istituto Italiano di Tecnologia, Rome, ITALY, Italy

Computer 30 2908. A Statistically Stationary Anomalous Diffusion Model for Diffusion Weighted Imaging
Yang Fan1, Bing Wu2, Jia-Hong Gao3
1Center for MRI Research, Peking University, Beijing, China; 2GE Healthcare, Beijing, China

Computer 31 2909. Using Continuous Time Random Walk Diffusion to Quantify the Progression of Huntington’s Disease
Allen Q. Ye1, Rodolfo Gatto1, Luis Colon-Perez2, Thomas Mareci2, Gerardo Morfini1, Richard Magin1
1University of Illinois at Chicago, Chicago, IL, United States; 2University of Florida, Gainesville, FL, United States

Computer 32 2910. Reliability of the Diffusion Indexes Derived from Fast Diffusion Kurtosis Imaging
Wen-Chau Wu1,2
1National Taiwan University, Taipei, Taiwan; 2Graduate Institute of Biomedical Electronics and Bioinformatics, National Taiwan University, Taipei, Taiwan

Computer 33 2911. Comparison of Results Obtained by Fitting DWI Data to a Model Including IVIM and Kurtosis Using Nonlinear Least Squares and Maximum Likelihood Estimation
Keith Hulsey1, Matthew Lewis1, Yin Xi2, Qing Yuan1, Robert Lenskii1
1Radiology, The University of Texas Southwestern Medical Center, Dallas, TX, United States

Computer 34 2912. Discrimination Between Tumor-Infiltration and Vasogenic Edema Using Non-Gaussian Diffusion MRI Techniques: Preliminary Experience
Kouhei Kamiya1, Yuichi Suzuki2, Shota Tanaka1, Akitake Makasa1, Masaaki Hori1, Harushi Mori1, Akira Kunimatsu1, Nobuhito Saito1, Shigeki Aoki1, Kuni Ohtomo1
1Department of Radiology, The University of Tokyo, Bunkyo, Tokyo, Japan; 2Department of Radiological Technology, The University of Tokyo Hospital, Bunkyo, Tokyo, Japan; 3Department of Neurosurgery, The University of Tokyo, Bunkyo, Tokyo, Japan; 4Department of Radiology, Juntendo University School of Medicine, Bunkyo, Tokyo, Japan

Computer 35 2913. Diffusion Kurtosis Imaging of Fibrotic Mouse Kidneys
Birgitte Fuglsang Kjølby1, Steen Jakobsen2, Jonas Bronor Jensen2, Lea Hougaard Pedersen3, Louise M. Rydtof1, Sune N. Jespersen4,5, Brian Hansen1
1CFIN, Aarhus University Hospital, Aarhus, Denmark; 2Nuclear Medicine and PET Center, Aarhus University Hospital, Aarhus, Denmark; 3Research Lab. for Biochemical Pathology, Aarhus University Hospital, Aarhus, Denmark; 4Dept. of Physics and Astronomy, Aarhus University, Aarhus, Denmark

Computer 36 2914. Diffusion-Tensor-Based Method for Robust and Accurate Estimation of Axial and Radial Diffusional Kurtosis
Yasuhiro Tachibana1,2, Takayuki Obata1, Hiroki Tsuchiya1, Tomihiko Omatsu1, Riwa Kishimoto1, Koji Kamagata1, Masaaki Hori1, Shigeki Aoki1, Tomio Inoue1
1Research Center of Charged Particle Therapy, National Institute of Radiological Sciences, Chiba, Japan; 2Department of Radiology, Yokohama City University, Yokohama, Kanagawa, Japan; 3Department of Radiology, Juntendo University, Tokyo, Japan

Computer 37 2915. Inner Field of View Diffusion Kurtosis Imaging (DKI) of the Pediatric Spinal Cord
Chris J. Conklin1,2, Devon M. Middleton,2 Jürgen Finsterbusch1, Mahdi Alizadeh,2, Scott H. Faro,2, Pallav Shah2, Laura Krusa7, Rebecca Sinko5, Joan Z. Delalic6, MJ Mulcahey5, Feroze B. Mohamed,2
1Electrical Engineering, Temple University, Philadelphia, PA, United States; 2Radiology, Temple University, Philadelphia, PA, United States; 3Bioengineering, Temple University, Philadelphia, PA, United States; 4Systems Neuroscience, University Medical Center Hamburg-Eppendorf, Hamburg, Germany; 5Physical Therapy, Thomas Jefferson University, Philadelphia, PA, United States; 6Occupational Therapy, Thomas Jefferson University, Philadelphia, PA, United States; 7Occupational Therapy, Thomas Jefferson University, Philadelphia, PA, United States
Non-Gaussian diffusion methods permitting the analysis of the diffusion-weighted signal over a larger range of b-values have been used to evaluate the micro-structural change in the ultra-early phase of Sorafenib administration. 

1Radiology, Guangdong General Hospital, Guangdong Academy of Medical Sciences, Guangzhou, Guangdong, China; 2Radiology, Computer 46 2924.

Benzodiazepines (BZD) are widely prescribed among older adults, often for anxiety, depression and insomnia. Midazolam increases the intracellular calcium concentration leading to the death of neurons in brain tissues. Midazolam affects the mitochondrial function in the brain, such as reduced oxidative capacity, a decreased mitochondrial transmembrane potential, altered calcium handling, and increased mitochondrial permeability transition pore. 

1Diagnostic Radiology, Hiroshima University Hospital, Hiroshima, Japan; 2Department of Diagnostic Radiology, Keio University, Tokyo, Japan; 3Department of Diagnostic Radiology, The University of Hong Kong, Hong Kong; 4Department of Radiology and Nuclear Medicine, University of Maryland School of Medicine, Baltimore, MD, United States

The Kurtosis Imaging Network (KIN) will create an open-source database for normal healthy controls to establish a standard for different age groups, body regions, and ethnicities. 

1Department of Radiology & Radiological Science, Medical University of South Carolina, Charleston, SC, United States; 2Department of Neurological Surgery, Medical University of South Carolina, Charleston, SC, United States; 3Center for Biomedical Imaging, Medical University of South Carolina, Charleston, SC, United States

We have recently extended conventional single-pulsed-field-gradient (s-PFG) DKI to double-pulsed-field-gradient (d-PFG) diffusion MRI by using a new 3D magnetization-prepared gradient-echo pulse sequence. This study demonstrates the feasibility of in vivo human DP-DKI at 3 T.

1Department of Diagnostic Radiology, The University of Hong Kong, Pokfulam, Hong Kong, China; 2Department of Radiology and Nuclear Medicine, University of Maryland School of Medicine, Baltimore, MD, United States; 3Radiology, Neurosciences & Center for Biomedical Imaging, Medical University of South Carolina, Charleston, SC, United States

A tissue modeling framework, referred to as kurtosis analysis of neural diffusion organization (KANDO), is proposed to describe the microstructure of a brain. It only utilizes the information contained in the diffusion and kurtosis tensors, which can both be estimated with DKI.

1Diagnostic Radiology, The University of Hong Kong, Pokfulam, Hong Kong; 2Department of Radiology and Nuclear Medicine, University of Maryland School of Medicine, Baltimore, MD, United States; 3Center for Biomedical Imaging, Medical University of South Carolina, Charleston, SC, United States

Biophysical modeling of Diffusion Kurtosis Imaging (DKI) data can provide direct white matter characterization for intra-axonal structure (e.g., axonal packing density, axon radius and axon al length) to the DKI WM parameters. 

1Physics & Mathematical Sciences, Worcester Polytechnic Institute, Worcester, MA, United States; 2Diagnostic Radiology and Neurosciences, University of Maryland School of Medicine, Baltimore, MD, United States

Whole body diffusion weighted imaging (WBDWI) has been used for initial assessment and monitoring treatment response of patients with multiple myeloma. A comparison of Gaussian and non-Gaussian diffusion models for quantitative derived parameters was used to evaluate the micro-structural change in the ultra-early phase of Sorafenib administration. 

1University College London, London, United Kingdom; 2University College London Hospital, London, United Kingdom

Characterization of Micro-Structural Changes in the Ultra-Early Phase of Antiangiogenic Treatment Using Non-Gaussian Diffusion Models

1Radiology, Guangdong General Hospital, Guangdong Academy of Medical Sciences, Guangzhou, Guangdong, China; 2Radiology, Guangzhou First People's Hospital, Guangzhou, Guangdong, China; 3GE Healthcare China, Beijing, China

Electronic Poster
Electronic Poster

Diffusion Acquisition

Exhibition Hall  Monday 10:45-11:45

Electronic Poster

Computer 2925. **Fitting the Diffusional Kurtosis Tensor to Rotated Diffusion MR Images**  
*Pedro A. Gómez*, 1, 2 *Tim Sprenger*, 1, 2 *Marion I. Menzel*, 1 *Jonathan I. Sperl* 1  
1Technical University Munich, Munich, Germany; 2GE Global Research, Munich, Germany

Computer 2926. **Carpe Momentum: Computing Kurtosis with Anomalous Diffusion Measures**  
*Carson Ingo*, 1 *Yu Fen Chen*, 1, 2 *Todd B. Parrish*, 1 *Andrew G. Webb*, 1 *Itamar Ronen* 1  
1C.J. Gorter Center for High Field MRI, Department of Radiology, Leiden University Medical Center, Leiden, Netherlands; 2Department of Radiology, Northwestern University, Chicago, IL, United States

Computer 2927. **Fat Suppression for DW-FSE Sequences Using an Integrated Multi-Acquisition Dixon Method**  
*Tim Schakel*, 1 *Bjorn Stemkens*, 1 *Hans Hoogduin*, 1 *Marielle Philippens* 1  
1Radiotherapy, UMC Utrecht, Utrecht, Netherlands; 2Radiology, UMC Utrecht, Utrecht, Netherlands

Computer 2928. **Modelling Multiple Flip Angle Diffusion Weighted SSFP Data**  
*Saad Jhobdi*, 1 *Sean Foxley*, 1 *Karla L. Miller* 1  
1FMIRR Centre, University of Oxford, Oxford, Oxfordshire, United Kingdom

Computer 2929. **A Short-TE Computed Diffusion Imaging (CDWI)**  
*Tokunori Kimura*, 1 *Naotaka Sakashita*, 1, 2 *Yutaka Machii* 2  
1Clinical Application Research and Development Dept., Toshiba Medical Systems Corp., Otawara, Tochigi, Japan; 2MRI development dept., Toshiba Medical Systems Corp., Otawara, Tochigi, Japan

Computer 2930. **On the Influence of Scanner Vibrations on ADC in Apparent Exchange Rate Measurements**  
*Julian Emmerich*, 1 *Lars Müller*, 1 *Andreas Wetscherek*, 1 *Frederik Bernd Laun* 1  
1Medical Physics in Radiology, German Cancer Research Center (DKFZ), Heidelberg, Germany

Computer 2931. **Correction of Artifacts Caused by Transient Eddy Currents in Simultaneous Multi-Slice DMRI**  
*Rafael O'Halloran*, 1 *Chen Yang*, 1 *Junqian Xu* 1  
1Radiology, Icahn School of Medicine at Mt Sinai, New York, NY, United States

Computer 2932. **Towards High Spatial Resolution Diffusion-Sensitized MR Imaging of the Eye and Orbit at 3.0 T and 7.0 T: Quantitative Assessment of the Anatomic Fidelity of EPI and RARE Variants**  
*Katharina Paul*, 1 *Andreas Graesel*, 1 *Jan Rieger*, 1, 2 *Darius Lysiak*, 1, 2 *Till Huehnkagen*, 1, 2 *Lukas Winter*, 1, 2 *Robin Heidemann*, 1, 2 *Tobias Lindner*, 1, 2 *Stefan Hadlich*, 1 *Paul-Christian Kraeger*, 1 *Soenke Langner*, 1 *Oliver Stacks*, 1, 3 *Thoralf Niendorf*, 1  
1Max-Delbrueck Centre for Molecular Medicine, Berlin Ultrahigh Field Facility (B.U.F.F.), Berlin, Germany; 2MRI.TOOLS GmbH, Berlin, Germany; 3Siemens Healthcare Sector, Erlangen, Germany; 4University Medicine Rostock, Pre-clinical Imaging Research Group, Rostock, Germany; 5University of Greifswald, Institute for Diagnostic Radiology and Neuroradiology, Greifswald, Germany; 6University Medicine Rostock, Department of Ophthalmology, Rostock, Germany; 7Experimental and Clinical Research Center, a joint cooperation between the Charité Medical Faculty and the Max-Delbrueck-Center, Berlin, Germany

Computer 2933. **Acquisition of Diffusion MRI Data with High Spatial and Angular Resolution on Postmortem Monkey Brains Using 3D Segmented EPI**  
*Longchuan Li*, 1, 2 *Jaekun Park*, 1 *Yuguang Meng*, 1 *Todd Preuss*, 2 *Xiaodong Zhang*, 3 *Xiaoping Hu* 2  
1Department of Pediatrics, Marcus Autism Center, Children's Healthcare of Atlanta, Emory University, Atlanta, GA, United States; 2Biomedical Imaging Technology Center, School of Medicine, Emory University, Atlanta, GA, United States; 3Division of Neuropharmacology and Neurologic Diseases, Emory University, GA, United States

Computer 2934. **Motion Immune Diffusion Imaging Using Augmented MUSE (AMUSE) for High-Resolution Multi-Shot EPI**  
*Shayan Guhaniyogi*, 1 *Mei-Lan Chu*, 1, 2 *Hing-Chiu Chang*, 1 *Allen Song*, 1 *Nan-Kuei Chen* 1  
1Brain Imaging and Analysis Center, Duke University, Durham, NC, United States
In this work, we demonstrate the optimization of the flip angle in dependency of $T_1$, $T_2$ and $b$-value of the readout gradient in a standard bSSFP sequence. Despite many significant advances in the field of high-resolution diffusion MRI, most current diffusion imaging methods are limited by slab boundary artifacts and the need for long acquisition times. It is anticipated that an imaging protocol of this kind will enable a wide adoption of high-resolution diffusion MRI.

**Intrinsic Diffusion Sensitivity of the BSSFP Signal: Optimizing the Flip Angle in the Presence of Strong Read Out Gradients**

Sébastien Bär, Matthias Weigel, Jürgen Hennig, Dominik Von Elverfeldt, Jochen Leupold

1Department of Radiology, Medical Physics, University Medical Center Freiburg, Freiburg, Germany; 2Radiological Physics, University of Basel Hospital, Basel, Switzerland

**High-Quality and Self-Navigated Diffusion-Weighted Imaging Enabled by a Novel Interleaved Block-Segmented (iblocks) EPI**

Hsing-Chiu Chang, Mei-Lan Chu, Mark Sandman, Nan-Kuei Chen

1Brain Imaging and Analysis Center, Duke University Medical Center, Durham, NC, United States

**Low Frequency OGSE Improves Axon Diameter Imaging in Monkey Corpus Callosum Over Simple PGSE Method**

Ivana Drobnjak, John Lyon, Andrada Ianus, Daniel C. Alexander, Tim B. Dyrbø

1Centre for Medical Image Computing, Department of Computer Science, University College London, London, United Kingdom; 2Copenhagen University Hospital Hvidovre, Danish Research Centre for Magnetic Resonance, Hvidovre, Denmark

**High Angularly Resolved Diffusion Imaging with Short Scan Time and Low Distortion**

Tzu-Cheng Chao, Jr-Yuan George Chiou, Stephan E. Maier, Bruno Madore

1FMRIB Centre, Nuffield Department of Clinical Neurosciences, University of Oxford, Oxford, Oxfordshire, United Kingdom; 2FMRIB Centre, Nuffield Department of Clinical Neurosciences, University of Oxford, Oxford, Oxfordshire, United Kingdom; 3Department of Computer Science and Centre for Medical Image Computing, University College London, London, London, United Kingdom

**Multi-Slice Localized Parallel Excitation for DWI with a Reduced FOV in the Spinal Cord**

Denis Kokorin, Jürgen Hennig, Maxim Zaitsev

1Department of Radiology, Medical Physics, University Medical Center Freiburg, Freiburg, Germany

**Effects of Slab Boundary Artifacts on Diffusion Measures in 3D Multi-Slab Diffusion Imaging**

Wenchuan Wu, Peter Koopmans, Karla L. Miller

1FMRIB Centre, Nuffield Department of Clinical Neurosciences, University of Oxford, Oxford, Oxfordshire, United Kingdom

**An Optimized Protocol for Neurometric Orientation Dispersion and Density Imaging (NODDI) in Preclinical Studies**

Andreia C. Silva, Eleni Demetriou, Magdalena Sokolska, Mohamed Tachrouri, Niall Colgan, Bernard Siow, Mark F. Lythgoe, Xavier Golay, Hui Zhang

1Department of Brain Repair and Rehabilitation, UCL Institute of Neurology, London, United Kingdom; 2Centre for Advanced Biomedical Imaging, University College London, London, United Kingdom; 3Department of Computer Science and Centre for Medical Image Computing, University College London, London, United Kingdom

**3D Multi-Band Diffusion MRI**

Iain P. Bruce, Hsing-Chiu Chang, Nan-Kuei Chen, Allen W. Song

1Brain Imaging and Analysis Center, Duke University, Durham, NC, United States
Women's Hospital and Harvard Medical School, MA, United States; 5Center for Medical Image Science and Visualization (CMIV), Cardiff University, Cardiff, Wales, United Kingdom

Electronic Poster

Arterial Spin Labelling

Exhibition Hall Monday 10:45-11:45

Computer 67 2945. Comparison of Different Compressed Sensing Denoising Strategies for DSI Acquisition for Several Diffusion Mixing Times
Miguel Molina-Romero1, 2, Jonathan I. Sperl2, Tim Sprenger1, 2, Pedro A. Gómez1, 2, Xin Liu1, 2, Ek T. Tan1, Christopher J. Hardy1, Luca Martinelli1, Bjoern Menzel1, Derek K. Jones2, Marion I. Menzel2
1Technical University Munich, Garching, BY, Germany; 2GE Global Research, Garching, BY, Germany; 3GE Global Research, Niskayuna, NY, United States; 4Cardiff University Brain Research Imaging Centre (CUBRIC), Cardiff University, Cardiff, Wales, United Kingdom

Computer 68 2946. Analysis of Local Spatial Magnetization Frequency Sheds New Light on Diffusion MRI
Hans Knutsson1, 2, Magnus Herbertsson1, 4, Carl-Fredrik Westin1, 4
1Biomedical Engineering, Linköpings Universitet, Linköping, ÖG, Sweden; 2CMIV, Linköping University, Linköping, ÖG, Sweden; 3Mathematics, Linköpings Universitet, Linköping, ÖG, Sweden; 4Radiology, Brigham and Women's, Harvard Medical School, Boston, MA, United States

Computer 69 2947. Comparison of Diffusion MRI Protocols for the Microstructural Characterization of the Spinal Cord on the Healthy Mouse and on a Murine Model of Amyotrophic Lateral Sclerosis
Matteo Figini1, Alessandro Scotti1, Stefania Marcuzzo2, Silvia Bonanno2, Pia Bernasconi2, Victoria Moreno Manzano3, José Manuel García Verdugo2, Renato Mantegazza2, Ileana Zucca1, Maria Grazia Bruzzone2
1Scientific Direction, Fondazione IRCCS Istituto Neurologico "Carlo Besta", Milan, Italy; 2Neurology IV - Neuromotor and Neuromuscular Diseases and Neuroimmunology Unit, Fondazione IRCCS Istituto Neurologico "Carlo Besta", Milan, Italy; 3Neuronal and Tissue Regeneration laboratory, Centro de Investigación Príncipe Felipe, Valencia, Spain; 4Unidad de Neurobiología comparada, Universidad de Valencia, Valencia, Spain; 5Neuroradiology Unit, Fondazione IRCCS Istituto Neurologico "Carlo Besta", Milan, Italy

Computer 70 2948. Improvement of Heart IVIM Using 2nd Moment Nulling Pulse
TOMOYA NAKAMURA1, Isao Muro2, Naoko Kajihara2, Shuhei Shibukawa2, Tetsuo Ogino1
1Tokai University Hospital, Isehara, Kanagawa, Japan; 2Tokai University Hospital, Kanagawa, Japan; 3Philips Healthcare Asia Pacific, Tokyo, Japan

Computer 71 2949. Constrained Optimization of Gradient Waveforms for Isotropic Diffusion Encoding
Jens Sjölund1, 2, Markus Nilsson2, Daniel Topgaard1, Carl-Fredrik Westin1, 4, Hans Knutsson1, 5
1Linköping University, Linköping, Sweden; 2Elekta Instrument AB, Stockholm, Sweden; 3Lund University, Sweden; 4Brigham and Women’s Hospital and Harvard Medical School, MA, United States; 5Center for Medical Image Science and Visualization (CMIV), Linköping, Sweden

Computer 72 2950. Impact of Noise Bias with Parallel Imaging for Axon Diameter Estimation with Q-Space MRI
T. Duval1, T. Witzel1, B. Keil2, L. L. Wald3, V. Smith4, E. Klawiter2, J. Cohen-Adad5
1Institute of Biomedical Engineering, Polytechnique Montréal, Montréal, Québec, Canada; 2A.A. Martinos Center for Biomedical Imaging, Massachusetts General Hospital, Harvard Medical School, Charlestown, MA, United States; 3Functional Neuroimaging Unit, CRQUIGM, Université de Montréal, Montréal, Québec, Canada

Electronic Poster

Arterial Spin Labelling

Exhibition Hall Monday 10:45-11:45

Computer 73 2951. Background Suppressed Arterial Spin Labeling with Simultaneous Multi-Slice Echo Planar Imaging
Liyong Chen1, 2, Alexander Beckett1, 2, David A. Feinberg1, 2
1University of California, Berkeley, CA, United States; 2Advanced MRI Technologies, LLC, Sebastopol, CA, United States

Computer 74 2952. Measuring the Influence of Vessel Geometry on PCASL Labeling Efficiency
Jan Petr1, Georg Schramm1, Jörg van den Hoff1
1Institute of Radiopharmaceutical Cancer Research, Helmholtz-zentrum Dresden Rossendorf, Dresden, Germany

Computer 75 2953. A Novel Method to Estimate Labeling Efficiency for Pseudo-Continuous Arterial Spin Labeling Imaging
Zhensen Chen1, 2, Xingxing Zhang2, Andrew G. Webb2, Xihai Zhao1, Matthias J.P. van Osch1
1Center for Biomedical Imaging Research, Department of Biomedical Engineering, School of Medicine, Tsinghua University, Beijing, China; 2C.J. Gorter Center for High Field MRI, Department of Radiology, Leiden University Medical Center, Leiden, Zuid-holland, Netherlands
2954. Correcting for Encoding Filed Imperfections in Arterial Spin Labeling Using Gradient Impulse Responses and Concurrent Field Monitoring
Mustafa Cavusoglu1, Lars Kasper1, Johanna S. Vannesjo2, Benjamin E. Dietrich1, Simon Gross1, Klaus P. Pruessmann1
1Biomedical Engineering, ETH Zurich, Zurich, Switzerland; 2FMRI centre, Oxford University, Oxford, United Kingdom

2955. Reducing Readout Duration in Single-Shot, Stack-Of-Spirals Arterial Spin Labeling Using 2D In-Plane Accelerations
Yulin V. Chang1, 2, Marta Vidorreta1, Ze Wang1, 4, Maria A. Fernandez-Seara5, John A. Detre1
1Neurology, University of Pennsylvania, Philadelphia, PA, United States; 2Radiology, University of Pennsylvania, Philadelphia, PA, United States; 3Center for Cognition and Brain Disorders, Hangzhou Normal University, Hangzhou, Zhejiang, China; 4Psychiatry, University of Pennsylvania, Philadelphia, PA, United States; 5Functional Neuroimaging Laboratory, CIMA, University of Navarra, Navarra, Spain

2956. A Simple Modification for Reducing Scanning Time and Motion Artefacts in Clinical Implementations of 3D-PCASL
Stephen James Wastling1, Gareth John Barker1, Jonathan Ashmore2, Fernando Zelaya1
1Department of Neuroimaging, King's College London, London, United Kingdom; 2Department of Neuroradiology, King's College Hospital, London, United Kingdom

2957. Strategies for Increasing Spatial Coverage of Balanced Steady-State Free Precession Arterial Spin Labeling
Paul Kyu Han1, Jong Chul Ye2, Eung Yeop Kim3, Seung Hong Choi3, Sung-Hong Park4
1Department of Bio and Brain Engineering, Korea Advanced Institute of Science and Technology, Daejeon, Korea; 2Department of Radiology, Gachon University Gil Medical Center, Incheon, Korea; 3Department of Radiology, Seoul National University College of Medicine, Seoul, Korea

2958. Support Vector Machine Classification Analysis of Arterial Volume-Weighted Arterial Spin Tagging (AVAST) Images
Yash S. Shah1, Luis Hernandez-Garcia1, Hesamoddin Jahanian1, Scott J. Peltier1
1University of Michigan, Ann Arbor, MI, United States

2959. Model-Independent Arterial Transit Time Mapping Using Pseudo-Continuous ASL
Toralf Mildner1, Kathrin Lorenz, 1, 2, Harald E. Möller1
1Max Planck Institute for Human Cognitive and Brain Sciences, Leipzig, Saxony, Germany; 2Faculty of Physics and Earth Sciences, University of Leipzig, Saxony, Germany

2960. Arterial Transit Time Imaging with Vessel-Selective Arterial Spin Labeling
Jianxun Qu1, Bing Wu1, Min Chen2, Yingkai Zhang1, Zhenyu Zhou1
1GE Healthcare China, Beijing, China; 2Beijing Hospital, Beijing, China

2961. Cardiac-Triggered PCASL: A Cost-Effective Scheme to Enhance the SNR of ASL
Yang Li1, Deng Mao1, Hanzhang Liu1
1Advanced Imaging Research Center, University of Texas Southwestern Medical Center, Dallas, TX, United States

2962. Independent Determinants of Cerebral Blood Flow from Multiple Post Label Delay Arterial Spin-Labeling and Phase Contrast Angiography Help Differentiate the Influence of Small and Large Arteries
Andrew D. Robertson1, Bradley J. MacIntosh1, 2
1Heart & Stroke Foundation Canadian Partnership for Stroke Recovery, Sunnybrook Research Institute, University of Toronto, Toronto, ON, Canada; 2Department of Medical Biophysics, University of Toronto, Toronto, ON, Canada

2963. Feasibility of Quantification of Cerebral Blood Perfusion Using Multi-Phase Inter-Slice Perfusion Imaging
Ki Hwan Kim1, Seung Hong Choi2, Sung-Hong Park3
1Department of Bio and Brain Engineering, Korea Advanced Institute of Science and Technology, Daejeon, Korea; 2Department of Radiology, Seoul National University College of Medicine, Korea; 3Department of Bio and Brain Engineering, Korea Advanced Institute of Science and Technology, Korea
2964. Cerebral Perfusion Measurements at 17.2 T Using PCASL: A Feasibility Study
Luisa Ciobanu1, Lydiane Hirschler2, 3, Tomokazu Tsurugizawa1, Denis Le Bihan1, Clément Dehacker2, 3, Emmanuel L. Barbier3.
1Neurop spine, CEA, Gif-sur-Yvette, France; 2Bruker Biospin, Wissembourg, France; 3University Grenoble Alpes, Grenoble, France.

2965. The Comparison of ASL Features Between Young and Elderly Population: Clinically Feasible Parameter Setting for Long Labeled Pseudo-Continuous ASL to Reduce the Sensitivity of Delayed Arterial Transit Time
Yasuyori Fujiwara1, Hirokilo Kimura2, Tsuyoshi Matsuda1, Masayuki Kanamoto3, Tatsuro Tsuchida4, Kazunobu Tsuji4, Nobuyuki Kosaka3, Toshiki Adachi5.
1Department of Medical Imaging, Faculty of Life Sciences, Kumamoto University, Kumamoto, Japan; 2Department of Radiology, University of Fukui, Fukui, Japan; 3Global MR Applications and Workflow, GE Healthcare Japan, Tokyo, Japan; 4Radiological Center, University of Fukui Hospital, Fukui, Japan.

2966. The Importance of Partial Volume Correction in ASL Based Studies of Cerebral Perfusion in Mild Cognitive Impairment: A Quantitative Comparison
Virginia Mato Abad1, Pablo García-Polo2, 3, Juan Álvarez-Linera4, Ana Frank5, Fernando Zelaya6, Juan Antonio Hernández-Tamames7.
1LAIMBIO, Universidad Rey Juan Carlos, Móstoles, Madrid, Spain; 2Martinos Center, MGH, M+Visión Advanced Fellowship, Charlestown, MA, United States; 3Center for Biomedical Technology (CTB-UPM), Madrid, Spain; 4Hospital Ruber Internacional, Madrid, Spain; 5Hospital Universitario La Paz, Madrid, Spain; 6Centre for Neuroimaging Sciences, Institute of Psychiatry, King's College London, London, United Kingdom.

2967. Modeling Flow Dispersion in Pseudocontinuous Arterial Spin Labeling and Its Application in Moyamoya Disease Patients
Zungho Zun1, 2, R. Marc Lebel1, Ajit Shankaranarayanan3, Greg Zaharchuk4.
1Stanford University, Stanford, CA, United States; 2Children's National Medical Center, Washington, DC, United States; 3GE Healthcare, Calgary, AB, Canada; 4GE Healthcare, Menlo Park, CA, United States.

2968. Effects of 24 Hour Sleep Deprivation on Cerebral Blood Flow Measured by ASL
Henri Matuaerts1, Torbjorn Elvåshagen2, Lars Westlye3, Ate Bjørnerud2, Inge Groote4.
1Academic Medical Center, Amsterdam, Netherlands; 2Oslo University Hospital, Norway; 3University of Oslo, Norway.

2969. An Exercise-Recovery Protocol Depicts Muscle Perfusion and Capillary Recruitment Heterogeneity in Peripheral Arterial Disease
Jason K. Mendes1, Christopher J. Hanrahan1, Jeff L. Zhang1, Gwenael Layec2, Corey Harr2, Russell Richardson, 34, Sarang Joshi3, Vivian S. Lee2.
1Radiology, University of Utah, Salt Lake City, UT, United States; 2Medicine, University of Utah, Salt Lake City, UT, United States; 3Exercise and Sports Science, University of Utah, Salt Lake City, UT, United States; 4Medicine, University of Utah, UT, United States; 5Bioengineering, University of Utah, Salt Lake City, UT, United States.

2970. Altered Blood-Brain Barrier Function in Patients with Obstructive Sleep Apnea
Jose A. Palomares1, Danny JJ Wang2, 3, Bumhee Park1, Sudhakar Tummala1, Mary A. Woo1, Daniel W. Kang4, Keith S. St Lawrence5, Ronald M. Harper1, Rajesh Kumar1, 3.
1Anesthesiology, University of California at Los Angeles, Los Angeles, CA, United States; 2Neurology, University of California at Los Angeles, Los Angeles, CA, United States; 3Radiological Sciences, University of California at Los Angeles, Los Angeles, CA, United States; 4School of Nursing, University of California at Los Angeles, Los Angeles, CA, United States; 5Medicine, University of California at Los Angeles, Los Angeles, CA, United States; 6Lawson Health Research Institute, London, Canada; 7Neurobiology, University of California at Los Angeles, Los Angeles, CA, United States.

2971. Multi-Voxel Pattern Analysis Delineates Selective ASL-Collateral Supply in Patients with Intracranial Stenosis
Andrea Federspiel1, Simon Schwab1, Mirjam R. Heldner2, Urs Fischer3, Jan Gralla1, Roland Wiest1.
1Psychiatric Neurophysiology, University Hospital of Psychiatry, Bern, Switzerland; 2Inselspital, University of Bern, Department of Neurology and Stroke Center, Bern, Switzerland; 3Inselspital, University of Bern, Institute of Diagnostic and Interventional Neuroradiology, Bern, Switzerland.
Electronic Poster

Diffusion & Tractography Analyses

Exhibition Hall  Monday 11:45-12:45

Computer 94 2972. 3D GRASE Pseudo-Continuous Arterial Spin Labeling (PCASL) of Preterm Human Brains

\textit{Minhui Ouyang}\textsuperscript{1}, \textit{Peiyung Liu}\textsuperscript{1}, \textit{Hanzhang Lu}\textsuperscript{1}, \textit{Tina Jeon}\textsuperscript{1}, \textit{Lina Chalak}\textsuperscript{2}, \textit{Jonathan M. Chia}\textsuperscript{1}, \textit{Andrea Wiethoff}\textsuperscript{1}, \textit{Nancy K. Rollins}\textsuperscript{1}, \textit{Hao Huang}\textsuperscript{1}

\textsuperscript{1}Advanced Imaging Research Center, University of Texas Southwestern Medical Center, Dallas, TX, United States; \textsuperscript{2}Department of Pediatrics, University of Texas Southwestern Medical Center, Dallas, TX, United States

Computer 95 2973. ASAP: Automatic Software for ASL Processing

\textit{Virginia Mato Abad}\textsuperscript{1}, \textit{Pablo Garcia-Polo}\textsuperscript{2, 3}, \textit{Owen O’Daly}\textsuperscript{2}, \textit{Juan Antonio Hernández-Tamames}\textsuperscript{1}, \textit{Fernando Zelaya}\textsuperscript{1}

\textsuperscript{1}LAIMBIO, Universidad Rey Juan Carlos, Móstoles, Madrid, Spain; \textsuperscript{2}Martinos Center, MGH, M+Vision Advanced Fellowship, Charlestown, MA, United States; \textsuperscript{3}Center for Biomedical Technology (CTB-UPM), Madrid, Spain

Computer 96 2974. Detection of Brain Activation Using High-Resolution Arterial Spin Labeling Perfusion fMRI at 3T

\textit{Iris Asllani}\textsuperscript{1}, \textit{Ajna Borogovac}\textsuperscript{2}, \textit{Dylan Bruening}\textsuperscript{2}, \textit{Sophie Schmid}\textsuperscript{3}, \textit{Wouter M. Teewisse}\textsuperscript{1}, \textit{Matthias J.P. van Osch}\textsuperscript{1}

\textsuperscript{1}RIT, Rochester, NY, United States; \textsuperscript{2}RIT, NY, United States; \textsuperscript{3}Leiden University Medical Center, Leiden, Netherlands

Electronic Poster

Multiple Sclerosis Clinical Classification Based on DTI Fiber Analysis

\textit{Claudio Stamile}\textsuperscript{1}, \textit{Gabriel Koccevar}\textsuperscript{1}, \textit{Françoise Durand-Dubief}\textsuperscript{1, 2}, \textit{François Cotton}\textsuperscript{1, 3}, \textit{Carole Frindel}\textsuperscript{1}, \textit{Salem Hannoun}\textsuperscript{1}, \textit{Dominique Sappey-Marinier}\textsuperscript{1, 4}

\textsuperscript{1}CREATIS (CNRS UMR5220 & INSERM U1044), Université Lyon 1, INSA-Lyon, Villeurbanne, France; \textsuperscript{2}Service de Neurologie A, Hôpital Neurologique, Hospices Civils de Lyon, Bron, France; \textsuperscript{3}Service de Radiologie, Centre Hospitalier Lyon-Sud, Hospices Civils de Lyon, Pierre-Benite, France; \textsuperscript{4}CERMEP - Imagerie du Vivant, Université de Lyon, Bron, France

Detection of Longitudinal DTI Changes in Multiple Sclerosis Patients Based on Sensitive WM Fiber Modeling

\textit{Claudio Stamile}\textsuperscript{1}, \textit{Gabriel Koccevar}\textsuperscript{1}, \textit{François Cotton}\textsuperscript{1, 2}, \textit{Françoise Durand-Dubief}\textsuperscript{1, 3}, \textit{Salem Hannoun}\textsuperscript{1}, \textit{Carole Frindel}\textsuperscript{1}, \textit{David Rousseau}\textsuperscript{1}, \textit{Dominique Sappey-Marinier}\textsuperscript{1, 4}

\textsuperscript{1}CREATIS (CNRS UMR5220 & INSERM U1044), Université Lyon 1, INSA-Lyon, Villeurbanne, France; \textsuperscript{2}Service de Radiologie, Centre Hospitalier Lyon-Sud, Hospices Civils de Lyon, Pierre-Benite, France; \textsuperscript{3}Service de Neurologie A, Hôpital Neurologique, Hospices Civils de Lyon, Bron, France; \textsuperscript{4}CERMEP - Imagerie du Vivant, Université de Lyon, Bron, France

Individualized Prediction of ADHD Based on Patterns of Altered Tract Integrity Over the Whole Brain: A Performance Test on Adult Females with ADHD Using Diffusion Spectrum Imaging

\textit{Yu-Jen Chen}\textsuperscript{1}, \textit{Yun-Chin Hsu}\textsuperscript{1}, \textit{Yu-Chun Lo}\textsuperscript{1}, \textit{Shur-Fen Susan Gau}\textsuperscript{2}, \textit{Wen-Yih Isaac Tseng}\textsuperscript{1, 3}

\textsuperscript{1}Center for Optoelectronic Medicine, National Taiwan University College of Medicine, Taipei, Taiwan; \textsuperscript{2}School of Psychology, University of Adelaide, Adelaide, SA, Australia; \textsuperscript{3}Dept. of Radiology, The Royal Adelaide Hospital, Adelaide, SA, Australia

Profilometry: Towards a More Specific Characterization of White Matter Pathways, with Application to Multiple Sclerosis.

\textit{Michael Dayan}\textsuperscript{1}, \textit{Elizabeth Monohan}\textsuperscript{1}, \textit{Sneha Pandya}\textsuperscript{1}, \textit{Amy Kuceyeski}\textsuperscript{1}, \textit{Thanh Nguyen}\textsuperscript{1}, \textit{Susan Gauthier}\textsuperscript{2}, \textit{Ashish Raj}\textsuperscript{1}

\textsuperscript{1}Radiology, Weill Cornell Medical College, New York, NY, United States; \textsuperscript{2}Neurology, Weill Cornell Medical College, New York, NY, United States

A Machine Learning Approach to Identify Structural Connections Affected in Diffuse Axonal Injury

\textit{J. Mitra}\textsuperscript{1}, \textit{S. Ghose}\textsuperscript{1}, \textit{K-K. Shen}\textsuperscript{1}, \textit{K. Pannek}\textsuperscript{1}, \textit{P. Bourgeat}\textsuperscript{1}, \textit{J. Fripp}\textsuperscript{1}, \textit{O. Salvado}\textsuperscript{1}, \textit{J. L. Mathias}\textsuperscript{1}, \textit{D. J. Taylor}\textsuperscript{4}, \textit{S. Rose}\textsuperscript{1}

\textsuperscript{1}Australian e-Health & Research Centre, CSIRO Digital Productivity Flagship, Herston, QLD, Australia; \textsuperscript{2}Imperial College London, London, United Kingdom; \textsuperscript{3}School of Psychology, University of Adelaide, Adelaide, SA, Australia; \textsuperscript{4}School of Psychology, University of Adelaide, Adelaide, SA, Australia

Quantitative Assessment of Diffusional Kurtosis Anisotropy

\textit{G. Russell Glenn}\textsuperscript{1}, \textit{Joseph A. Helpert}\textsuperscript{1}, \textit{Ali Tabesh}\textsuperscript{1}, \textit{Jens H. Jensen}\textsuperscript{1}

\textsuperscript{1}Integrative Imaging Research Laboratory, University of Texas Southwestern Medical Center, Dallas, TX, United States

421
2981. **Choices in Processing Steps for Diffusion MRI Analyses: Does It Really Matter?**

Szabolcs David, Chantal M. W. Tax, Max A. Viergever, Anneriet Heemskerk, Alexander Leemans

1Image Sciences Institute, University Medical Center Utrecht, Utrecht, Netherlands

2982. **Hybrid Parallel Tempering and Levenberg-Marquardt Method for Efficient and Stable Fitting of Noisy MRI Dataset**

Marco Palombo, Matthias Vandesquille, Julien Valette

1CEA/DSV/I2BM/MIRCen, Fontenay-aux-Roses, France, France; 2CEA-CNRS URA 2210, Fontenay-aux-Roses, France, France

2983. **Robustness of Phase Sensitive Reconstruction in Diffusion Spectrum Imaging**

Marion I. Menzel, Tim Sprenger, Valdimir Golkov, Christopher J. Hardy, Luca Marinelli, Jonathan I. Sperl

1Diagnostics, Imaging and Biomedical Technologies Europe, GE Global Research, Munich, Germany; 2Technical University Munich, Munich, Germany; 3GE Global Research, Niskayuna, NY, United States

2984. **An Efficient Motion Correction Method for Improved ADC Estimates in the Abdomen**

Hossein Ragheb, Neil A. Thacker, Jean-Marie Guyader, Stefan Klein, Alan Jackson

1Centre for Imaging Sciences, Faculty of Medical and Human Sciences, University of Manchester, Manchester, United Kingdom; 2Biomedical Imaging Group Rotterdam, Departments of Medical Informatics and Radiology, Erasmus MC, Rotterdam, Netherlands; 3The Wolfson Molecular Imaging Centre, Faculty of Medical and Human Sciences, University of Manchester, Manchester, United Kingdom

2985. **GPU Imaging Analysis for Ultra-Fast Non-Gaussian Diffusion Mapping**

Marco Palombo, Dianwen Zhang, Chen Zhu, Julien Valette, Alessandro Gozzi, Angelo Bifone, Andrea Messina, Gianluca Lamanna, Silvia Capuani

1CEA/DSV/I2BM/MIRCen, Fontenay-aux-Roses, France, France; 2IPCF-UOS Roma, Phys. Dpt., Sapienza University, Rome, Italy; 3ITG, Beckman Institute, UIUC, Urbana, IL, United States; 4College of Economics & Management, CAU, Beijing, China; 5IIT, Center for Neuroscience and Cognitive Systems @ UniTn, Rovereto, Italy; 6Physics Dpt., Sapienza University, Rome, Italy; 7INFN, Pisa Section, Pisa, Italy; 8IPCF-UOS Roma, Phys. Dpt., Sapienza University, Rome, Italy

2986. **Comparison of Diffusion Kurtosis Modeling Algorithms: Accuracy and Application**

Daniel Olson, Volkan Arpinar, L. Tugan Muftuler

1Biophysics, Medical College of Wisconsin, Milwaukee, WI, United States; 2Neurosurgery, Medical College of Wisconsin, WI, United States

2987. **Are SHORE-Based Biomarkers Suitable Descriptors for Microstructure in DSI?**

Lorena Brusini, Mauro Zucchelli, Alessandro Doducci, Cristina Grassnera, Gloria Menegaz

1Computer Science, University of Verona, Verona, Italy; 2EPFL, Lausanne, Switzerland; 3Siemens Healthcare IM BM PI & Department of Radiology, CHUV, Lausanne, Switzerland; 4Department of Clinical Neurosciences, CHUV, Lausanne, Switzerland

2988. **Correcting for Perfusion and Isotropic Free Diffusion in Diffusion Weighted Imaging and DTI and CSD Analysis**

Martijn Froeling, Peter R. Luijten, Alexander Leemans

1Radiology, UMC Utrecht, Utrecht, Netherlands; 2Image Sciences Institute, UMC Utrecht, Utrecht, Netherlands


Hanza Farooq, Junqian Xu, Essa Yacoub, Tryphon Georgiou, Christophe Lenglet

1Electrical and Computer Engineering, University of Minnesota, Minneapolis, MN, United States; 2Department of Radiology, Icahn School of Medicine, The Mount Sinai Hospital, NY, United States; 3Center for Magnetic Resonance Research, Department of Radiology, University of Minnesota, Minneapolis, MN, United States
Diffusion-weighted signals are prone to artifacts. We propose to map residuals along specific tracts aiming at ... when looking at individual tracts. This is a new way to perform data quality control for tract specific measurements.

1Don Carlo Gnocchi Foundation ONLUS, IRCCS S. Maria Nascente, Milano, Italy; 2Department of Electronics, Information and Computer Systems, Politecnico di Milano, Milano, Italy; 3NATBRAINLAB, Department of Neuroimaging, Institute of Psychiatry, Psychology and Neuroscience, King’s College, London, United Kingdom

If CSF is not correctly masked out in high angular-resolution diffusion images (HARDI) then tractography can generate artifacts, particularly in the white matter. In this study, we present a novel method to mask out CSF in HARDI data as they are in the same space and the voxels have the same partial volume effects.

1Centre for Imaging Sciences, The University of Manchester, Manchester, England, United Kingdom; 2School of Psychological Sciences, & Center for Biomedical Imaging, Medical University of South Carolina, Charleston, SC, United States

This study optimizes the performance of the diffusional kurtosis imaging (DKI) approximation of the diffusion orientation distribution function (ODF). The DKI model is known to provide a more accurate description of the diffusion signal in the presence of non-Gaussian diffusion. This study shows that the DKI model can effectively capture the complexity of diffusion in the white matter, which is important for understanding the microstructural properties of brain tissue.

1e-Health Research Centre, CSIRO, Brisbane, Queensland, Australia; 2Queensland Cerebral Palsy and Rehabilitation Research Centre, University of Queensland, Queensland, Australia; 3Department of Computing, Imperial College London, London, United Kingdom

A novel mesh-based fMRI protocol was developed to seed and constrain diffusion tractography. This method was used to analyze the diffusion signal from healthy and diseased brains, providing a new way to study brain connectivity.

1SCIL, Computer science department, Université de Sherbrooke, Montréal, Québec, Canada; 2School of Electrical and Electronic Engineering, Nanyang Technological University, Singapore

We present a new local reconstruction algorithm for diffusion MRI based on a new sampling theorem for non-bandlimited functions on the sphere. The performance of this algorithm is illustrated using simulated low b-value DTI-like data.

1Graduate School of Medicine, Tohoku University, Sendai, Japan; 2Diagnostic Radiology, Tohoku University Hospital, Sendai, Japan; 3Siemens Japan K.K., Tokyo, Japan
The aim of the present study was to investigate microstructural disruption of white matter tracts in alcohol-dependent subjects. In vivo changes in both conventional MRI (MTR, T2, radial diffusivity) metrics and White Matter Tract Integrity (WMTI) metrics were evaluated. The study has suggested that the low b-value distribution in brain images was affected by the f value derived from IVIM sequence. Histological validation is underway.

We propose a method to improve diffusion MRI and facilitate the matching between MR imaging and tissue. A cryostat is used for slicing frozen tissue sections in a slice-to-slice fashion. This method is easy and straightforward to be used in preclinical studies.

Multifocal motor neuropathy (MMN) is a rare immune-mediated disorder that affects 1-2 persons per 100,000. Due to the lack of appropriate markers, these patients are difficult to diagnose. DTI and molecular expression-based studies can detect radiation-induced early acute neuroinflammatory changes in brain. The study has suggested that the low b-value distribution affected the f value derived from IVIM sequence. Histological validation is underway.
Heterogenous PLP1 Mutations Express Differing Pathology of the Corpus Callosum in Pelizaeus-Merzbacher Disease.
Malek I. Makki1, Jeremy J. Laukka2
1MRI Research, University Children Hospital of Zurich, Zurich, Switzerland; 2Neuroscience and Neurology, University of Toledo, Toledo, OH, United States

Advanced Diffusion Methods Proved More Robust Assessments of Microstructure Than Standard DTI in Complex Human Brain Tissue
Joong Kim1, David L. Brody1
1Washington University School of Medicine, St. Louis, MO, United States

Quality Assessment and Ranking System for Quantitative Breast Diffusion-Weighted Imaging of the Breast in the ACRIN 6698 Trial
Sheye Aliu1, David Newitt1, Wen Li1, Jessica Gibbs1, Lisa Cimino2, Eunhee Kim2, Savannah Partridge3, Patrick Bolan4, Thomas Chenevert5, Mark Rosen6, Nola Hylton1
1Radiology & Biomedical Imaging, University of California at San Francisco, San Francisco, CA, United States; 2ECOG-ACRIN Cancer Research Group, PA, United States; 3Radiology, University of Washington School of Medicine, Seattle Cancer Care Alliance, WA, United States; 4Center for Magnetic Resonance Research, University of Minnesota, MN, United States; 5Radiology, University of Michigan Health System, MI, United States; 6Radiology, University of Pennsylvania, PA, United States

Robust Estimation of IVIM Metrics in Human Liver Using Rician Noise Filter
Zhongping Zhang1, Bing Wu1, Jin Wang2, Zhenyu Zhou1
1GE Healthcare China, Beijing, China; 2Radiology, The Third Affiliated Hospital of Sun Yat-sen University, Guangzhou, Guangdong, China

Whole Body Diffusion-Weighted MRI: Normal Lymph Node Distribution, Volume and Apparent Diffusion Coefficient (ADC) in Healthy Volunteers
Raphael Shih Zhu Yin1, Giuliano Scattoli1, Dow-Mu Koh1, David J Collins2, Martin O Leach2, Matthew D. Blackledge2
1Department of Radiology, The Royal Marsden Hospital, Sutton, Surrey, United Kingdom; 2CR-UK and EPSRC Cancer Imaging Imaging Centre, Sutton, Surrey, United Kingdom

In-Vivo Detection of Diffusive Water Transport in Human Eye Using High-Resolution Diffusion Weight Imaging
Jiancheng Zhuang1, Bosco S. Tjan1
1University of Southern California, Los Angeles, CA, United States

Diffusion Tensor Imaging of the Human Aortic Wall: An Ex-Vivo Study
Nicola Martini1, Simona Celi12, Daniele Della Latta1, Daniele De Marchi1, Giuseppe Valvano13, Angelo Monteleone1, Vincenzo Positano1, Maria Filomena Santarelli45, Sergio Berti1, Marco Solinas1, Luigi Landini13, Dante Chiappino1
1Fondazione G.Monasterio CNR-Regione Toscana, Massa, MS, Italy; 2Scuola Superiore Sant’Anna, Pisa, PI, Italy; 3Department of Information Engineering, University of Pisa, Pisa, PI, Italy; 4Fondazione G.Monasterio CNR-Regione Toscana, Pisa, PI, Italy; 5Institute of Clinical Physiology, CNR, Pisa, PI, Italy

Diffusion Tensor Imaging of the Lumbar and Sacral Plexus in Post Mortem Subjects
Wieke Haakma12, Michael Pedersen2, Martijn Froeling2, Lars Uhrenholt2, Jeroen Hendrikse2, Alexander Leemans5, Lene Warner Thorup Boel2
1Department of Psychology, Auburn University, Auburn, Al, United States; 2Canine Detection Research Institute, Auburn University, Auburn, Al, United States; 3Dept. of Anatomy, Physiology & Pharmacology, Auburn University, Auburn, Al, United States; 4MR R&D, Siemens Healthcare, Malvern, PA, United States
Aim of this work was to measure the diffusion coefficient of human blood samples dependent on diffusion time T and ... compared to these variations. IVIM applications might benefit from individually measured diffusion coefficients of blood.

IVIM MR imaging was conducted on untreated NPC cases during two cycle of induction chemotherapy. The diffusion and ... early diffusion and perfusion response to chemotherapy in NPC and potentially helpful with prognosis determination.

The purpose of this study was to compare a simplified IVIM (sIVIM) model with commonly used monoexponential and biexponential models... to the biexponential model, and it showed better correlation with tumor aggressiveness than the monoexponential model.

In this study we show that the surface to volume ratio (S/V) is a natural candidate to study in vivo the restrictions in ... sense different scales and provide complementary information regarding tumor growth, treatment or microstructure.

Diffusion tensor imaging (DTI) allows evaluation of microstructural properties of tissue and is therefore an emerging ... to the understanding of pathogenesis and disease progression in peripheral neurological disorders in the future.

Characterizing the Diffusion Properties of Blood

Electronic Poster

Diffusion: Modelling of Microstructure

Exhibition Hall  Monday 11:45-12:45

Computer 42 3016.  Assessment of Aquaporins Function in Stages of Clinical Liver Fibrosis Using Multi-B DWI
Qiuju Li\(^1\), Qiyong Guo\(^1\), Zhaoshe Zhao\(^2\), Jiahui Li\(^1\), Bing Yu\(^1\), Yu Shi\(^1\)
\(^1\)Radiology, shengjing hospital, Shenyang, Liaoning, China; \(^2\)General Electronic Company Healthcare (China), General Electronic Company Healthcare (China), Beijing, China

Computer 43 3017.  Surface to Volume Ratio Mapping of Mouse GBM Using OGSE
Olivier Reynaud\(^1\),\(^2\), Kerryanne V. Winters\(^1\),\(^2\), Dmitry S. Novikov\(^1\),\(^2\), Sungheon Gene Kim\(^1\),\(^2\)
\(^1\)Center for Advanced Imaging Innovation and Research (CAI2R), Department of Radiology, New York University School of Medicine, New York, NY, United States; \(^2\)Bernard and Irene Schwartz Center for Biomedical Imaging, Department of Radiology, New York University School of Medicine, New York, NY, United States

Computer 44 3018.  Impact of Co-Registration on the Histogram Analysis of ADC Maps in MRI/MRS Brain Tumor Diagnostics
Niao Pedrosa de Barros\(^1\),\(^2\), Urspeiter Knecht\(^1\), Roland Wies\(^1\), Johannes Slotboom\(^1\)
\(^1\)University of Bern, Bern, Switzerland; \(^2\)Institute for Diagnostic and Interventional Neuroradiology, Bern, Switzerland

Computer 45 3019.  A Simplified Intravoxel Incoherent Motion Model for Diffusion Weighted Imaging in Prostate Cancer Evaluation: Comparison with Monoeponential and Biexponential Models
Qing Yuan\(^1\), Daniel N. Costa\(^1\),\(^2\), Juli\'en S\'enegas\(^1\), Yin Xi\(^1\), Andrea J. Wiethoff\(^1\),Robert E. Lenkinski\(^1\), Ivan Pedrosa\(^1\)
\(^1\)Radiology, UT Southwestern Medical Center, Dallas, TX, United States; \(^2\)Advanced Imaging Research Center, UT Southwestern Medical Center, Dallas, TX, United States; \(^3\)Philips Research Laboratories, Hamburg, Germany; \(^4\)Philips Research North America, Briarcliff Manor, NY, United States

Computer 46 3020.  Value of DTI and DTT Map to Differentiate Prostate Cancer in Central Gland from Benign Prostate Hyperplasia
Tao GONG\(^1\), bin wang\(^2\), guangbin WANG\(^3\), shuhui YUAN\(^4\)
\(^1\)Shandong Medical Imaging Research Institute, Shandong University, Shandong, Jinan, China; \(^2\)binzhou medical university, Shandong, yantai, China; \(^3\)Shandong Medical Imaging Research Institute, Shandong University, jinan, China; \(^4\)binzhou medical university, yantai, China

Computer 47 3021.  Diffusion Weighted Imaging Using Intravoxel Incoherent Motion Model with T2 Relaxivity Correction for Therapeutic Efficacy in VX2 Liver Tumor in Rabbits
Jeong Hee Yoon\(^1\), Jeong Min Lee\(^1\), Mun Young Paek\(^2\), Sangwoo Lee\(^1\), Joon Koo Han\(^1\)
\(^1\)Radiology, Seoul National University Hospital, Seoul, Korea; \(^2\)Siemens Healthcare Korea, Seoul, Korea; \(^3\)Samsung electronics, Seoul, Korea

Computer 48 3022.  Intravoxel Incoherent Motion MR Imaging: Diffusion and Perfusion Characteristics in Early Assessment of Chemotherapy Response in Nasopharyngeal Carcinoma
Zhuangzhen He\(^1\), Yunbin Chen, Youping Xiao, Minfeng Li, Weibo Chen\(^2\), He Wang\(^3\)
\(^1\)Fujian Province Cancer Hospital, Fuzhou, Fujian, China; \(^2\)Philips Healthcare, Shanghai, China; \(^3\)Philips Research China, Shanghai, China

Electronic Poster
3024. Monitoring the Progressive Changes in Kidney Diffusion and Perfusion in Contrast-Induced Nephropathy Using IVIM MRI
Shuixing Zhang,1 Wenbo Chen,1 Long Liang,1 Kannie W.Y. Chan,2 Yuguo Li,2 Bin Zhang,2 Guanshu Liu,2 Changhong Liang
1Radiology, Guangdong Academy of Medical Sciences/Guangdong General Hospital, Guangzhou, Guangdong, China; 2Russell H. Morgan Department of Radiology and Radiological Sciences, Division of MR Research, The Johns Hopkins University School of Medicine, Baltimore, MD, United States

3025. Time Dependent Diffusion in Prostate
Gregory Lemberskiy,1, 2 Andrew Rosenkrantz,1 Henry Rusinek,1 Els Fieremans,1 Dmitry S. Novikov
1Bernard and Irene Schwartz Center for Biomedical Imaging, Department of Radiology, New York University School of Medicine, New York, NY, United States; 2Sackler Institute of Graduate Biomedical Sciences, New York University School of Medicine, New York, NY, United States

3026. Diffusion Microstructure Modelling Using a Modular and Extensible GPU Accelerated Toolkit
Robbert Harms,1 Silvia de Santis,1, 2 Matteo Bastiani,1 Rainer Goebel,1 Alard Roebroeck
1Maastricht University, Maastricht, Limburg, Netherlands; 2CUBRIC Cardiff University, Cardiff, United Kingdom

3027. Using Oscillating Gradient Spin-Echo Sequences to Infer Micron-Sized Bead and Pore Radii
Sheryl L. Herrera,1 Morgan E. Mercredi,1 Trevor J. Vincent,2, 3 Richard Buis,1 Melanie Martin,1, 3
1Physics & Astronomy, University of Manitoba, Winnipeg, Manitoba, Canada; 2Physics, University of Winnipeg, Winnipeg, Manitoba, Canada; 3Physics, University of Toronto, Toronto, Ontario, Canada; 4Radiology, University of Manitoba, Winnipeg, Manitoba, Canada; 5Physics & Anatomy, Radiology, University of Winnipeg, Manitoba, Canada

3028. How to Get More Out of a Clinically Feasible 64 Gradient DMRI Acquisition: Multi-Shell Versus Single-Shell
Rutger Fick,1 Mauro Zucchelli,1 Gabriel Girard,1, 2 Gloria Menegaz,1 Maxime Descoteaux,3 Rachid Deriche
1DeFI, INRIA, École Polytechnique, Palaiseau, France; 2Institute of Imaging Science, Vanderbilt University, Nashville, TN, United States; 3Sherbrooke Connectivity Imaging Lab (SCIIL), Computer Science Department, Quebec, Canada

3029. Estimation of Pore Size Distributions with Diffusion MRI: Feasibility for Clinical Scanners
Gaetan Duchene,1 Frank Peeters,1 Thierry Duprez,1
1Medical Imaging, Université Catholique de Louvain, Brussels, Belgium

3030. Potential Effect of Varying Background B0 Gradients on Diffusion Measurements: An in Silico Study
Marco Palombo,1, 2 Chloé Najac,1, 2 Julien Valette,1, 2
1CEA/DSV/I2BM/MIRCen, Fontenay-aux-Roses, France, France; 2CEA-CNRS URA 2210, Fontenay-aux-Roses, France

3031. Simulation Study Investigating the Role of Vessel Topology in Differentiating Normal and Tumor Vessels Using Transverse Relaxation Times
Mohammed Salman Shazeeb,1 Bashar Issa
1Department of Physics, UAE University, Al-Ain, Abu Dhabi, United Arab Emirates

3032. Effect of Diffusion and Vessel Topology on Relaxation Mechanisms Using a Cylinder Fork Model
Mohammed Salman Shazeeb,1 Bashar Issa
1Department of Physics, UAE University, Al-Ain, Abu Dhabi, United Arab Emirates

3033. Time-Dependent Influence of Cell Membrane Permeability on MR Diffusion
Hua Li,1 Xiaoyu Jiang,1 Jingping Xie,1 J. Oliver McIntyre,1 John C. Gore,1 Junzhong Xu
1Institute of Imaging Science, Vanderbilt University, Nashville, TN, United States

3034. New Mathematical Model for the Diffusion Time Dependent ADC
Simona Schiavi,1 Houssem Haddar,1 Jing-Rebecca Li
1DeFI, INRIA, École Polytechnique, Palaiseau, France
Electronic Poster

Computer 61 3035. Model-Based Estimation of Microstructure Parameters from Diffusion MRI Data in a Substrate with Microscopic Anisotropy and a Distribution of Pore Sizes

Andrada Iamus1, Ivana Drobnjak1, Daniel C. Alexander2
1Centre for Medical Image Computing, Department of Computer Science, UCL, London, United Kingdom

Computer 62 3036. Simulating the DPFG and QMAS in a Model of Acute Axonal Injury

Matthew Budde1, Nathan Skinner1
1Neurosurgery, Medical College of Wisconsin, Milwaukee, WI, United States; 2Biophysics, Medical College of Wisconsin, Milwaukee, WI, United States


Michael Paquette1, Chantal M.W. Tax2, Alexander Leemans2, Maxime Descoteaux2
1Sherbrooke Connectivity Imaging Lab (SCIL), Université de Sherbrooke, Sherbrooke, Quebec, Canada; 2University Medical Center Utrecht, Image Sciences Institute, Utrecht, Netherlands

Computer 64 3038. An Osage Orange as a Diffusion Imaging Phantom for the Evaluation of Slice-Accelerated Diffusion Imaging Sequence

Kwan-Jin Jung1
1Radiology, University of Louisville, Louisville, KY, United States

Computer 65 3039. Effect of Demyelination on Diffusion Tensor Indices: A Monte Carlo Simulation Study

Maximilian Pietsch1, J-Donald Tournier1
1Centre for the Developing Brain, King's College London, London, United Kingdom

Computer 66 3040. Human Brain Tissue Microstructure Characterization Using 3D-SHORE on the HCP Data

Mauro Zucchelli1, Maxime Descoteaux2, Gloria Menegaz1
1Computer Science, University Of Verona, Verona, Italy; 2Sherbrooke Connectivity Imaging Lab (SCIL), Université de Sherbrooke, Sherbrooke, Quebec, Canada

Computer 67 3041. Micro-MR Correlates of Cellular-Level Alterations in Epileptogenesis

Katharina Göbel1, Johannes Gerlach1, Robert Kamberger1, Jochen Leupold1, Dominik von Elverfeldt1, Carola Haas2, Jan G. Korvink3, Jürgen Hennig1, Pierre LeVan1
1Medical Physics, Dept. of Radiology, University Medical Center Freiburg, Freiburg, Germany; 2Experimental Epilepsy Research, University Medical Center Freiburg, Freiburg, Germany; 3Dept. of Microsystems Engineering (IMTEK), Technical Faculty, University of Freiburg, Freiburg, Germany

Computer 68 3042. Microscopic Anisotropy in the Fixed Spinal Cord from DPFG and QMAS Diffusion Weighted Imaging Compared to DTI

Nathan P. Skinner1, 2, Matthew D. Budde1, 3
1Biophysics Graduate Program, Medical College of Wisconsin, Milwaukee, WI, United States; 2Medical Scientist Training Program, Medical College of Wisconsin, Milwaukee, WI, United States; 3Department of Neurosurgery, Medical College of Wisconsin, Milwaukee, WI, United States

Computer 69 3043. Estimation of Neurite Density from an Isotropic Diffusion Model

Brian Hansen1, Torben E. Lund1, Ryan Sangill1, Sune N. Jespersen1, 2
1Center for Functionally Integrative Neuroscience, Aarhus University, Aarhus, Denmark; 2Department of Physics and Astronomy, Aarhus University, Aarhus, Denmark

Computer 70 3044. Estimation of Intra-Axonal Fraction in Spinal Cord White Matter by Using Monte Carlo Simulation of Water Diffusion and High B-Value Sensitized MRI

Nabraj Sapkota1, 2, John Rose1, Scott Miller1, Beth Bowman1, Lubdha Shah1, Erica Bisson1, Sook Yoon1, 6, Eun-Kee Jeong1, 7
1Utah Center for Advanced Imaging Research, University of Utah, SLC, UT, United States; 2Department of Physics, University of Utah, SLC, UT, United States; 3Department of Neurology, University of Utah, SLC, UT, United States; 4Department of Radiology, University of Utah, SLC, UT, United States; 5Department of Neurosurgery, University of Utah, SLC, UT, United States; 6Department
of Multimedia Engineering, Mokpo National Engineering, Jeonnam, Korea; ⑦Department of Radiology, Korea University, Seoul, Korea

**Computer 71 3045. Diffusion MRI Detects Early Axon Loss Despite Confounding Inflammation in Optic Neuritis**

Carlos J. Perez-Torres①, Tsern-Hsuan Lin①, Chia-Wen Chiang①, Peng Sun①, Yong Wang①, Anne H. Cross③, Sheng-Kwei Song②

①Radiology, Washington University, Saint Louis, MO, United States; ②Hope Center for Neurological Disorders, Washington University, Saint Louis, MO, United States; ③Neurology, Washington University, Saint Louis, MO, United States

**Electronic Poster**

**Perfusion & Permeability - Contrast Agent Methods**

Exhibition Hall  Monday 11:45-12:45

**Computer 73 3047. Feasibility of Test-Bolus Dynamic Contrast-Enhanced MRI Using CAIPIRINHA-VIBE for Evaluation of Pancreas Malignancy.**

Jimi Huh①, Kyung Won Kim②, Jisuk Park②, Jae Ho Byun①, In Seong Kim③, Berthold Kiefer④, Moon-Gyu Lee①

①Radiology, Seoul Asan Medical Center, Seoul, Korea; ②radiology, Seoul Asan Medical Center, SEOUL, Korea; ③Siemens Healthcare, Seoul, Korea; ④Siemens Healthcare, Erlangen, Germany

**Computer 74 3048. Survival Rate Prediction in Patients with Glioblastoma Multiforme, Using Dynamic Contrast Enhanced MRI and Nested Model Selection Technique**


①Mechanical Engineering, Shiraz University, Shiraz, Fars, Iran; ②Nuclear Engineering, Shahid Beheshti University, Tehran, Iran; ③Nuclear Engineering and Science, Azad University of Najafabad, Najafabad, Isfahan, Iran; ④Neurology, Henry Ford Hospital, Detroit, MI, United States; ⑤Radiology and Research Administration, Henry Ford Hospital, Detroit, MI, United States; ⑥GRU Cancer Center, Georgia Regents University, Atlanta, GA, United States; ⑦Neurological Surgery, Henry Ford Hospital, Detroit, MI, United States; ⑧Physics, Oakland University, Rochester, MI, United States

**Computer 75 3049. Assessment and Prediction of Vestibular Schwannoma Response to Anti-Angiogenic Therapy in Neurofibromatosis Type 2 Patient Using Low Dose High Temporal Resolution DCE-MRI**

Ka-Loh Li①, Alan Jackson①, Xiaoping Zhu①

①WMIC, University of Manchester, Manchester, Great Manchester, United Kingdom

**Computer 76 3050. High-Resolution Whole-Brain DCE MRI of Brain Tumor Using Constrained Reconstruction: Prospective Clinical Evaluation**

Yi Guo②, R. Marc Lebel②, Yinghua Zhu①, Mark S. Shiroishi②, Meng Law②, Krishna S. Nayak①

①Pathology, Fortis Memorial Research Institute, Gurgaon, India; ②GE Healthcare, Calgary, Alberta, Canada; ③Department of Radiology, University of Southern California, Los Angeles, CA, United States

**Computer 77 3051. Prospective Glioma Grading Using Single Dose Dynamic Contrast Enhanced MRI Perfusion**

Aprajita Mehta①, Krishan K. Jain①, Prativa Sahoo①, Bhaswati Roy①, Ritu Tyagi①, Ram K S Rathore①, Rana Patir④, Sandeep Vaishya①, Neeraj Prakash④, Nandini Vasudev①, Rakesh K. Gupta①

①Radiology, Fortis Memorial Research Institute, Gurgaon, India; ②Philips Healthcare, Philips India Ltd, Gurgaon, India; ③Dept of Mathematics, Indian Institute of Technology, Kanpur, India; ④Neurosurgery, Fortis Memorial Research Institute, Gurgaon, India; ⑤Pathology, Fortis Memorial Research Institute, Gurgaon, India

**Computer 78 3052. Evaluation of DCE-MRI Data Sampling, Reconstruction and Model Fitting Using Digital Brain Phantom**

Yinghua Zhu①, Yi Guo①, Sajan Goud Lingala①, Samuel Barnes①, R. Marc Lebel①, Meng Law①, Krishna S. Nayak①

①University of Southern California, Los Angeles, CA, United States; ②California Institute of Technology, Pasadena, CA, United States; ③GE Healthcare, Calgary, Canada
The aim of this study is to explore the effect of the delay between arterial input function and lung tissue enhancement on pharmacokinetic model parameters. We found that a delay of 47 percent. Thus, correction for bolus delay is essential for accurate estimation of pulmonary perfusion parameters.

Computer 87 3061.

The Tofts model is commonly used to parameterize tissue perfusion, vessel permeability, extracellular extravascular space, and other factors. We compare our fluorescence imaging measurements with classic DCE-MRI pharmacokinetic modeling results.

1Centre d'imagerie moléculaire de Sherbrooke, Université de Sherbrooke, Sherbrooke, Québec, Canada

Computer 86 3060.

In dynamic contrast-enhanced MRI, pharmacokinetic modeling is used to quantify tissue physiology. The maximal allowed number of data points is limited by hardware constraints and low spatial resolution. We improve parameter mapping at the same fitting accuracy.

1Department of Neuroradiology, Klinikum rechts der Isar, TU München, Munich, Germany; 2Department of Nuclear Medicine, Klinikum rechts der Isar, TU München, Munich, Germany; 3Department of Radiology, Klinikum rechts der Isar, TU München, Munich, Germany; 4Siemens Healthcare, Munich, Germany

In this paper, we developed a Multi-band Multi-echo EPI (M2-EPI) sequence and applied the method in dynamic susceptibility contrast perfusion imaging. Feasibility of the technique was studied with 12-channel and 32-channel head coils.

1Radiology and Imaging Sciences, Emory University, Atlanta, GA, United States; 2Siemens Healthcare, GA, United States

Ultrashort echo time (UTE) based DCE-MRI alleviates T2 * blooming artifacts caused by high contrast agent concentration. UTE-QSM can complement magnitude UTE and offer a powerful tool to study renal physiology.

1Center for In Vivo Microscopy, Duke University Medical Center, Durham, NC, United States; 2Brain Imaging Analysis Center, Duke University Medical Center, Durham, NC, United States

In this pilot study, we investigated the feasibility of using an iterative MR reconstruction method with a total variation penalty. Magnetic resonance images indicated that permeability and perfusion parameters were accurately calculated using the undersampled data.

1Radiation Oncology, Duke University Medical Center, Durham, NC, United States; 2Medical Physics Graduate Program, Duke University, Durham, NC, United States

Pharmacokinetic quantification of the microvasculature from DCE-MRI in carotid plaques is of great interest. Currently, the adventitial K trans may be a better measure for plaque microvasculature compared to other vascular regions.

1Radiology, Maastricht University Medical Center, Maastricht, Netherlands; 2Cardiovascular Research Institute Maastricht (CARIM), Maastricht University, Maastricht, Netherlands; 3Neurology, Maastricht University Medical Center, Maastricht, Netherlands; 4Nuclear Medicine, Maastricht University Medical Center, Maastricht, Netherlands; 5Pathology, Maastricht University Medical Center, Maastricht, Netherlands; 6Surgery, Maastricht University Medical Center, Maastricht, Netherlands; 7Pathology, Academic Medical Center, Amsterdam, Netherlands

Brain DCE MRI is a powerful technique for evaluating blood-brain-barrier leakage in tumors, multiple sclerosis lesions, and other neurovascular inputs. We demonstrate its application to the evaluation of sparse sampling and constrained reconstruction methods.

Electronic Poster

Anne Kluge1, Mathias Lukas2, Vivien Toth3, Stefan Förster2, Claus Zimmer1, Christine Preibisch1, 4

1Ina Nora Kompan1, 2, Benjamin Richard Knowles1, Cristoffer Cordes1, Matthias Guenther2, 3, 4
1Fraunhofer MEVIS, Bremen, Germany; 2mediri GmbH, Heidelberg, Baden-Württemberg, Germany; 3Universitätsklinikum Freiburg, Freiburg, Baden-Württemberg, Germany

Variation Penalty: Feasibility Study

Matt N. Gwilliam1, David J. Collins2, Martin O. Leach1, Matthew R. Orton1
1Institute of Cancer Research, London, Greater London, United Kingdom

In this paper, we developed a Multi-band Multi-echo EPI (M2-EPI) for Dynamic Susceptibility Contrast (DSC) Perfusion Imaging: A Feasibility Study

Deqiang Qiu1, Amit Saindane1, Xiaodong Zhong2, Seena Dehkharghani1
1Radiology and Imaging Sciences, Emory University, Atlanta, GA, United States; 2Siemens Healthcare, GA, United States

In this pilot study, we investigated the feasibility of using an iterative MR reconstruction method with a total variation penalty for DCE-MRI Analysis Using Intravital Microscopy.

Dina Sikpa1, Réjean Lefebvre1, Vincent Turgeon1, Lisa Whittingstall1, Jérémie Fouquet1, Marc-André Bonin1, Luc Tremblay1, Martin Lepage1
1Centre d'imagerie moléculaire de Sherbrooke, Université de Sherbrooke, Sherbrooke, Québec, Canada

Closing Up on Pharmacokinetic Modeling – Exploring the Limits of the Tofts Model for DCE-MRI Analysis

Closing Up on Pharmacokinetic Modeling – Exploring the Limits of the Tofts Model for DCE-MRI Analysis

Dina Sikpa1, Réjean Lefebvre1, Vincent Turgeon1, Lisa Whittingstall1, Jérémie Fouquet1, Marc-André Bonin1, Luc Tremblay1, Martin Lepage1
1Centre d'imagerie moléculaire de Sherbrooke, Université de Sherbrooke, Sherbrooke, Québec, Canada

Quantifying Pulmonary Perfusion in Health and Pulmonary Disease with DCE-MRI: Effect of Bolus Delay

J. Tim Marcus1, Barry Ruijter1, Taco Kind1, Rudolf Verdaasdonk1, Anton Vonk Noordegraaf1
1Physics & Medical Technology, VU University Medical Center, Amsterdam, Netherlands; 2Pulmonology, VU University Medical Center, Amsterdam, Netherlands
A Novel Vascular Transfer Function for Modeling the Local Arterial Input Function for More Accurate Estimation of Vascular Permeability Parameters in DCE-MRI Studies

Siamak Nejad-Davarani1,2, Hassan Bagher-Ebadian3,4, Douglas Noll2, Tom Mikkelsen5, Lisa Scarpace2, Azimeh Noorizadeh Vahe Dehkordi2, James R. Ewing,4,5, Michael Chopp1,6, Quan Jiang2,4

1Department of Neurology, Henry Ford Hospital, Detroit, MI, United States; 2Department of Biomedical Engineering, University of Michigan, Ann Arbor, MI, United States; 3Department of Radiology, Henry Ford Hospital, Detroit, MI, United States; 4Department of Physics, Oakland University, Rochester, MI, United States; 5Department of Neurosurgery, Henry Ford Hospital, Detroit, MI, United States; 6Department of Nuclear Engineering, Shahid Beheshti University, Tehran, Iran

A Tracer Kinetic Model with Optimal Compartments for Assessing Intravoxel Tumor Heterogeneity in Papillary Thyroid Carcinoma

Yonggang Lu1, Yussef Mazaheri1, Vaois Hatzoglou1, Hilda Stambuk1, Ashok Shaha1, Joseph O. Deasy2, R. Michael Tuttle3, Amita Shukla-Dave1

1Memorial Sloan-Kettering Cancer Center, NEW YORK, United States

An Efficient Method for Pharmacokinetics Parameter Calculation in Permeability Study Using Dynamic Contrast-Enhanced Magnetic Resonance Imaging

Chunhao Wang1,2, Fang-Fang Yin1,2, Zheng Chang2,3

1Radiation Oncology, Duke University Medical Center, Durham, NC, United States; 2Medical Physics Graduate Program, Duke University, Durham, NC, United States

Comparison of the Arterial Input Function Measured at Low and High Contrast Agent Doses in Prostate Cancer Patients

Shiyang Wang1, Gregory S. Karczmar1, Xiaobing Fan1, Federico Pineda1, Milica Medved1, Ambereen Yousuf1, Aytek Ouo1

1Radiology, University of Chicago, Chicago, IL, United States

DCE-MRI Analysis Using Model-Based Classification Shapes with Non-Negative Least-Squares

Zaki Ahmed1, Ives R. Levesque,12

1Medical Physics Unit, McGill University, Montreal, Quebec, Canada; 2Research Institute of the McGill University Health Center, Montreal, Quebec, Canada

Automatic Selection of Arterial Input Function Using K-Mean Cluster Algorithm

Tian-Yu Su1, Sheng-Min Huang1, Cheng-He Li1, Kung-Chu Ho2, Fu-Nien Wang2

1Biomedical Engineering and Environmental Sciences, National Tsing Hua University, Hsinchu, Taiwan; 2Nuclear Medicine, Chang Gung Memorial Hospital, Taoyuan, Taiwan

Integrated MRI-LINAC Radiotherapy Machine

Oliver Hey1, Michael Kleemann1, Jürgen Heller1

1CT NTF HTC, Siemens AG, Erlangen, Bavaria, Germany

Whole-Body PET/MR Imaging: Quantitative Evaluation of a Novel Model-Based MR Attenuation Correction Method Including Bone

Daniel H. Paulus1, Harald H. Quick1,2, Matthias Fenchel3, Christian Geppert1,2, David Faul1, Yiqiang Zhan1, Fernando E. Booda2,5, Kent L. Friedman1, Thomas Koesters6,7

1Institute of Medical Physics, University of Erlangen-Nürnberg, Erlangen, Germany; 2High Field and Hybrid MR Imaging, University Hospital Essen, Essen, Germany; 3Siemens AG Healthcare, Erlangen, Germany; 4Siemens AG Healthcare, New York, NY, United States; 5Siemens AG Healthcare, Malvern, PA, United States; 6NYU Langone Medical Center, Center for Biomedical Imaging, Department of Radiology, New York, NY, United States; 7NYU Langone Medical Center, Center for Advanced Imaging Innovation and Research, CA2R, New York, NY, United States
### Electronic Poster

#### Computer 3 3070. Clinical MR-Linac System

Johan Overweg\(^1\), Falk Uhlemann\(^1\), Phil Jonas\(^2\), Thomas Amthor\(^2\), Peter Forthmann\(^2\), Panu Vesainen\(^3\), Tero Virta\(^3\), Christopher Busch\(^1\), Kevin Brown\(^1\)

\(^1\)Philips Innovative Technologies, Hamburg, Germany; \(^2\)Philips Healthcare, Latham, NY, United States; \(^3\)MR therapy, Philips Healthcare, Vantaa, Finland; \(^3\)Elekta Limited, Crawley, United Kingdom

**Abstract**

PET/CT is typically used to evaluate vascular inflammation. An advantage of using PET/MR compared to PET/CT is that it allows for better visualization of lesions due to the combination of high magnetic resonance (MR) and positron emission tomography (PET) imaging modalities. In this study, we evaluate the feasibility of low-dose, long-duration 18F-FDG PET imaging using a simultaneous PET/MR scanner. The results show promising results for clinical applications, particularly in oncology, where detailed visualization of lesions is crucial.

#### Computer 4 3071. Optimisation of a 32-Channel Resonator for Simultaneous PET/MRI of the Head at 3.0 Tesla: Material Selection and Performance Testing

Adam Farag\(^1\), Jean Theberge\(^1\), 4

\(^1\)Ceresensa Inc, London, Ontario, Canada; \(^2\)Western University, London, Ontario, Canada; \(^3\)Lawson Health Research Institute, Ontario, Canada; \(^4\)Department of Medical Biophysics, University of Western Ontario, London, Ontario, Canada

**Abstract**

In this work, we present a design for a 32-channel resonator for use in a simultaneous PET/MRI system operating at 3.0 Tesla. The resonator was optimized for performance in terms of homogeneity, sensitivity, and linearity. The results indicate that this resonator can provide high-quality images suitable for clinical applications, including oncology and cardiology.

#### Computer 5 3072. Zero TE Based PET Attenuation Correction in the Head

Florian Wiesinger\(^2\), Anne Menini\(^2\), Sangtae Ahn\(^3\), Lishui Cheng\(^2\), Gaspar Delso\(^1\), Sandeep Kaushik\(^4\), Ravindra Manjeshwar\(^2\), Dattesh Shanbhag\(^4\)

\(^1\)GE Global Research, Munich, Germany; \(^2\)GE Global Research, Niskayuna, NY, United States; \(^3\)GE Healthcare, Zurich, Switzerland; \(^4\)GE Global Research, Bangalore, India

**Abstract**

PET/CT and PET/MR are imaging modalities that are widely used in clinical practice for tumor diagnosis and therapy. However, attenuation correction is a critical aspect in these imaging modalities, especially in the head region. In this study, we report on the development of a zero-echo-time (TE) based PET attenuation correction method that aims to improve the accuracy of attenuation correction in PET/MR imaging of the head. The results show that this method is effective in improving the accuracy of attenuation correction in PET/MR imaging.

#### Computer 6 3073. MR Driven PET-Attenuation Correction in Presence of Metal Implants Using Anatomy Context Driven Decisioning

Dattesh D. Shanbhag\(^1\), Sandeep S. Kaushik\(^1\), Sheshadri Thiruvengadam\(^1\), Florian Wiesinger\(^2\), Sangtae Ahn\(^3\), Rakesh Mullick\(^2\), Ravindra M. Manjeshwar\(^2\)

\(^1\)Medical Image Analysis Laboratory, GE Global Research, Bangalore, Karnataka, India; \(^2\)GE Global Research, Munich, Germany; \(^3\)GE Global Research, Niskayuna, NY, United States; \(^4\)GE Healthcare, Zurich, Switzerland; \(^5\)GE Global Research, Bangalore, India

**Abstract**

In this study, we investigated the feasibility of MR-driven PET attenuation correction in the presence of metal implants using an anatomy context-driven decisioning approach. The results indicate that this method can accurately correct for attenuation effects caused by metal implants in PET/MR imaging, thereby improving the diagnostic utility of these imaging modalities.

#### Computer 7 3074. MR Guided Motion Correction for Yttrium 90 Imaging Using a Simultaneous PET/MRI Scanner

Mootaz Eldib\(^1\), Niels Oesingmann\(^1\), David Faul\(^1\), Jason Bini\(^2\), Lale Kostakoglu\(^4\), Karin Knesaurek\(^4\), Zahi A. Fayad\(^4\)

\(^1\)TMII, Ichan School of Medicine at Mount Sinai, New York, NY, United States; \(^2\)Biomedical Engineering, City College of New York, New York, NY, United States; \(^3\)Siemens Healthcare, New York, NY, United States; \(^4\)Radiology, Ichan School of Medicine at Mount Sinai, New York, NY, United States

**Abstract**

Motion correction is a critical aspect in the accurate delivery of radiation therapy using Yttrium 90. In this study, we evaluated the feasibility of using simultaneous PET/MRI for motion correction in Yttrium 90 radiation therapy. The results show that this method can effectively correct for motion, improving the accuracy of radiation delivery.

#### Computer 8 3075. A New Unilateral Breast Specific Coil Design and Dual-Modality Interface Configuration for MR/scintimammography

Jaeedu Cho\(^1\), Seunghoon Ha\(^1\), Alex Luk\(^1\), Farouk Nouizi\(^1\), Orhan Nalcioglu\(^1\), Gultekin Gulsen\(^1\), Ming-Ying Su\(^1\)

\(^1\)Center for Functional Onco-Imaging, University of California Irvine, Irvine, CA, United States

**Abstract**

MR/scintimammography is a dual-modality imaging system that combines MR imaging and scintigraphic imaging for breast cancer diagnosis. In this study, we present a new unilateral breast coil design and dual-modality interface configuration for MR/scintimammography. The results indicate that this system can provide high-quality images suitable for clinical applications.

#### Computer 9 3076. Design of a Whole-Body Radio Frequency Coil for Image-Guided Radiotherapy Treatment in a MRI-LINAC System

Aurelien Destruel\(^1\), Ewald Weber\(^1\), Ivan Hughes\(^1\), Yu Li\(^1\), Feng Liu\(^1\), Stuart Crozier\(^1\)

\(^1\)School of ITEE, University of Queensland, Brisbane, Queensland, Australia

**Abstract**

A concept for a real-time MR-guided radiotherapy system has been industrialized to make it suitable for clinical use. In this study, we present the design of a whole-body radio frequency coil for use in a MRI-LINAC system. The results indicate that this system can provide high-quality images suitable for clinical applications.

#### Computer 10 3077. Feasibility of 18F-FDG Radio-Tracer Dose Reduction in Simultaneous Carotid PET/MR Imaging

Mootaz Eldib\(^1\), Jason Bini\(^2\), Olivier Lalvez\(^2\), Zahi A. Fayad\(^2\), Venkatesh Mani\(^5\)

\(^1\)Radiology, Icahn School of Medicine at Mount Sinai, New York, NY, United States; \(^2\)Translational and Molecular Imaging Institute, Icahn School of Medicine at Mount Sinai, NEW YORK, United States

**Abstract**

PET/MR is a novel hybrid imaging modality that promises to influence radiology in the near and long-term future. In this study, we evaluated the feasibility of dose reduction of 18F-FDG radio-tracer in simultaneous carotid PET/MR imaging. The results indicate that this method can effectively reduce the radio-tracer dose while maintaining diagnostic accuracy.

#### Computer 11 3078. Whole-Body PET-MR Including DWI, T2w, and Gadofosveset-Enhanced T1w Sequences: Evaluation of MR Performance Compared to PET-CT and Relative Benefits Provided by Each Sequence

Piotr Obara\(^1\), Andreas Loening\(^1\), Valentina Taviani\(^1\), Andrei Iagaru\(^1\), Brian Hargreaves\(^1\), Shreyas Vasanawala\(^1\)

\(^1\)Radiology, Stanford Hospital, Stanford, CA, United States

**Abstract**

In this study, we evaluated the performance of whole-body PET-MR imaging including DWI, T2w, and gadofosveset-enhanced T1w sequences. The results indicate that PET-MR imaging provides complementary clinical information compared to PET-CT imaging.

#### Computer 12 3079. MR Performance Evaluation of a PET/MR with SiPM Based Time of Flight PET Detectors

Mohammad Mehdi Khalighi\(^1\), Gaspar Delso\(^2\), Sri-Harsha Maramraju\(^3\), Greg Zaharchuk\(^3\), Gary Glover\(^3\)

\(^1\)Philips Innovative Technologies, Hamburg, Germany; \(^2\)Philips Healthcare, Latham, NY, United States; \(^3\)Philips Healthcare, Vantaa, Finland

**Abstract**

In this study, we evaluated the performance of a PET/MR system using SiPM-based time of flight PET detectors. The results indicate that this system can provide high-quality images suitable for clinical applications.
Here we develop a 10-channel field probe system using 1H as the NMR signal source to monitor the magnetic field. The...s temporal resolution and use this information to improve the time-domain SNR (tSNR) of dynamic spiral imaging by 137%.

Foreign objects with high conductivity can intensify and concentrate the induced eddy currents from the gradient...affect the small rise times as the modifies limit is less sensitive to gradient rise time compared to IEC standard.
Electronic Poster

**Computer 22 3089.** Accurate Vibroacoustic Simulations in High Performance Gradient Coils  
Simone Angela Winkler¹, Trevor P. Wade¹, Andrew Alejski¹, Charles McKenzie⁵, Brian K. Rutt¹  
¹Dept. of Radiology, Stanford University, Stanford, CA, United States; ⁵Robarts Research Institute, The University of Western Ontario, London, Ontario, Canada

**Computer 23 3090.** The Automatic Placement of Cooling Pathways for MRI Gradient Coils Using Path Finding Algorithms  
Elliot Smith¹, Fabio Freschi¹,², Maurizio Repetto¹,², Stuart Crozier¹  
¹School of ITEE, University of Queensland, Brisbane, Queensland, Australia; ²Department of Energy, Politecnico di Torino, Torino, Italy

**Computer 24 3091.** Design of a Shielded Coil Element of a Matrix Gradient Coil  
Feng Jia¹, Sebastian Littin¹, Kelvin Layton¹, Stefan Kroboth¹, Hujun Yu¹, Jürgen Hennig¹, Maxim Zaitsev¹  
¹Dept. of Radiology, University Medical Center Freiburg, Freiburg, BW, Germany

**Electronic Poster**

**Non-Array RF Coils, Materials & Other Hardware**

**Exhibition Hall Monday 14:15-15:15**

**Computer 25 3092.** RF Dipole Coil with Novel Slotted Shielding Plate Achieving an Improved B1 Distribution for 7 T MRI  
Zhichao Chen¹,², Mahdi Abbasi⁴, Klaus Solbach⁴, Daniel Erni¹  
¹General and Theoretical Electrical Engineering (ATE), Faculty of Engineering, University of Duisburg-Essen, Duisburg, NRW, Germany; ²High Frequency Engineering (HFT), Faculty of Engineering, University of Duisburg-Essen, Duisburg, NRW, Germany

**Computer 26 3093.** Inductively Coupled Planar TX Coils: Analysis of B1⁺ Efficiency and SAR Performance  
Johanna Schöpfer¹,², Klaus Huber², Stephan Biber², Markus Vester³, Sebastian Martius¹, Martin Vossiek⁴  
¹LHFT, University of Erlangen-Nuremberg, Erlangen, Germany; ²Siemens AG, Corporate Technology, Erlangen, Germany; ³Siemens AG, Healthcare, Erlangen, Germany; ⁴LHFT, University of Erlangen-Nuremberg, Erlangen, Germany

**Computer 27 3094.** Tackling the Challenges of Imaging the Infant Brain in a Dedicated Neonatal Coil  
Emer Hughes¹, Tobias Winchmann¹, Laurent Mager¹, Francesco Padormo¹, Hutter Jana¹, Julia Wurie¹, Matthew Fox¹, Maryanne Sharma¹, David Edwards¹, Andrew Kapetanakis¹, Alessandro Allievi¹, Joseph Hajnal⁴  
¹Centre for the developing brain, Kings College London, London, United Kingdom; ²Rapid biomedical engineering, Germany; ³Peraltec AG, Switzerland; ⁴Division of imaging science and biomedical engineering, Kings College London, London, United Kingdom; ⁵Imperial College London, London, United Kingdom

**Computer 28 3095.** WITHDRAWN

**Computer 29 3096.** High-Precision Magnetic Susceptometry Applied to 3D-Printed RF Coil Construction  
R. Adam Horch¹,², John C. Gore¹,²  
¹Department of Radiology & Radiological Sciences, Vanderbilt University, Nashville, TN, United States; ²Vanderbilt University Institute of Imaging Science, Nashville, TN, United States

**Computer 30 3097.** Ink-Jet Printing Enables Maskless Electroplating Mould Patterning for Rapid MRI Coil Fabrication  
Markus V. Meissner¹, Nils Spengler¹, Dario Mager¹, Jens Hößlin¹, Peter T. While¹, Jan G. Korvink¹  
¹Department of Microsystems Engineering - IMTEK, University of Freiburg, Freiburg, BW, Germany

**Computer 31 3098.** Baluned-Hairpin-(BHP)-Resonator for Field Monitoring  
Thomas Riemer¹  
¹Institute for Medical Physics and Biophysics, University of Leipzig, Leipzig, Saxony, Germany

**Computer 32 3099.** Comparison of Different Simulation Methods Regarding Their Feasibility for MRI Coil Design  
Sebastian Martius¹, Johanna Schöpfer¹, Andreas Fackelmeier¹, Klaus Huber¹  
¹Siemens AG, Corporate Technology, Erlangen, Germany; ²LHFT, University of Erlangen-Nuremberg, Erlangen, Germany; ³Siemens AG, Corporate Technology, Erlangen, Germany
A procedure for evaluating RF electromagnetic fields in anatomical human models for any matching and coupling conditions is presented. The basis functions are then used as building blocks for calculating the fields for any other S parameter matrix.

Appropriate high-permittivity, low-conductivity materials (HPM) placed between the RF coil and the sample can provide improved performance. Approaching this with a relatively small number of transmit elements by optimizing the relative permittivity of the HPM layer is approached.

In this study, different coupling methods for a cylindrical dielectric resonator operating in TE01δ mode were evaluated. The results from this study will be useful for the new designs on MRI probe head made of cylindrical dielectric resonators.

A cryogenic solenoid transmit/receive coil resonating at 132 MHz for sodium MRI (11.7 T) was constructed and tested at 7 T for comparison. A 70% SNR improvement was obtained. The coil package is small and convenient for commercial use.

Loop antenna arrays are the major components for reception in magnetic resonance imaging systems. Typically, 3D full wave frequency domain simulations are performed, regarding their suitability of accurately calculating a more complex antenna structure.

Improving B1+ uniformity using segmented dielectric pads is discussed. Suitable placements and the impact of the numbers of layers were investigated.

The basis functions: a novel approach for electromagnetic fields evaluations for any matching and coupling conditions are introduced. These functions provide a powerful tool for evaluating electromagnetic fields in complex and anatomically realistic environments.
RF Coil Arrays

Electronic Poster

Computer 42 3109. **Ideal Current Patterns Correspond to Larger Surface Coils with Use of High Permittivity Materials**
*Magnetically Resonance Imaging (MRI) has become an essential medical tool. While this technology is widely used, its efficiency can be enhanced with the development of a less invasive approach. A novel RF coil design approach with high permittivity materials is presented.**
Manushka V. Vaidya1, 2, Gillian G. Haemer1, 2, Giuseppe Carluccio1, Dmitry Novikov1, 2, Daniel K. Sodickson1, 2, Christopher M. Collins1, 2, Graham C. Wiggins1, 2, Riccardo Lattanzi1, 2
1Center for Advanced Imaging Innovation and Research, and Center for Biomedical Imaging, Department of Radiology, New York University School of Medicine, New York, NY, United States; 2Sackler Institute of Graduate Biomedical Sciences, New York University School of Medicine, New York, NY, United States

Computer 43 3110. **Optimal Permittivity of Dielectric Liners and Their Effects on Transmit Array Performance**
*Real-time performance of MR transmit coil arrays can be improved by adding dielectric liners. This project aims to determine the optimal permittivity of these liners and their effects on transmit array performance.**
Atefeh Kordzadeh1, Nicola DeZanche2
1Biomedical Engineering, University of Alberta, Edmonton, Alberta, Canada; 2Department of Medical Physics, Cross Cancer Institute and University of Alberta, Edmonton, Alberta, Canada

Computer 44 3111. **Influence of Metamaterial Insert to Cylindrical RF Coil Array in Human Knee MR Imaging at 1.5T**
*The use of metamaterial inserts in RF coil arrays for MR imaging can significantly enhance image quality. This study investigates the effects of a specific metamaterial insert on knee MR imaging at 1.5T.**
Xiaoqin Hu1, Chunlai Li2, Hongyi Wang1, Xiaoliang Zhang1, Xin Liu2, Hairong Zheng1, Lin Luan2, Ye Li1
1Lauterbur Research Center for Biomedical Imaging, Shenzhen Institutes of Advanced Technology of Chinese Academy of Sciences, Shenzhen, Guangdong, China; 2ShenzhenKey Laboratory of Optical and Terahertz Meta-RF, Kuang-Chi Institute of Advanced Technology, Shenzhen, Guangdong, China; 1Department of Radiology and Biomedical Imaging, University of California San Francisco, CA, United States

Computer 45 3112. **Development of Low Field MRI System Running on the Same Magnetic Circuit Used for 750 MHz CW EPR Imaging System**
*Developing a low field MRI system with similar performance to a high field system is a challenging task. This project presents a novel design that achieves this goal.**
Hideo Sato-Akaba1, Hiroshi Hirata2
1Department of Systems Innovation, Graduate School of Engineering Science, Osaka University, Toyonaka, Osaka, Japan; 2Division of Bioengineering and Bioinformatics, Graduate School of Information Science and Technology, Hokkaido University, Sapporo, Hokkaido, Japan

Computer 46 3113. **SpinoTemplate: A System for MR-Guided Spinal Cellular Therapeutics Injections**
*The SpinoTemplate system is a novel approach for delivering cellular therapies to the spine. This project investigates its effectiveness and potential clinical applications.**
Alexander Squires1, John Oshinski2, Jason Lamanna2, Zion Tsz Ho Tse3
1Center for Magnetic Resonance Research, U. of Minnesota, Minneapolis, MN, United States; 2Department of Radiology, New York University School of Medicine, New York, NY, United States; 3Mechanical Engineering, Iowa State University, Ames, IA, United States

Computer 47 3114. **Non-Metal Electrodes for Local Field Potential Recordings in Magnetic Resonance Scanners**
*Conventional metal electrodes are commonly used for local field potential recordings in MR scanners, but their use can be limited. This project explores the use of non-metal electrodes as a viable alternative.**
Jennifer Michelle Taylor1, 2, Shan Hu3, Rajesh Rajamani3, Xiao-Hong Zhu5, Yi Zhang2, Wei Chen1, 2
1Biomedical Engineering, University of Minnesota, Minneapolis, MN, United States; 3Mechanical Engineering, Iowa State University, Ames, IA, United States; 5Mechanical Engineering, University of Minnesota, Minneapolis, MN, United States

Computer 48 3115. **Design of FPGA On-Chip Module for Real-Time Image Processing**
*FPGA-based solutions are increasingly used for real-time image processing in MR systems. This project focuses on designing a modular FPGA module for optimizing performance.**
Limin Li1, Alice M. Wyrwicz1, 2
1Center for Basic MR Research, NorthShore University HealthSystem, Evanston, IL, United States; 2Department of Biomedical Engineering, Northwestern University, Evanston, IL, United States

Electronic Poster

RF Coil Arrays

Exhibition Hall  Monday 14:15-15:15

Computer 49 3116. **Dipole Arrays for MR Head Imaging: 7T Vs. 10.5T**
*Dipole arrays are a common choice for MR imaging. This study compares their performance at 7T and 10.5T.**
Jinfeng Tian1, Russell Lagore2, J. Thomas Vaughan3
1Center for Magnetic Resonance Research, U. of Minnesota, Minneapolis, MN, United States; 2U. of Minnesota, MN, United States

Computer 50 3117. **Asymmetrically Segmented Loop Phased Coil for Uniform RF Field Excitation at 7T**
*Phased coils are used for uniform RF field excitation in MR imaging. This project presents an asymmetrically segmented coil design.**
Seunghoon Ha1, Haoqin Zhu1, Labros Petropoulos1
1Center for Magnetic Resonance Research, U. of Minnesota, Minneapolis, MN, United States; 2Department of Physics, University of Minnesota, Minneapolis, MN, United States
Electronic Poster

Computer 51 3118. Magnetic Wall Decoupling for Dipole Transceiver Array for MR Imaging: A Feasibility Test
Xingjiang Yan1, Xiaoaliang Zhang1, Long Wei1, Rong Xue1
1State Key Laboratory of Brain and Cognitive Science, Beijing MRI Center for Brain Research, Institute of Biophysics, Chinese Academy of Sciences, Beijing, China; 2Key Laboratory of Nuclear Analysis Techniques, Institute of High Energy Physics, Chinese Academy of Sciences, Beijing, China; 3Department of Radiology and Biomedical Imaging, University of California San Francisco and UCSF/UC Berkeley Joint Graduate Group in Bioengineering, San Francisco, CA, United States

Computer 52 3119. Evaluation of a Modified Passive Clamp Decoupling Network at High Frequencies
Chathura Kumaragamage1, Jamie Near, 2
1Biomedical Engineering, McGill University, Montreal, Quebec, Canada; 2The Douglas Brain Imaging Centre, Montreal, Quebec, Canada

Computer 53 3120. Matching-Network Noise Dominating Regime for Receive Coil Loops
Xueming Cao1, Elmar Fischer1, Boris Keil2, Lawrence L. Wald2, 3, Jan G. Korvink4, Jürgen Hennig1, Maxim Zaitsev1
1University Medical Center Freiburg, Freiburg, Germany; 2A. A. Martinos Center for Biomedical Imaging, Dpt. of Radiology, Massachusetts General Hospital, Charlestown, MA, United States; 3Harvard Medical School, Boston, MA, United States; 4IMTEK, University of Freiburg, Freiburg, Germany

Computer 54 3121. 31P MRSI of the Brain at 3T with an Improved 8-Channel Receive Array and Whitened Singular Value Decomposition for Optimal Combination of 31P Array Signals
M.J. van Uden1, A. Bijma2, 3, C.T. Rodgers4, Bart Philips4, T.W.J. Scheenen5, A. Heerschap1
1Department of Radiotherapy and Nuclear Medicine, Radboud University Medical Center, Nijmegen, Gelderland, Netherlands; 2Department of Geriatric Medicine, Radboud University Medical Center, Gelderland, Netherlands; 3Radboud Alzheimer Center, Radboud University Medical Center, Gelderland, Netherlands; 4OCMR, RDM Cardiovascular Medicine, University of Oxford, Oxford, United Kingdom; 5Department of Radiotherapy and Nuclear Medicine, Radboud University Medical Center, Nijmegen, Gelderland, Netherlands

Computer 55 3122. Comparison of 16-Channel Stripline and 10-Channel Fractionated Dipole Transceiver Arrays for Body Imaging at 7T
M. Arcan Erturk1, Alexander J. E. Raaijmakers2, Gregor Adriany1, Jinfeng Tian1, Pierre-Francois van de Moortele1, Cornelis A. T. van den Berg2, Dennis W. J. Klomp2, J. Thomas Vaughan1, Kamil Ugurbil1, Gregory J. Metzger1
1Center for Magnetic Resonance Research, University of Minnesota, Minneapolis, MN, United States; 2Imaging Division, UMC Utrecht, Utrecht, Netherlands

Computer 56 3123. A 24-Channel Quadrature Surface Coil Array for High-Resolution Human Temporal Lobe fMRI at 3T
Pu-Yeh Wu1, Ying-Hua Chu1, Shang-Yueh Tsai1, Wen-Jui Kuo3, Fa-Hsuan Lin1
1Institute of Biomedical Engineering, National Taiwan University, Taipei, Taiwan; 2Institute of Applied Physics, National Chengchi University, Taipei, Taiwan; 3Institute of Neuroscience, National Yang Ming University, Taipei, Taiwan

Computer 57 3124. Three-Channel Flexible Phased Array Using Circular Coils with Annex Structure for Decoupling
Jhy-Neng Tasso Yeh1, Fa-Hsuan Lin1
1Institute of Biomedical Engineering, National Taiwan University, Taipei, Taiwan

Computer 58 3125. Triangular Receiver Coils to Support Superior/inferior Acceleration
Paul T. Weavers1, Jacob N. Gloe1, Eric G. Stinson1, Phillip J. Rossman1, Thomas C. Hulshizer1, Stephen J. Riederer1
1Radiology, Mayo Clinic, Rochester, MN, United States

Computer 59 3126. Direct Derivation of Multi-Channel Receive Coil Sensitivity
Victor Taracila1, Fraser Robb1
1General Electric, Aurora, OH, United States
Computer 60 3127. High Acceleration Ability of a Homemade 8-Ch Mouse Phased Array Suggests the Possibility for EPI-Based Functional Studies of Mice Models Using a Standard 3T Human Scanner
Hai Han1, John Stager2, Wei Cao3, Miguel Navarro4, Fraser Robb5, Junghun Cho6, Nozomi Nishimura6, Chris Schaffer7, Valerie Reyn4, Yi Wang8, Wen-Ming Lu9
1Cornell MRI Facility, Cornell University, Ithaca, NY, United States; 2Tongji Hospital, Huazhong University of Science and Technology, Hubei, China; 3GE Healthcare, OH, United States; 4Biomedical Engineering, Cornell University, Ithaca, NY, United States

Computer 61 3128. Lung-Cardiac Specific 1H RF Array Coil at 1.5 T
Madhvesha Rao1, Fraser Robb2,3, Jim Wild4
1University of Sheffield, Sheffield, South Yorkshire, United Kingdom; 2GE Healthcare, Aurora, OH, United States

Computer 62 3129. Swaddle Coils for a Newborn
A.M. Flynn1, J.R. Corea1, P.B. Lechene1, P.D. Calderon1, T. Zhang1, G.C. Scott1, S.S. Vasanawala1, A.C. Arias1, M. Lustig1
1EECS, Univ. of California, Berkeley, CA, United States; 2Diamant Engineering, Castro Valley, CA, United States; 3EECS, Stanford Univ., Palo Alto, CA, United States; 4Radiology, Stanford LPCH, Palo Alto, CA, United States

Computer 63 3130. Array Coil and Sample Preparation and Support System for Whole Brain Ex Vivo Imaging at 100 μm
Azma Mareyam1, Jonathan R. Polimeni1,2, Allison Stevens1, Andre Van Der Kouwe1,2, Loren D. Bridgers2, Jason P. Stockmann1,2, Matthew D. Tisdall1,2, Lee Tirrell1,2, Alison L. Moreau1, Ani Varjabedian1, Brian L. Edlow1,2, Bruce Fischl1,2, Lawrence L. Wald1,2
1A.A. Martinos Center of Biomedical Engineering, Department of Radiology, Charlestown, MA, United States; 2Harvard Medical School, Boston, MA, United States; 3Department of Mechanical Engineering, Massachusetts Institute of Technology, Cambridge, MA, United States; 4CSAIL, Massachusetts Institute of Technology, Cambridge, MA, United States

Computer 64 3131. Short Dipole Array for Enhanced B1 Efficiency/sensitivity at the Expense of SAR
Alexander J.E. Raaijmakers1, Arcan Erturk2, Greg Metzger2, Cornelis A.T. van den Berg1, Gregor Adriany2
1Imaging Division, UMC Utrecht, Utrecht, Netherlands; 2Center for Magnetic Resonance Research, Minneapolis, MN, United States

Computer 65 3132. Transmit Power Reduction and B1+ Homogenization Using 4-Channel Regional RF Shimming for Shoulder Imaging at 3T
Yukio Kaneko1, Yoshihisa Soutome1,2, Kosuke Ito1, Masahiro Takizawa2, Hidea Habara1,2, Yusuke Seki1, Tetsuhiko Takahashi1, Yoshitaka Bito1, Hisaaki Ochi1
1Central Research Laboratory, Hitachi Ltd., Kokubunji-shi, Tokyo, Japan; 2Hitachi Medical Corporation, Kashiwa, Chiba, Japan

Computer 66 3133. A Combined Electric Dipole and Loop Head Coil for 7T Head Imaging
Gang Chen1,2, Karthik Lakshmanan1, Daniel Sodickson1, Graham Wiggins1
1Center for Advanced Imaging Innovation and Research (CAI2R) and Center for Biomedical Imaging, New York University School of Medicine, New York, NY, United States; 2The Sackler Institute of Graduate Biomedical Science, New York University School of Medicine, New York, NY, United States

Computer 67 3134. A Receive Chain Add-On for Implementation of a 32-Channel Integrated Tx/Rx Body Coil and Use of Local Receive Arrays at 7 Tesla
Stephan Orzada1, Andreas K. Bitz2, Klaus Solbach3, Mark E. Ladd1,2
1Erwin L. Hahn Institute for MRI, Essen, NRW, Germany; 2Medical Physics in Radiology, German Cancer Research Center (DKFZ), Heidelberg, Germany; 3RF Technology, University Duisburg-Essen, Duisburg, Germany

Computer 68 3135. Initial Results: Ultra-High Field 32-Ch Tx Body Array with Bright Centers.
Shailesh B. Raval1, Tiejun Zhao1, Narayanan Krishnamurthy1, Yujuan Zhao1, Sossena Wood1, Kyongtae Bae1, Tamer S. Ibrahim1
1University of Pittsburgh, Pittsburgh, PA, United States; 2Siemens Medical Solutions, Pittsburgh, PA, United States

Computer 69 3136. Boosting 31P Signals by Using a 7 Channel Receive Array at 7T
Bart L. van de Bank1, Frits Smits1, Miriam W. van de Stadt-Lagemaat1, Tom W.J. Scheenen1,2
**Electronic Poster**

**UHF Applications: General**

**Exhibition Hall** Monday 14:15-15:15

**Computer 70 3137.** 3D-Printed Microstrip Resonators for 4.7T MRI

Saeed Javidmehr1, Adam Maunder2, Mojgan Daneshmand3, Nicola De Zanche4

1Department of Radiology and Nuclear Medicine, Radboud University Medical Center, Nijmegen, Netherlands; 2Erwin L. Hahn Institute, University Duisburg-Essen, Germany

**Computer 71 3138.** Harmonic Excitation of MR Signal for Interventional MRI

Dmitri Artemov1, Yoshihori Kato1,2

1Radiology, Johns Hopkins University, Baltimore, MD, United States; 2Radiology, University of Alabama, Birmingham, AL, United States

**Computer 72 3139.** Onboard RF Combination for Receiver Channel Reduction

Ziyuan Fu1, Mark Bolding2, Shumin Wang3

1Auburn University, Auburn, AL, United States; 2Radiology, University of Alabama, Birmingham, AL, United States

**Electronic Poster**

**Exhibition Hall** Monday 14:15-15:15

**Computer 73 3140.** Simultaneous In Vivo 1H/23Na-Imaging of Superficial Lymph Nodes Using 7 Tesla-MRI

Martin T. Freitag1, Nadia Benkedah1, Pedram Yazdanbakhsh1, Titus Lanz1, Moritz Berger2, Mathies Breithaupt1, Jessica Hassel1, Heinz-Peter Schlemmer1, Mark E. Ladd2, Armin M. Nagele1

1Department of Radiology, German Cancer Research Center, Heidelberg, Baden-Wuerttemberg, Germany; 2Department of Radiology, German Cancer Research Center, Heidelberg, Baden-Wuerttemberg, Germany; 3Medical Physics in Imaging, German Cancer Research Center, Heidelberg, Baden-Wuerttemberg, Germany; 4Department of Dermatology, National Center for Tumor Diseases, Heidelberg, Baden-Wuerttemberg, Germany

**Computer 74 3141.** Successful 2-Spoke PTX RF Pulse Excitation Using a Single-Channel Transmit 7T Console Retrofitted with a 16-Channel B1 Shimming Unit

Sebastian Schmitter1, Xiaoping Wu1, Edward John Auerbach1, Lance DelaBarre1, Gregor Adriany1, Kamil Ugurbil1, Pierre-Francois Van de Moortele1

1Center for Magnetic Resonance Research, University of Minnesota, Minneapolis, MN, United States

**Computer 75 3142.** Measuring the Rate of Phosphocreatine Recovery in Human Skeletal Muscle After Exercise by Localized 1H MRS Without Water Suppression at 7T

Jimin Ren1,2, Baolian Yang3, A. Dean Sherry4, Craig R. Malloy3,4

1Advanced Imaging Research Center, University of Texas Southwestern Medical Center, Dallas, TX, United States; 2Department of Radiology, University of Texas Southwestern Medical Center, Dallas, TX, United States; 3Philips Healthcare, Cleveland, OH, United States; 4Department of Chemistry, University of Texas at Dallas, Richardson, TX, United States; 5VA North Texas Health Care System, Dallas, TX, United States

**Computer 76 3143.** MR Imaging of the Temporomandibular Joint at 7.0 Tesla: A Feasibility Study Using Novel High Permittivity Dielectric Pads

Andrei Manoliu1,2, Georg Spinner1, Michael Wyss2, Daniel Nanz1, Dominik Ettlin1, Luigi M. Gallo3, Gustav Andreisek1

1Department of Radiology, University Hospital Zurich, Zurich, Switzerland; 2Institute for Biomedical Engineering, University and ETH Zurich, Zurich, Switzerland; 3Center for Dental and Oral Medicine and Maxillofacial Surgery, University of Zurich, Zurich, Switzerland

**Computer 77 3144.** A 32 Channel Bi-Lateral Breast Array for High Resolution Accelerated MR Imaging

R. O. Giaquinto1,2, R. G. Pratt1, W. M. Loew1, H. Friel1, L. Bickford1, C. Ireland3, B. Daniels1, B. Williams1, L. Haas1, J. M. Lanier1, K. M. Cecil1,2, M. Mahoney2, E. A. Morris3, C. L. Dumoulin4

1Imaging Research Center, Cincinnati Childrens Hospital Medical Center, Cincinnati, OH, United States; 2UC College of Medicine, University of Cincinnati, Cincinnati, OH, United States; 3Philips Healthcare, Best, Netherlands; 4Memorial Sloan Kettering Cancer Center, New York, United States
**Electronic Poster**

**Computer 78** 3145. **Overcoming the SAR Limitation of Magnetization Transfer Pulses at 7 Tesla Using Parallel Transmission**

*Shajan G1, Christian Mirkes2, Rolf Pohmann1, Klaus Scheffler1, 2, Feliks Kogan1, Brian Hargreaves1, Garry Gold1, Katharina Paul1, Andreas Graessl1, 2, Darius Lysiak1, 2, Till Huelnhagen1, Lukas Winter1, Robin Lance DelaBarre1, Stefan Neubauer2, Matthew D. Robson2, J. Thomas Vaughan1, Christopher T. Rodgers2, Samaneh Shooshtary1, Adam Buck1, Klaus Solbach1*

1Department of Radiology, Massachusetts General Hospital, Charlestown, MA, United States; 2Division of Health Sciences Technology, Harvard-MIT, MA, United States

**Computer 79** 3146. **The Three-Dimensional Shape of the Myopic Eye Measured with MRI**

*Jan-Willem M. Beenakker1, 2, Denis P. Shamonin3, Andrew G. Webb1, Gregorius PM Layten2, Berend C. Stoel1*

1Department of Radiology, C.J.Gorter Center for High Field MRI, Leiden University Medical Center, Leiden, Zuid-Holland, Netherlands; 2Department of Ophthalmology, Leiden University Medical Center, Leiden, Zuid-Holland, Netherlands; 3Department of Radiology, division of Image Processing, Leiden University Medical Center, Leiden, Zuid-Holland, Netherlands

**Computer 80** 3147. **It Goes to 11: A Scalable Home-Built Transmit Array Beyond Eight Channels**

*Andre Kuehne1, 2, Patrick Waxmann1, Werner Hoffmann1, Harald Pfeiffer1, Reiner Seemann1, Frank Seifert1, Oliver Speck1, Bernd Ittermann1*

1Center for Medical Physics and Biomedical Engineering, Medical University of Vienna, Vienna, Austria; 2MR Centre of Excellence, Medical University of Vienna, Vienna, Austria; 3Physikalisch-Technische Bundesanstalt (PTB), Braunschweig und Berlin, Berlin, Germany; 4Otto-von-Guericke-University, Magdeburg, Germany

**Computer 81** 3148. **Phosphorus 3D CSI at 9.4 T Using a 27-Channel Receiver Array**

*Shailesh Raval1, Tiejun Zhao2, Narayanan Krishnamurthy1, Tales Santini3, Vijay S. Gorantla3, Tamer S. Ibrahim3, Andre Kuehne1, 2, Patrick Waxmann1, Klaus Scheffler1, 2*

1UPMC, Pittsburgh, PA, United States; 2Siemens Medical Solutions, Pittsburgh, PA, United States; 3University of Pittsburgh, Pittsburgh, PA, United States

**Computer 82** 3149. **Multi-Slice GagCEST Sequence for Whole-Joint GagCEST Mapping: Application to Articular Cartilage in the Ankle**

*Feliks Kogan1, Brian Hargreaves1, Garry Gold1*

1Department of Radiology, Stanford University, Stanford, CA, United States

**Computer 83** 3150. **Upper Extremity Neural and Vascular Imaging with UHF 7T MRI**

*Shailesh Raval1, Tiejun Zhao2, Narayanan Krishnamurthy1, Tales Santini3, Vijay S. Gorantla3, Tamer S. Ibrahim3, Jan-Willem M. Beenakker1, 2, Denis P. Shamonin3, Andrew G. Webb1, Gregorius PM Layten2, Berend C. Stoel1*

1UMCM, Pittsburgh, PA, United States; 2Siemens Medical Solutions, Pittsburgh, PA, United States; 3University of Pittsburgh, Pittsburgh, PA, United States

**Computer 84** 3151. **Stability Test Method for Cartesian Feedback Power Amplifier in PTx Array**

*Samanneh Shooshtary1, Adam Buck1, Klaus Solbach1*

1Institute of Microwave and RF Technology, Duisburg-Essen University, Duisburg, Germany

**Computer 85** 3152. **Bi Shimming Further Improves Human Cardiac 31P-MRS at 7 Tesla**

*Lance DelaBarre1, Stefan Neuhauser1, Matthew D. Robson1, J. Thomas Vaughan1, Christopher T. Rodgers2, Samar Sreeram3, OCMR, University of Oxford, Oxon, United Kingdom*

1CMRR, University of Minnesota, Minneapolis, MN, United States; 2OCMR, University of Oxford, Oxon, United Kingdom

**Computer 86** 3153. **Diffusion-Sensitized Ophthalmic MRI Free of Geometric Distortion in Patients with Intraocular Masses**

*Katharina Paul1, Andreas Graessl1, Jan Rieger1, 2, Darius Lysiak1, 2, Till Huelnhagen1, Lukas Winter1, Robin Heidemann1, Tobias Lindner1, Stefan Hadlich1, Annette Zimpfer1, Andreas Pohlmann1, Paul-Christian Krueger4, Soenke Langner1, Oliver Stachs2, 7, Thoralf Niendorf1, 8*

1Max-Delbrueck Centre for Molecular Medicine, Berlin Ultra high Field Facility (B.U.F.F.), Berlin, Germany; 2MRI.TOOLS GmbH, Berlin, Germany; 3Siemens Healthcare Sector, Erlangen, Germany; 4University Medicine Rostock, Pre-clinical Imaging Research Group, Rostock, Germany; 5University of Greifswald, Institute for Diagnostic Radiology and Neuroradiology, Greifswald, Germany; 6University Medicine Rostock, Institute of Pathology, Rostock, Germany; 7University Medicine Rostock, Department of Ophthalmology, Rostock, Germany; 8Experimental and Clinical Research Center, a joint cooperation between the Charité Medical Faculty and the Max-Delbrueck-Center, Berlin, Germany

**Computer 87** 3154. **GAGCEST Imaging of Knee at 7T a Reproducibility Study**

*Anand Kumar Venkatachar1, Cory Wyatt1, Doug Kelley2, Sharmila Majumdar1*

1Radiology and Biomedical Imaging, University of California San Francisco, San Francisco, CA, United States; 2GE Healthcare Technologies, San Francisco, CA, United States
RF Coil Arrays

**Computer 88 3155. Multi-Parametric Renal MRI at 7T**
Xuifeng Li1, Edward J. Auerbach1, Pierre-Francois Van de Moortele1, Kamil Ugurbil1, Gregory J. Metzger1
1Radiology-CMRR, University of Minnesota, Minneapolis, MN, United States

**Computer 89 3156. Construction of a 4-Channel Transmit/4-Channel Receive Neck Array for Carotid Artery Vessel Wall Imaging at 7 Tesla**
Konstantinos Papoutsis1,2, Ling Li3, Stephen J. Payne1, Peter Jezzard1
1Department of Engineering science, University of Oxford, Oxford, United Kingdom; 2FMRIB Centre, Nuffield Department of Clinical Neurosciences, University of Oxford, Oxford, United Kingdom

**Computer 90 3157. MRI of the Pulleys of the Flexor Tendons of the Fingers at 11.7T**
Kenyu Iwasaki1, Reni Biswas1, Betty Tran1, Sheronda Statum1, Christine Chung1, Nikolaus M. Szeverenyi1, Graeme Bydder1
1University of California, San Diego, CA, United States

**Computer 91 3158. T1- And TR-Independent B1+ Mapping by Bloch-Siegert Shift for 7T Human Cardiac 31P-MRS**
William T. Clarke1, Matthew D. Robson1, Christopher T. Rodgers2
1OCMR, RDM Cardiovascular Medicine, University of Oxford, Oxford, United Kingdom

**Computer 92 3159. Ultrahigh Field MRI After Upper Extremity Transplantation.**
Shaillesh B. Raval1, Tiejun Zhao1, Vijay S. Gorantla1, Tamer S. Ibrahim1
1University of Pittsburgh, Pittsburgh, PA, United States; 2Siemens Medical Solutions, Pittsburgh, PA, United States

**Computer 93 3160. MRI of the Cartilaginous and Fibrous Structure of the Meniscus of the Knee: In Vitro Studies at 11.7T**
Hongda Shao1, Soorena A. Zanganeh1, Jihye Baek1, Daryl D'Lima1, Jiang Du1, Nikolaus M. Szeverenyi1, Graeme Bydder1
1University of California, San Diego, CA, United States

**Computer 94 3161. In-Vivo 31P Chemical Shift Imaging Sensitivity Improvement Utilizing High Dielectric Pads**
Rita Schmidt1, Wyger Brink1, Andrew Webb1
1Leiden University Medical Center, Leiden, Netherlands

**Computer 95 3162. Parallel Imaging of the Prostate at 7T Using a B0 Crusher Coil to Suppress Aliasing Artifacts**
Remco Krijthe1, Vincent Boer1, Arjan Hendriks1, Dennis Klomp1
1Radiology, University Medical Center Utrecht, Utrecht, Netherlands

**Computer 96 3163. Functional 31P Magnetic Resonance Spectroscopic Imaging of the Human Calf Muscle at 7 T by Means of Echo-Planar Acquisition Techniques**
Andreas Korzowski1, Peter Bachert1
1Medical Physics in Radiology, German Cancer Research Center, Heidelberg, Baden-Württemberg, Germany

---

**Electronic Poster RF Coil Arrays**

**Exhibition Hall**
**Monday 15:15-16:15**

**Computer 1 3164. Analysis of FDTD Field Simulation and Experimental Results in a Monopole Antenna Array Coil at 7T**
Myung-Kyun Woo1, Sik-Min Hong2, Jongho Lee1, Young-Bo Kim1, Zang-Hee Cho1
1Department of Electrical and Computer Engineering, Seoul National University, Seoul, Korea; 2Institute of Neuroscience and Medicine - 4, Forschungszentrum Jülich, Jülich, Germany; 3Gil Hospital, Incheon, Korea; 4Neuroscience Research Institute, Incheon, Korea
**Electronic Poster**

**Computer 2** 3165. **Optimal Arrangement of Finite Element Loop Arrays for Parallel Imaging in a Spherical Geometry at 9.4 T**

Andreas Pfrommer¹, Anke Henning², ³

¹Max Planck Institute for Biological Cybernetics, Tuebingen, Germany; ²Institute for Biomedical Engineering, UZH and ETH Zurich, Zurich, Switzerland

**Computer 3** 3166. **Potential Gain of a 256 Channel Head Coil at 7T: Combined Measurements and G-Factor Calculations**

Arjan D. Hendriks¹, Michel G.M. Italiaander⁴, Natalia Petridou⁴, Dennis W.J. Klomp¹, ²

¹Department of Radiology, University Medical Center Utrecht, Utrecht, Netherlands; ²MR Coils B.V., Drunen, Netherlands

**Computer 4** 3167. **A Novel Design 20-Channel Head Coil for Cortical Imaging with Ultra-High Resolution.**

Alexander Beckett¹, ², Liyong Chen¹, ², An T. Vu³, David A. Feinberg¹, ²

¹Helens Wills Neuroscience Institute, University of California, Berkeley, CA, United States; ²Advanced MRI Technology, Sebastopol, CA, United States; ³CMRR, University of Minnesota, Minneapolis, MN, United States

**Computer 5** 3168. **High-Throughput Diffusion-Tensor-Imaging of Mouse Brains Using a Four-Coil System**

John C. Nouls⁴, Alexandra Badea⁵, Gary P. Cofer⁴, G Allan Johnson¹

¹Center for In Vivo Microscopy, Duke University Medical Center, Durham, NC, United States

**Computer 6** 3169. **Performance Evaluation of 2-Channel Endorectal Coil Geometries for Imaging the Prostate at 7T**

M. Arcan Erturk¹, Gregory Adriany¹, Gregory J. Metzer¹

¹Center for Magnetic Resonance Research, University of Minnesota, Minneapolis, MN, United States

**Computer 7** 3170. **A Novel Decoupling Technique for Multiple-Row Microstrip Transceiver Array Designs**

Xingjiang Yan¹, ², Long Wei¹, Rong Xue¹, Xiaoliang Zhang¹

¹State Key Laboratory of Brain and Cognitive Science, Beijing MRI Center for Brain Research, Institute of Biophysics, Chinese Academy of Sciences, Beijing, China; ²Key Laboratory of Nuclear Analysis Techniques, Institute of High Energy Physics, Chinese Academy of Sciences, Beijing, China; ³Department of Radiology and Biomedical Imaging, University of California San Francisco and UCSF/UC Berkeley Joint Graduate Group in Bioengineering, San Francisco, CA, United States

**Computer 8** 3171. **Tx-Array Design Strategies for Reducing Excitation Artifact and Local SAR Hot Spots in PTx MRI**

Pei-Shan Wei¹, ², Mike J. Smith¹, Christopher P. Bidinosti³, Scott B. King, ¹⁴

¹Department of Physics and Astronomy, University of Manitoba, Winnipeg, Manitoba, Canada; ²National Research Council of Canada, Winnipeg, Manitoba, Canada; ³Department of Physics, University of Winnipeg, Winnipeg, Manitoba, Canada; ⁴National Research Council of Canada, Winnipeg, Manitoba, Canada

**Computer 9** 3172. **A 3 Channel 31P and 2 Channel ¹H Coil Array for 31P NMR in the Visual Cortex at 7 T**

Sigrun Goluch¹, ², Andre Kuehne¹, ², Albrecht Ingo Schmid¹, ², Ewald Moser¹, ², Elmar Laistler¹, ²

¹MR Center of Excellence, Medical University of Vienna, Vienna, Austria; ²Center for Medical Physics and Biomedical Engineering, Medical University of Vienna, Vienna, Austria

**Computer 10** 3173. **Two-Channel High-Temperature Superconducting Array for Diffusion Tensor Imaging of Rat Spinal Cord at 7T**

Yun-Jie Li¹, Meng-Chi Hsieh¹, ², In-Tsang Lin², Xiao-Liang Zhang², Jyh-Horng Chen¹, ³

¹Graduate Institute of Biomedical Electronics and Bioinformatics, National Taiwan University, Taipei, Taiwan, Taiwan; ²Xiamen University, Xiamen, Fujian, China; ³Department of Radiology and Biomedical imaging, University of California, University of California San Francisco, California, United States; ⁴Dept. of Electrical engineering, National Taiwan University, Taipei, Taiwan, Taiwan

**Computer 11** 3174. **Preliminary Investigation on Shielding-Ring Based Decoupling Technique for Small Monolithic RF Coils**

Zhoujian Li³, Roberta Kriegl³, ⁴, Elmar Laistler³, ⁴, Marie Poirier-Quinot³, Luc Darrasse³, Jean-Christophe Ginefri³

¹Laboratoire d’Imagerie par Résonance Magnétique Médicale et Multi-Modalités (IR4M), UMR8081 CNRS, Université Paris-Sud, Orsay, France; ²Center for Medical Physics and Biomedical Engineering, Medical University of Vienna, Vienna, Austria; ³MR Centre of Excellence, Medical University of Vienna, Vienna, Austria; ⁴Center for Medical Physics and Biomedical Engineering, Medical University of Vienna, Vienna, Austria
Analytical Performance Evaluation and Optimization of Resonant Inductive Decoupling (RID)

André Küehne, Elmar Laistler, Anke Henning, Ewald Moser, Nikolai I. Avdievich

1Center for Medical Physica and Biomedical Engineering, Medical University of Vienna, Vienna, Austria; 2Department of Biomedical Magnetic Resonance, University Hospital, Tuebingen, Baden Wuerttemberg, Germany; 3University of Manchester, Manchester, United Kingdom

A Novel Transceiver Wired & Wireless Array Coil Assembly for MR Guided Robot Assisted Interventions and Radiosurgery Procedures

Seung-Hoon Ha, Haoqin Zhu, Labros Petropoulos

1R&D, IMRIS Inc., Minnetonka, MN, United States
Electronic Poster

Computer 22 3185. Validation of a Semi-Flexible 64-Channel Receive-Only Phased Array for Pediatric Body MRI at 3T
Tao Zhang1, 2, Joseph Y. Cheng1, 2, Paul D. Calderoni1, Thomas Grafendorfer1, Greig Scott1, Bob Rainey1, Mark Giancola1, Fraser Robb1, John M. Pauly2, Brian A. Hargreaves1, Shreyas S. Vasanawala1
1Radiology, Stanford University, Stanford, CA, United States; 2Electrical Engineering, Stanford University, Stanford, CA, United States

Computer 23 3186. A Dual-Tuned Two-Element Array for 1H/3H Imaging at 1 Tesla
Scott A. Blaszczzyk1, John C. Bosshard1, Neal A. Hollingsworth1, Brian J. Bass1, Steven M. Wright1
1Electrical and Computer Engineering, Texas A&M University, College Station, TX, United States

Computer 24 3187. Signal Combination Mode Matrix Calculation on Considering Multiregion SNR
Zhang Qiong1, Sun zhi guo1, Liu Wei1, Wang jian min1
1Siemens, Shenzhen, Guangdong, China

Electronic Poster
UHF Acquisitions: Neuro
Exhibition Hall Monday 15:15-16:15

Computer 25 3188. Whole Brain 3D-FLAIR Imaging at 7T
Eberhard Daniel Pracht1, Daniel Brenner1, Tony Stöcker1, 2
1German Center for Neurodegenerative Diseases (DZNE), Bonn, Germany; 2Department of Physics and Astronomy, University of Bonn, Bonn, Germany

Computer 26 3189. Proton Observed Phosphorus Editing (POPE) for In Vivo Detection of Phospholipid Metabolites
Jannie P. Wijnen1, 2, Dennis J.W. Klomp1, Christine I.H.C Nabuurs1, Robin A. de Graaf1, Irene M.L. van Kalleveen1, Wybe J.M. van der Kemp1, Peter R. Luijten1, Mark C. Kruit2, Andrew Webb1, Hermien E. Kan1, Vincent O. Boer1
1Radiology, University Medical Centre Utrecht, Utrecht, Netherlands; 2Radiology, Leiden University Medical Centre, Leiden, Zuid Holland, Netherlands; 3Radiology, Maastricht University, Maastricht, Limburg, Netherlands; 4Radiology, Yale University, New Haven, CT, United States

Computer 27 3190. Zero Echo Time (ZTE) Imaging of Human Brain Tumor at 7T
Douglas A C Kelley1, Angela Jakary2, Qiuting Wen3, Yan Li2, Sarah Nelson2
1Neuro Apps and Workflow, GE Healthcare, San Francisco, CA, United States; 2Radiology and Biomedical Imaging, UCSF, San Francisco, CA, United States

Computer 28 3191. Comparing Different Contrasts for Myelin-Related Cortical Mapping at 7T
Roy Haast1, Dino Ivanov1, Kamil Uludağ2, 3, 4
1Cognitive Neuroscience, Maastricht University, Maastricht, Limburg, Netherlands

Computer 29 3192. Reduced Specific Absorption Rate (SAR) and Scan Time Using Variable Density Magnetization Transfer (VdMT) for 7T
Se-Hong Oh1, Wanyong Shin1, Jongho Lee2, Mark J Lowe1
1Imaging Institute, Cleveland Clinic Foundation, Cleveland, OH, United States; 2Department of Electrical and Computer Engineering, Seoul National University, Seoul, Korea

Computer 30 3193. RF Pulse Designs for MPRAGE at 9.4T
Desmond Ho Yan Tse1, 2, Daniel Brenner3, Johannes G Ramaekers1, Joachim E Wildberger3, Benedikt A Poser1
1Faculty of Psychology and Neuroscience, Maastricht University, Maastricht, Netherlands; 2Department of Radiology, Maastricht University Medical Centre, Maastricht, Netherlands; 3German Centre for Neurodegenerative Diseases (DZNE), Bonn, Germany

Computer 31 3194. Robust Tissue Segmentation of Human Brain Images Acquired with a Surface Coil at Ultrahigh Field
Byeong-Yeul Lee1, Wei Chen1, Xiao-Hong Zhu1
1Center for Magnetic Resonance Research, Department of Radiology, University of Minnesota, Minneapolis, MN, United States
An 8-Channel Parallel Transmit System for 7T MRI Based on Custom-Built I/Q Modulators

Sören Johst1, Marcel Gratz1, 2, Samaneh Shoostary1, Klaus Solbach1, Mark E. Ladd1, 4, Stephan Orzada1
1Erwin L. Hahn Institute for Magnetic Resonance Imaging, University Duisburg-Essen, Essen, Germany; 2High-field and Hybrid MR Imaging, University Hospital Essen, University Duisburg-Essen, Essen, Germany; 3High Frequency Technology, University Duisburg-Essen, Duisburg, Germany; 4Medical Physics in Radiology, German Cancer Research Center (dkfZ), Heidelberg, Germany

A Parkinson's Disease 31P-MRSI Study at 7T

Silvina G. Horovitz1, Peter Lauro2, Pascal Sati1, Nora Vanegas-Arroyave2, Codrin I. Lungu1, Mark Hallett1
1MNB, HMCS, NINDS, NIH, Bethesda, MD, United States; 2OCD, NINDS, NIH, Bethesda, MD, United States; 3NIB, TNU, NINDS, NIH, Bethesda, MD, United States

7T MRSI Using Semi-Adiabatic Spectral-Spatial Spectroscopic Imaging (SASSI) for Improved B1-Insensitivity in Refocusing and Reduced Chemical Shift Artifact

Rebecca Emily Feldman1, Priti Balchandani1
1Radiology, Icahn School of Medicine at Mount Sinai, New York, United States

Correction of Artifacts in Ultrahigh Field T2* Imaging Using a Training Model for Field Probe Based B0 Measurements

Anders Garpebring1, 2, Joep Wezel1, Vincent O. Boer3, Tijl A. van der Velden1, Andrew G. Webb1, Dennis W.J. Klomp1, Matthias J. P. van Osch1
1C.J. Gorter center for high field MRI, Radiology, Leiden University Medical Center, Leiden, Netherlands; 2Radiation Sciences, Umeå University, Umeå, Sweden; 3Radiology, University Medical Center Utrecht, Utrecht, Netherlands

Simultaneous T1 and T2 Quantitation of the Human Brain at 7 Tesla by MR Fingerprinting

Yun Jiang1, Huihui Ye1, Berkin Bilge1, Dan Ma1, Thomas Witzel2, Stephen F. Cauley2, Elfar Adalsteinsson1, 4, Kavindra Setsompop2, Mark A. Griswold2, 5, Lawrence L. Wald1, 6
1Department of Biomedical Engineering, Case Western Reserve University, Cleveland, OH, United States; 2Department of Radiology, Massachusetts General Hospital, Athinoula A. Martins Center for Biomedical Imaging, Charlestown, MA, United States; 3Department of Biomedical Engineering, Zhejiang University, Hangzhou, Zhejiang, United States; 4Department of Electrical Engineering and Computer Science; Harvard-MIT Division of Health Sciences, MIT, Cambridge, MA, United States; 5Department of Radiology, Case Western Reserve University, OH, United States

Wide Screen Visual Stimulation: fMRI Combined with Fast GABA Detection

Arjan D. Hendriks1, Catalina S. Arteaga de Castro1, Vincent O. Boer2, Dennis W.J. Klomp1, Natalia Petridou1
1Department of Radiology, University Medical Center Utrecht, Utrecht, Netherlands

Towards Routine Application of Dynamic Parallel Transmission for Whole-Brain Imaging at 9.4 Tesla

Jens Hoffmann1, 2, G. Shajan3, Christian Mirkes1, 4, Tingting Zhao1, Anke Henning1, 4, Rolf Pohmann1, Klaus Scheffler1
1High-Field Magnetic Resonance Center, Max Planck Institute for Biological Cybernetics, Tuebingen, Germany; 2Graduate School of Neural & Behavioural Sciences, Tuebingen, Germany; 3Department for Biomedical Magnetic Resonance, University of Tuebingen, Germany; 4Institute for Biomedical Engineering, University and ETH Zurich, Switzerland

The Traveling Heads: Initial Comparisons of Multicenter Data on 7 Tesla MRI Systems

Maximilian N. Voelker1, 2, Oliver Kraft1, 2, Daniel Brenner2, Astrid Wollrab3, Tony Stoecker3, David Norris5, Mark E. Ladd1, 4, Oliver Speck1
1Erwin L. Hahn Institute for Magnetic Resonance Imaging, University Duisburg-Essen, Essen, Germany; 2Diagnostic and Interventional Radiology and Neuroradiology, University Hospital Essen, Essen, Germany; 3German Center for Neurodegenerative Diseases (DZNE), Bonn, Germany; 4Otto-von-Guericke-University, Magdeburg, Germany; 5Erwin L. Hahn Institute for Magnetic Resonance Imaging, University Duisburg-Essen, Essen, North Rhine-Westphalia, Germany; 6Medical Physics in Radiology, German Cancer Research Center (dkfZ), Heidelberg, Germany; 7Leibnitz Institute for Neurobiology, Magdeburg, Germany

Reliable GABA Spectral Editing BASING-PRESS MRS at 7T

Yan Li1, Bian Wei1, Peder Larson1, Jason C. Crane2, Srikantan Nagarajan2, Sarah J. Nelson1, 2
1University of California, San Francisco, CA, United States; 2Department of Radiology and Biomedical Imaging, University of California, San Francisco, CA, United States; 3Department of Bioengineering and Therapeutic Sciences, University of California, San Francisco, CA, United States
Electronic Poster

Computer 41 3204. High Resolution MR Spectroscopic Imaging of the Visual Cortex at 9.4T with Minimal Chemical Shift Displacement Artefact
Desmond H.Y. Ts, Vincent O. Boer, Valentin G. Kemper, Dennis W.J. Klomp, Jacobus F.A. Jansen
1Radiology, Maastricht UMC, Maastricht, Netherlands; 2Radiology, UMC Utrecht, Utrecht, Netherlands; 3Cognitive Neuroscience FPN, Maastricht University, Maastricht, Netherlands

Computer 42 3205. Multi-Channel B0 Crusher Coil for Lipid Suppression in MRI and MRSI
Vincent Boer, Mariska Damen, Dennis Klomp
1Radiology, University Medical Center Utrecht, Utrecht, Netherlands

Computer 43 3206. 3D Eigenmodes Optimizations for 3D Imaging at 7T
Yujuan Zhao, Narayanan Krishnamurthy, Sossena Wood, Tiejun Zhao, Shailesh B. Raval, Tamer S. Ibrahim
1University of Pittsburgh, Pittsburgh, PA, United States; 2Siemens Medical Solutions USA, Pittsburgh, PA, United States

Computer 44 3207. Laminar Variation of Population Receptive Field Center-Surround Properties in Human Primary Visual Cortex Revealed by 7T fMRI
Alessio Fracasso, Serge O. Dumoulin, Natalia Petridou
1Experimental Psychology, Helmholz institute, Utrecht University, Utrecht, Netherlands; 2Radiology, Imaging Division, University Medical Center, Utrecht, Netherlands

Computer 45 3208. High-Resolution 3D EPI at 9.4 Tesla with Parallel Transmit B1+ Field Homogenisation
Benedikt A Poser, Daniel Brenner, Desmond H Y Ts
1Faculty of Psychology and Neuroscience, Maastricht University, Maastricht, Netherlands; 2German Centre for Neurodegenerative Diseases (DZNE), Bonn, Germany; 3Department of Radiology, Maastricht University, Maastricht, Netherlands

Computer 46 3209. 7T Multi-Slab Whole-Head Homogenous and Low SAR T2 Acquisitions with Limited RF Power Amplifiers Capabilities
Narayanan Krishnamurthy, Yujuan Zhao, Shailesh Raval, Junghwan Kim, Sossena Wood, Tales Santini, Tiejun Zhao, Tamer Ibrahim
1University of Pittsburgh, Pittsburgh, PA, United States; 2University of Pittsburgh, PA, United States; 3Siemens Medical Solutions, PA, United States

Computer 47 3210. Systematic Investigation of Influence Factor on Parallel Transmit Pulse Performance at 9.4 Tesla
Tingting Shao, Nikolai Avdievich, Paul Chang, Jens Hoffmann, Klaus Scheffler, Anke Henning
1Max Planck Institute for Biological Cybernetics, Tübingen, Baden-Württemberg, Germany; 2Institute for Biomedical Engineering, UZH and ETH Zurich, Zurich, Switzerland

Computer 48 3211. Expected Homogeneity Gain and Hardware Requirements for Slice-Wise 3rd Order Dynamic Shim Updating for fMRI
Ariane Fillmer, Anke Henning
1Institute for Biomedical Engineering, UZH and ETH Zurich, Zurich, Switzerland; 2Max Planck Institute for Biological Cybernetics, Tuebingen, Germany

Electronic Poster
Safety in MRI
Exhibition Hall  Monday 15:15-16:15

Computer 49 3212. Q Matrix Approach to Control Implant Heating by Transmit Array Coils
Frank Seifert, Gerd Weidemann, Bernd Ittermann
1Physikalisch-Technische Bundesanstalt (PTB), Braunschweig und Berlin, Germany

Computer 50 3213. Local SAR Elevations in the Human Head Induced by High-Permittivity Pads at 7 Tesla
Thomas M. Fiedler, Mark E. Ladd, Andreas K. Bitz


**Electronic Poster**

**Computer 51**  
**3214.** A Comparison Between Three-Point Dixon Sequences and Label Fusion Techniques for Water-Fat Separation in High-Field MRI Local SAR Estimation  
Angel Torrado-Carvajal¹, ², Esra A. Turk³, ⁴, Joaquin L. Herraz², ³, Yigitcan Eryaman², ⁴, Juan A. Hernandez-Tamames³, ⁴, Elfar Adalsteinsson⁵, ⁶, Larry L. Wald⁶, ⁷, Norberto Malpica¹, ²  
¹Medical Image Analysis and Biometry Lab, Universidad Rey Juan Carlos, Mostoles, Madrid, Spain; ²Med-MIT M+Vision Consortium, Madrid, Spain; ³Research Laboratory of Electronics, Massachusetts Institute of Technology, Cambridge, MA, United States; ⁴Dept. of Electrical Engineering and Computer Science, Massachusetts Institute of Technology, Cambridge, MA, United States; ⁵Harvard-MIT Health Sciences and Technology, Massachusetts Institute of Technology, Cambridge, MA, United States

**Computer 52**  
**3215.** Local SAR Estimation for Parallel RF Transmit at 7T Using Directional Couplers  
Matthew Restivo¹, C.A.T van den Berg¹, Alexander Raaijmakers¹, Peter Luijten¹, Hans Hoogduin¹  
¹University Medical Center Utrecht, Utrecht, Netherlands

**Computer 53**  
**3216.** Anatomical Models of Pregnant Women in 3T PTx Body Coils: Evaluation of SAR and B1+ Optimization in Various Imaging Positions  
Manuel Murbach¹, Esra Neufeld¹, Eugenia Cabot¹, Earl Zastrow¹, Juan Corcoles¹, Wolfgang Kainz¹, Niels Kuster¹, ⁴  
¹ITIS Foundation, Zurich, Switzerland; ²Department of Electronic and Communication Technology, Universidad Autónoma de Madrid (UAM), Madrid, Spain; ³Center for Devices and Radiological Health (CDRH), US Food and Drug Administration (FDA), Silver Spring, MD, United States; ⁴Swiss Federal Institute of Technology (ETH), Zurich, Switzerland

**Computer 54**  
**3217.** Multi-Body-Model Method for Design of Mismatch-Insensitive SAR-Aware Parallel Transmit RF Pulses  
Mihir Pendse¹, Brian Rutt¹  
¹Radiology, Stanford University, Stanford, CA, United States

**Computer 55**  
**3218.** Temperature Sensor Implant for Analysis of RF Safety of Active Implantable Medical Devices Under MRI  
Berk Silemek¹, ², Volkan Acikel¹, ², Ergin Atalar¹, ²  
¹Bilkent University, Ankara, Turkey; ²Umram, Ankara, Turkey

**Computer 56**  
**3219.** A Phantom Designed Specifically for Local SAR Validation  
Matthew Restivo¹, Ronald Mooiweer¹, C.A.T van den Berg¹, Alexander Raaijmakers¹, Frank Simonis¹, Peter Luijten¹, Hans Hoogduin¹  
¹University Medical Center Utrecht, Utrecht, Netherlands

**Computer 57**  
**3220.** An Approach to Temperature-Based Virtual Observation Points for Safety Assurance and Pulse Design  
Giuseppe Carluccio¹, ², Cem Murat Deniz¹, ², Christopher Michael Collins¹, ²  
¹Radiology, Center for Advanced Imaging Innovation and Research (CA2R), New York University School of Medicine, New York, United States; ²Radiology, Bernard and Irene Schwartz Center for Biomedical Imaging, New York University, New York, United States

**Computer 58**  
**3221.** Torque and Translational Force Estimation for Ferromagnetic Objects: The Saturation Effect  
Vahid Ghodrati¹, Abbas Nasiraei Moghaddam¹, ²  
¹BME, Amirkabir University of Technology (Tehran Polytechnic), Tehran, Iran; ²School of Cognitive Sciences, Institute for Research in Fundamental Sciences (IPM), Tehran, Iran

**Computer 59**  
**3222.** Experiments and Analysis of Virtual Observation Points at 7T  
Yujian Zhao¹, Tiejun Zhao², Tamer Ibrahim¹  
¹University of Pittsburgh, Pittsburgh, PA, United States; ²Siemens Medical Solutions USA, Pittsburgh, PA, United States
Electronic Poster

Computer 60  3223.  Breast Tissue Expanders with Magnetic Ports: Clinical Experience at 1.5-Tesla
Nanda Deepa Thimmappa1, Christina Y. Ahn1, Silvina F. Dutruel1, Joshua L. Levine5, Srikanth Reddy Boddu1, Martin R. Prince1
1Radiology, Weill Cornell Medical College, New York, NY, United States; 2NY Langone Medical Center, Department of Plastic Surgery, New York, United States; 3Department of Plastic Surgery, New York Eye and Ear Infirmary of Mount Sinai, New York, United States

Computer 61  3224.  An Algorithm for Maximum-SAR Targeted RF Hyperthermia
Mihir Pendse1, Brian Rutt1
1Radiology, Stanford University, Stanford, CA, United States

Computer 62  3225.  Effect of 3T MRI Noise on Adults Hearing Observed by the Dynamic Auditory Brainstem Response Test
Huan Li1, Yan An1, Qinli Sun1, Yanyan Li1, Pan Cao1, Miaomiao Wang1, Jianxin Guo1, Jian Yang1
1Department of Radiology, The First Affiliated Hospital of Medical College, Xi'an Jiaotong University, Xi'an, Shaanxi, China

Computer 63  3226.  RF-Induced Heating in MRI of Tissue Around an Aneurysm Clip Near the Middle Cerebral Artery at 7 T Under Consideration of the Pennes Bioheat Equation
Yacine Noureddine1, 2, Oliver Kraft3, Mark E. Ladd4, Karsten Wrede5, Gregor Schaefers6, Andreas K. Bitz2
1Erwin L. Hahn Institute for MRI, University Duisburg-Essen, Essen, NRW, Germany; 2MR:comp GmbH, MR Safety Testing Laboratory, Gelsenkirchen, NRW, Germany; 3Medical Physics in Radiology, German Cancer Research Center (DKFZ), Heidelberg, BW, Germany; 4Clinic for Neurosurgery, University Hospital Essen, Essen, NRW, Germany

Computer 64  3227.  MRI Planning for SAR Management in PTx Systems
Joaquin L. Herranz1, Yogitcan Eryaman2,3, Esra Abaci Turk3, Angel Torrado-Carvajal2,3, Adrian Martin2,3, Emanuele Schiavi4,5, Bastien Guerin6, Elfar Adalsteinsson7, Lawrence L. Wald5, Juan A. Hernandez-Tamames1,10, Norberto Malpica1,11
1Madrid-MIT M+Vision Consortium in RLE, Massachusetts Institute of Technology, Cambridge, MA, United States; 2Center for Magnetic Resonance Research, Department of Radiology, University of Minnesota, Minneapolis, MN, United States; 3Medical Image Analysis and Biometry Laboratory, Universidad Rey Juan Carlos, Madrid, Spain; 4Dept. of Applied Mathematics, Universidad Rey Juan Carlos, Mostoles, Madrid, Spain; 5Martinos Center for Biomedical Imaging, Dept. of Radiology, MGH, Charlestown, MA, United States; 6Dept. of Electrical Engineering and Computer Science, Harvard-MIT Health Sciences and Technology, Massachusetts Institute of Technology, Cambridge, MA, United States

Computer 65  3228.  Fast, Thermal Dose-Based Exposure Safety Supervision
Esra Neufeld1, Manuel Murbach2, Niels Kuster2, 3
1ITIS Foundation for Research on Information Technologies in Society, Zurich, Switzerland; 2Swiss Federal Institute of Technology (ETHZ), Zurich, Switzerland

Computer 66  3229.  Signal Changes in Dentate Nuclei with 10 or More Gadolinium-Based Contrast Administrations: Comparison of Linear Versus Macrocytic Contrast Agents
Daisy Q. Huang1, Martin Prince1, George Shih1, Yan Cao1
1Radiology, New York Presbyterian Hospital/Weill Cornell, NY, NY, United States

Computer 67  3230.  Radiofrequency-Induced Heating of Intracranial Stereo-EEG Electrodes During MRI: A Phantom Study
Annie Papadaki1,2, David Carmichael1, Mark James White1, 2, Hoskote Chandrashekar1, Tarek Yousry1, 2, Beate Diedt1, 2, Louis Lezine3, John Stephen Thornton1, 2
1Lysholm Department of Neuroradiology, National Hospital for Neurology and Neurosurgery, UCLH, London, United Kingdom; 2Department of Brain Repair and Rehabilitation, UCL Institute of Neurology, London, United Kingdom; 3Imaging and Biophysics Unit, UCL Institute of Child Health, London, United Kingdom; 4Department of Clinical and Experimental Epilepsy, UCL Institute of Neurology, London, United Kingdom; 5Department of Neurophysiology, National Hospital for Neurology and Neurosurgery, UCLH, London, United Kingdom

Computer 68  3231.  Trial of Safe Working Procedure Against Occupational SMF Exposure - Evaluation of Its Effectiveness in Occupational SMF Exposure Levels and Work Performances Among 3 T MRI System Users -
Sachiko Yamaguchi-Sekino1, Masaki Sekino2, Toshihiko Nakai2
1National Institute of Occupational Safety and Health, Japan, Kawasaki, Kanagawa, Japan; 2Graduate School of Engineering, The University of Tokyo, Tokyo, Japan; 3Neuroimaging & Informatics, National Center for Geriatrics and Gerontology, Aichi, Japan
**Relaxometry-Technical Developments**

**Computer 1 3236.** **Effect of Cranial Fixation Plates on Brain MR Imaging at 7T in Neurosurgical Patients**  
Bixia Chen¹,², Tobias Schoemberg¹,², Oliver Kraft³, Andreas K. Bitz¹,², Mark Edward Ladd¹,³, Ulrich Sure², Karsten Henning Wrede².  
¹Erwin L. Hahn Institute for Magnetic Resonance Imaging, University Duisburg-Essen, Essen, NRW, Germany; ²Department of Neurosurgery, University Hospital Essen, University Duisburg-Essen, Essen, NRW, Germany; ³Medical Physics in Radiology, German Cancer Research Center (DKFZ), Heidelberg, BW, Germany; ²High Field and Hybrid MR Imaging, University Hospital Essen, University Duisburg-Essen, Essen, NRW, Germany

**Computer 2 3237.** **Isotropic T2 Mapping Using a 3D Radial FSE (Or TSE) Pulse Sequence**  
Mahesh Bharath Keerthivasan¹, Ali Bilgin¹,², Diego R. Martin¹, Maria I. Altbach².  
¹Department of Radiology, Stanford University, Stanford, CA, United States; ²Current Address: Philips Healthcare, Rimpar, Bavaria, Germany; ²Erwin L. Hahn Institute for Magnetic Resonance Imaging, University Duisburg-Essen, Essen, Germany

**Computer 3 3238.** **MIRACLE: Motion-Insensitive RApid Configuration ReLaxomEtry**  
Damien Nguyen¹, Oliver Bieri².  
¹Radiological Physics, Dep. of Radiology, University of Basel Hospital, Basel, Switzerland

**Computer 4 3239.** **Biexponential T1 Relaxation at 7T: Characterization and Impact on T1 Mapping**  
James A. Rioux¹, Ives R. Levesque²,³, Brian K. Rutt¹.  
¹Oncology, University of Alberta, Edmonton, AB, Canada; ²Medical Physics, Cross Cancer Institute, Edmonton, AB, Canada

**Computer 5 3240.** **Analytical Correction of Banding Artifacts in Driven Equilibrium Single Pulse Observation of T2 (DESPOT2)**  
Jean-David Jutras¹, Keith Wachowicz¹,², Nicola DeZanche¹,².  
¹Oncology, University of Alberta, Edmonton, AB, Canada; ²Medical Physics, Cross Cancer Institute, Edmonton, AB, Canada

**Computer 6 3241.** **Biexponential T1 Relaxation at 7T: Characterization and Impact on T1 Mapping**  
James A. Rioux¹, Ives R. Levesque²,³, Brian K. Rutt¹.  
¹Oncology, University of Alberta, Edmonton, AB, Canada; ²Medical Physics, Cross Cancer Institute, Edmonton, AB, Canada

**Computer 7**

**Electronic Poster**

**Exhibition Hall Monday 16:30-17:30**

**Computer 1 3242.** **Effect of Cranial Fixation Plates on Brain MR Imaging at 7T in Neurosurgical Patients**  
Bixia Chen¹,², Tobias Schoemberg¹,², Oliver Kraft³, Andreas K. Bitz¹,², Mark Edward Ladd¹,³, Ulrich Sure², Karsten Henning Wrede².  
¹Erwin L. Hahn Institute for Magnetic Resonance Imaging, University Duisburg-Essen, Essen, NRW, Germany; ²Department of Neurosurgery, University Hospital Essen, University Duisburg-Essen, Essen, NRW, Germany; ³Medical Physics in Radiology, German Cancer Research Center (DKFZ), Heidelberg, BW, Germany; ²High Field and Hybrid MR Imaging, University Hospital Essen, University Duisburg-Essen, Essen, NRW, Germany

**Computer 70 3233.** **RF Safety Assessment of a Bilateral 4-Channel Tx/Rx 7T Breast Coil**  
Thomas M. Fiedler¹, Aaron S. Kujawa¹, Frank Resmer¹, Patrick Stern¹, Titus Lanz¹, Mark E. Ladd¹,³, Andreas K. Bitz¹.  
¹Medical Physics in Radiology, German Cancer Research Center (DKFZ), Heidelberg, Germany; ²RAPID Biomedical GmbH, Rimpar, Bavaria, Germany; ³Erwin L. Hahn Institute for Magnetic Resonance Imaging, University Duisburg-Essen, Essen, Germany

**Computer 71 3234.** **Direct SAR Mapping by Thermoacoustic Imaging: Experimental Proof-Of-Concept**  
Simone Angela Winkler¹, Paul Picot², Michael Thornton³, Brian K. Rutt¹.  
¹Dept. of Radiology, Stanford University, Stanford, CA, United States; ²Endra Inc., Ann Arbor, MI, United States

**Computer 72 3235.** **An Investigation on IEC Head SAR Limit on Orbit Heating**  
Xin Chen¹, Charles Poole², Michael Steckner², Robert Brown².  
¹MR, Toshiba Medical Research Institute USA, Inc., Mayfield Village, OH, United States; ²Department of Physics, Case Western Reserve University, Cleveland, OH, United States

**Electronic Poster**  
**Exhibition Hall Monday 16:30-17:30**

**Computer 1 3246.** **Effect of Cranial Fixation Plates on Brain MR Imaging at 7T in Neurosurgical Patients**  
Bixia Chen¹,², Tobias Schoemberg¹,², Oliver Kraft³, Andreas K. Bitz¹,², Mark Edward Ladd¹,³, Ulrich Sure², Karsten Henning Wrede².  
¹Erwin L. Hahn Institute for Magnetic Resonance Imaging, University Duisburg-Essen, Essen, NRW, Germany; ²Department of Neurosurgery, University Hospital Essen, University Duisburg-Essen, Essen, NRW, Germany; ³Medical Physics in Radiology, German Cancer Research Center (DKFZ), Heidelberg, BW, Germany; ²High Field and Hybrid MR Imaging, University Hospital Essen, University Duisburg-Essen, Essen, NRW, Germany

**Computer 2 3247.** **Isotropic T2 Mapping Using a 3D Radial FSE (Or TSE) Pulse Sequence**  
Mahesh Bharath Keerthivasan¹, Ali Bilgin¹,², Diego R. Martin¹, Maria I. Altbach².  
¹Department of Radiology, Johns Hopkins University School of Medicine, Baltimore, MD, United States; ²F.M. Kirby Research Center for Functional Brain Imaging, Kennedy Krieger Institute, Baltimore, MD, United States; ³Medical Imaging, University of Arizona, Tucson, AZ, United States

**Computer 3 3248.** **MIRACLE: Motion-Insensitive RApid Configuration ReLaxomEtry**  
Damien Nguyen¹, Oliver Bieri².  
¹Radiological Physics, Dep. of Radiology, University of Basel Hospital, Basel, Switzerland

**Computer 4 3249.** **Quantitative Assessment of Hematocrit, Hemoglobin Concentration and Oxygenation Effects on the Longitudinal Relaxation Time of Blood**  
Wenbo Li¹,², Ksenija Gregac¹,², Alan Huang¹,², Jin Qin¹,², Nirbhay Yadav¹,², Peter Van Zijl¹,².  
¹Department of Radiology, Johns Hopkins University School of Medicine, Baltimore, MD, United States; ²F.M. Kirby Research Center for Functional Brain Imaging, Kennedy Krieger Institute, Baltimore, MD, United States; ³Current Address: Philips Healthcare, Best, Netherlands

**Computer 5 3250.** **Analytical Correction of Banding Artifacts in Driven Equilibrium Single Pulse Observation of T2 (DESPOT2)**  
Jean-David Jutras¹, Keith Wachowicz¹,², Nicola DeZanche¹,².  
¹Oncology, University of Alberta, Edmonton, AB, Canada; ²Medical Physics, Cross Cancer Institute, Edmonton, AB, Canada

**Computer 6 3251.** **Biexponential T1 Relaxation at 7T: Characterization and Impact on T1 Mapping**  
James A. Rioux¹, Ives R. Levesque²,³, Brian K. Rutt¹.  
¹Oncology, University of Alberta, Edmonton, AB, Canada; ²Medical Physics, Cross Cancer Institute, Edmonton, AB, Canada

**Computer 7**

**Electronic Poster**

**Exhibition Hall Monday 16:30-17:30**

**Computer 1 3246.** **Effect of Cranial Fixation Plates on Brain MR Imaging at 7T in Neurosurgical Patients**  
Bixia Chen¹,², Tobias Schoemberg¹,², Oliver Kraft³, Andreas K. Bitz¹,², Mark Edward Ladd¹,³, Ulrich Sure², Karsten Henning Wrede².  
¹Erwin L. Hahn Institute for Magnetic Resonance Imaging, University Duisburg-Essen, Essen, NRW, Germany; ²Department of Neurosurgery, University Hospital Essen, University Duisburg-Essen, Essen, NRW, Germany; ³Medical Physics in Radiology, German Cancer Research Center (DKFZ), Heidelberg, BW, Germany; ²High Field and Hybrid MR Imaging, University Hospital Essen, University Duisburg-Essen, Essen, NRW, Germany

**Computer 2 3247.** **Isotropic T2 Mapping Using a 3D Radial FSE (Or TSE) Pulse Sequence**  
Mahesh Bharath Keerthivasan¹, Ali Bilgin¹,², Diego R. Martin¹, Maria I. Altbach².  
¹Department of Radiology, Johns Hopkins University School of Medicine, Baltimore, MD, United States; ²F.M. Kirby Research Center for Functional Brain Imaging, Kennedy Krieger Institute, Baltimore, MD, United States; ³Medical Imaging, University of Arizona, Tucson, AZ, United States

**Computer 3 3248.** **MIRACLE: Motion-Insensitive RApid Configuration ReLaxomEtry**  
Damien Nguyen¹, Oliver Bieri².  
¹Radiological Physics, Dep. of Radiology, University of Basel Hospital, Basel, Switzerland

**Computer 4 3249.** **Quantitative Assessment of Hematocrit, Hemoglobin Concentration and Oxygenation Effects on the Longitudinal Relaxation Time of Blood**  
Wenbo Li¹,², Ksenija Gregac¹,², Alan Huang¹,², Jin Qin¹,², Nirbhay Yadav¹,², Peter Van Zijl¹,².  
¹Department of Radiology, Johns Hopkins University School of Medicine, Baltimore, MD, United States; ²F.M. Kirby Research Center for Functional Brain Imaging, Kennedy Krieger Institute, Baltimore, MD, United States; ³Current Address: Philips Healthcare, Best, Netherlands

**Computer 5 3250.** **Analytical Correction of Banding Artifacts in Driven Equilibrium Single Pulse Observation of T2 (DESPOT2)**  
Jean-David Jutras¹, Keith Wachowicz¹,², Nicola DeZanche¹,².  
¹Oncology, University of Alberta, Edmonton, AB, Canada; ²Medical Physics, Cross Cancer Institute, Edmonton, AB, Canada

**Computer 6 3251.** **Biexponential T1 Relaxation at 7T: Characterization and Impact on T1 Mapping**  
James A. Rioux¹, Ives R. Levesque²,³, Brian K. Rutt¹.  
¹Oncology, University of Alberta, Edmonton, AB, Canada; ²Medical Physics, Cross Cancer Institute, Edmonton, AB, Canada

**Computer 7**
Electronic Poster

Computer 7 3242. Estimating Microvessel Spacing or Cell Sizes Using $R_1^\rho$ Dispersion
John Thomas Spear1, Xiaoyong Zhang1, John Gore2, Kecheng Liu1, Dan Ma2, Tiejun Zhao1, Mark Griswold2, Chu-Yu Lee1, Jens H. Jensen1, 2, Rahel Heule1, Carl Ganter2, Oliver Bieri1, Nana K. Owusu1, Casey P. Johnson2, William R. Kearney2, John A. Wemmie3, 4, Vincent A. Magnotta2, Taehwa Hong1, Min-Oh Kim1, Dongyeob Han1, Dosik Hwang1, Dong-Hyun Kim1, Casey P. Johnson1, Vincent A. Magnotta1

1Radiology, Stanford University, Stanford, CA, United States; 2Medical Physics Unit, and Research Institute of the McGill University Health Centre, McGill University, Montreal, QC, Canada

Computer 8 3243. Measurement and Theoretical Description of Spin-Echo T2 Anisotropy in the Human Brain
Michael John Knight1, Bryony Wood1, Elizabeth Coulthard2, Risto Kauppinen1
1School of experimental psychology, University of Bristol, Bristol, Avon, United Kingdom; 2Southmead Hospital, University of Bristol, Bristol, Avon, United Kingdom

Computer 9 3244. Differentiating Microscopic Field Inhomogeneity Induced Relaxation from $R_2$ and $R_2^*$ Relaxations with Magnetic Field Correlation Imaging
Chu-Yu Lee1, 2, Xingju Nie1, 2, Jens H. Jensen1, 2, Vitria Adisetiyo1, 2, Qingwei Liu3, Joseph A. Helpern1, 2
1Department of Radiology and Radiology Science, Medical University of South Carolina, Charleston, SC, United States; 2Center for Biomedical Imaging, Medical University of South Carolina, Charleston, SC, United States; 3Neuroimaging research, Barrow Neurological Institute, Phoenix, AZ, United States

Computer 10 3245. Assessment of T1rho Sensitivity to PH and Glucose for Human Brain Imaging at 3T
Nana K. Owusu1, Casey P. Johnson2, William R. Kearney2, John A. Wemmie3, 4, Vincent A. Magnotta2
1Biomedical Engineering, University of Iowa, Iowa City, IA, United States; 2Radiology, University of Iowa, Iowa City, IA, United States; 3Psychiatry, University of Iowa, Iowa City, IA, United States; 4Veterans Affairs Medical Center, Iowa City, IA, United States

Computer 11 3246. Monte Carlo Modeling of the Non-Monoexponential CPMG Relaxation in Iron Overload
Chu-Yu Lee1, 2, Jens H. Jensen1, 2
1Department of Radiology and Radiology Science, Medical University of South Carolina, Charleston, SC, United States; 2Center for Biomedical Imaging, Medical University of South Carolina, Charleston, SC, United States

Computer 12 3247. B1 and B0 Sensitivity of Spin-Lock Preparation Pulses for Whole-Brain Quantitative T1rho Mapping
Casey P. Johnson1, Vincent A. Magnotta1
1Radiology, University of Iowa, Iowa City, IA, United States

Computer 13 3248. B1+ Inhomogeneity Compensated MRF Using Simultaneous AFI
Taehwa Hong1, Min-Oh Kim1, Dongyebob Han1, Dosik Hwang1, Dong-Hyun Kim1
1Electrical & Electronic Engineering, Yonsei University, Seodaemun-gu, Seoul, Korea

Computer 14 3249. Measurement of T2* and T1 of Bound and Pore Water in Cortical Bone Using UTE Sequences
Jun Chen1, Michael Carl2, Hongda Shao1, Qun He1, Eric Chang1, 3, Christine B. Chung1, 3, Graeme M. Bydder1, Jiang Du1
1Radiology, University of California, San Diego, CA, United States; 2GE Healthcare, San Diego, CA, United States; 3Department of Radiology, VA San Diego Healthcare System, San Diego, CA, United States

Computer 15 3250. Variable Flip Angle T1 Mapping in the Human Brain with Reduced T2 Sensitivity Using Fast RF-Spoiled Gradient Echo Imaging
Rahel Heule1, Carl Ganter2, Oliver Bieri1
1Division of Radiological Physics, Department of Radiology, University of Basel Hospital, Basel, Switzerland; 2Department of Radiology, Klinikum rechts der Isar, Technische Universität München, Munich, Germany

Computer 16 3251. Accurate T2-Mapping with CPMG Prepared Turbo-Flash Sequence
Kecheng Liu1, Dan Ma2, Tiejun Zhao1, Mark Griswold2
1Siemens Medical Solutions USA, Inc., Malvern, PA, United States; 2Case Western Reserved University, Cleveland, OH, United States
Fast and Robust 3D T1 Mapping Using Spiral Gradient Shape and Continuous Radio-Frequency Excitation at 7 T: Application on Cardiac Manganese Enhanced MRI (MEMRI) in Mice

Charles Robert Castets¹, Emeline Julie Ribot¹, Aurélien Julien Trotier¹, William Lefrançois¹, Jean-Michel Franconi¹, Sylvain Miraux²

¹RMSB - UMR5536, CNRS - Université de Bordeaux, Bordeaux, Aquitaine, France

Application of Acceleration Methods to Qmap and Synthetic MR Imaging

Ken-Pin Hwang¹, ², Kevin King¹, Peng Lai³, Wolfgang Stefan³, Christopher McClellan², Ersin Bayram⁴, Ajit Debra E. Horng¹, ²

¹Global MR Applications and Workflow, GE Healthcare, Houston, TX, United States; ²Department of Imaging Physics, The University of Texas MD Anderson Cancer Center, Houston, TX, United States; ³Global MR Applications and Workflow, GE Healthcare, Waukesha, WI, United States

Efficient 2D MRI Relaxometry Via Compressed Sensing

Ruiliang Bai¹, ², Alexander Cloninger³, Wojciech Czaja⁴, Peter J. Basser¹

¹Section on Tissue Biophysics and Biomimetics, National Institutes of Health, Bethesda, MD, United States; ²Biophysics Program, University of Maryland, College Park, Marland, United States; ³Applied Mathematics Program, Yale University, New Haven, CT, United States; ⁴Department of Mathematics, University of Maryland, College Park, MD, United States

Application of Compressed Sensing to 2D and 3D Relaxometry and Related Experiments

Hasan Celik¹, Ariel Hafftka¹, Alexander Cloninger³, Wojciech Czaja⁴, Richard G. Spencer¹

¹National Institute on Aging, National Institutes of Health, Bethesda, MD, United States; ²Department of Mathematics, University of Maryland, College Park, MD, United States; ³Applied Mathematics Program, Yale University, New Haven, CT, United States

R²* Estimation Performance in Iron-Overloaded Livers: Fit First or Average First?

Debra E. Horng¹, ², Diego Hernando³, Scott B. Reeder¹, ²

¹Radiology, University of Wisconsin-Madison, Madison, WI, United States; ²Medical Physics, University of Wisconsin-Madison, Madison, WI, United States

Explicit Modeling of SPGR Signals Using Extended Phase Graphs in DESPOT Style Relaxometry - A Dictionary Approach

Rui Pedro A. G. Teixeira¹, ², Shaikan J. Malik¹, ², Joseph V. Hajnal¹, ²

¹Center for the Developing Brain, King's College London, London, United Kingdom; ²Division of Imaging Sciences and Biomedical Engineering, King's College London, London, United Kingdom

Heat Induced Contrast Mechanisms in MRI: In Vivo Tissue Characterization by MR Thermal Response

Matthew Tarasek¹, Oguz Akin¹, Jeannette Christine Roberts³, Tom Foo¹, Desmond T.B. Yeo¹

¹MRI, GE Global Research, Niskayuna, NY, United States; ²Radiology, MSKCC, New York, NY, United States; ³Imaging & Physiology Lab, GE Global Research, Niskayuna, NY, United States
The dominant parameters influencing the SI were the pulse sequence, the field strength, the protein binding of the CA as ... and their in-vivo concentrations. These results should be considered for (semi- ) quantitative image evaluation.

A nearly linear correlation between Gd- concentration and SI was observed only for very low concentrations (<1- 3mM). At higher concentrations stable, increasing or decreasing SIs were observed.
3272. Correction for T1 Effects on MRI Estimation of Muscle Sodium Levels

Ping Wang1, Isaac V Manzanera Esteve2, Charles Nockowski1, John C. Gore1
1Vanderbilt University Institute of Imaging Science, Nashville, TN, United States; 2Philips Healthcare Technical Support at Vanderbilt, Nashville, TN, United States

3273. Excretion Rate and Distribution Volumes in Common Marmoset Monkeys After Slow and Fast Injection of Gadobutrol

Gunther Helms1,2, Christina Schlumbom1, Enrique Garea-Rodriguez3,4, Eberhard Fuchs5
1Medical Radiation Physics, Lund University, Lund, Scania, Sweden; 2Cognitive Neurology, Göttingen University Medical Center, Göttingen, Lower Saxony, Germany; 3Encepharm Inc., Göttingen, Lower Saxony, Germany; 4Neuroanatomy, Albert-Ludwigs-University Freiburg, Freiburg, Badenia, Germany; 5Clinical Neurobiology Group, German Primate Center, Göttingen, Lower Saxony, Germany

3274. Riboflavin (Vitamin B2) May Be Used as a Potential Chelate in Wilson Disease: Magnetic Resonance Relaxation Study

Lech Wiktor Skorski1, Barbara Blicharska2
1Radiospectroscopy, Jagiellonian University, Krakow, Malopolskie, Poland; 2Radiospectroscopy, Jagiellonian University, Malopolskie, Poland

3275. Investigating the Properties of Silk Formation in Bombyx Mori Silkworms Using T1 and T2 Image Maps.

Steven Reynolds1, Peter R. Laiyi2, Ben Curie2, Chris Holland2, Martyn N. Paley2
1Academic Unit of Radiology, University of Sheffield, Sheffield, South Yorkshire, United Kingdom; 2Department Materials Science and Engineering, University of Sheffield, Sheffield, South Yorkshire, United Kingdom

3276. Thyroid T1 Value Increase in Patients with Hypothyroidism

Min Liu1, Fangfang Yu2, Guang Wang2, Tianjing Zhang2, Jing An1
1the department of Radiology, Beijing Chaoyang Hospital of Capital Medical University, Bei Jing, China; 2the department of Endocrinology, Beijing Chaoyang Hospital of Capital Medical University, Bei Jing, China; 3MR Collaborations NE Asia, Siemens Healthcare, Bei Jing, China

3277. Myelin and More: McDESPOP Applied to Post Mortem Multiple Sclerosis Spinal Cord

Amy R. McDowell1, Tobias C. Wood1, Natalia Petrova1, Daniele Carassiti1, Marc Miquel2, David Thomas3, Gareth J. Barker1, Klaus Schmierer4
1Blizard Institute, Queen Marys University of London, London, United Kingdom; 2Clinical Physics, Barts Health NHS Trust, London, United Kingdom; 3UCL Institute of Neurology, London, United Kingdom; 4Barts and The London School of Medicine & Dentistry, Blizard Institute, London, Greater London, United Kingdom; 5Neurology, Barts Health NHS Trust, London, Greater London, United Kingdom

3278. A Fast Method for T1 and T2 Mapping of Cerebrospinal Fluid at 7T

Jolanda M. Spijkerman1, Eshen T. Petersen2,3, Peter Luijten1, Jeroen Hendrikse1, Jaco J. Zwanenburg1
1Radiology, University Medical Center Utrecht, Utrecht, Netherlands; 2Radiotherapy, University Medical Center Utrecht, Utrecht, Netherlands

3279. High-Resolution T1 Mapping of the Mouse Brain Using MP2RAGE at 14.1T

Nathalie Just1, Luc Driancourt1, Rolf Gruetter2
1CIBM-AIT, EPFL, Lausanne, Switzerland; 2Department of Radiology, Universities of Lausanne and Geneva, Lausanne and Geneva, NA, Switzerland

3280. Quantification of Myelin Degeneration in Multiple Sclerosis Within Clinical Scan Times.

L. Soustelle1,2, O. Commowick1, E. Bannier2, C. Barillot3
1Unité VISAGES U746 INSERM-INRIA, IRISA UMR CNRS 6074, University of Rennes, Rennes, France; 2Université de Strasbourg, CNRS, ICube, FMTS, Strasbourg, France; 3Radiology Dept., University Hospital of Rennes, F-35043 Rennes, France
In this abstract we demonstrate that combinations of phase maps obtained with different gradient polarities should be ... not measurable anymore, thus the scaling of the LF phase with the conductivity can be attributed to the RF phase leakage.

1Imaging Division, UMC Utrecht, Utrecht, Netherlands; 2Brain Center Rudolf Magnus, UMC Utrecht, Utrecht, Netherlands

Conventional MREIT suffers from long imaging time and low phase sensitivity, potentially resulting in inefficient ... steady state (DESS) MREIT for joint estimation of tissue relaxation and electrical properties in a single measurement.

1Center for Neuroscience Imaging Research, Institute for Basic Science (IBS), Sungkyunkwan University, Suwon, Gyeonggi, Korea; 2Department of Global Biomedical Engineering, Sungkyunkwan University, Suwon, Gyeonggi, Korea

Electrical tissue conductivity is primarily determined by concentration and mobility of ions. If electrical current is ... method showing a significant relationship between concentration and electrical conductivity of brain metabolites.

1Kyung Hee University, Yongin, Gyeonggi, Korea; 2Yonsei University, Seoul, Korea; 3Konkuk University, Seoul, Korea

In this abstract, we propose a new method for obtaining these quantitative applications simultaneously. Therefore, quantitative conductivity map, QSM, R2*, and R2' maps.

MR imaging can provide various quantitative information regarding the electro- magnetic properties and relaxation ... mis-registration, different physiological noise and lengthened scan time can be alleviated due to separate measurements.

1Electrical and Electronic Engineering, Yonsei University, Sinchon-dong, Seoul, Korea

Estimation of ablated lesion and control of RF power is important to reduce local recurrence after RF ablation, there ... six different stages and separately interpret temperature-dependent and/or structure-dependent conductivity changes.

1Kyung Hee University, Yongin, Gyeonggi, Korea; 2Yonsei University, Seoul, Korea; 3Konkuk University, Seoul, Korea

In this study, a dual cine and 3D T1 mapping method using stack-of-spirals sampling scheme and a Look-Locker approach ... T1 and cardiac cinematic might allows a precise characterization of tissue damages induced by a myocardial infarction.

1RMSB - UMR5536, CNRS - Université de Bordeaux, Bordeaux, Aquitaine, France

In this study, the reproducibility of T2* was calculated, and blood oxygen saturation dependence of tissue relaxation ... T2* values and blood volumes should be taken into account when employing changes in T2* for assessing tissue oxygenation.

1Royal Marsden NHS FT and Institute of Cancer Research, Sutton, Surrey, United Kingdom; 2Royal Marsden NHS FT and Institute of Cancer Research, London, United Kingdom; 3Royal Marsden NHS FT, London, United Kingdom

Hippocampal subfields are affected selectively in different disease processes but the interpretations are mostly limited ... echo T2* of the hippocampal subfields at 4.7 T using stimulated echo compensation and susceptibility compensation.

1Biomedical Engineering, University of Alberta, Edmonton, Alberta, Canada; 2Centre for Neuroscience, University of Alberta, Edmonton, Alberta, Canada

Myelin Water Fraction is a validated measure of myelin density. The proposed approach makes use of recent spatial ... within 6 minutes). The algorithms were evaluated on both synthetic and clinical data for cross-validation strategy.

Electronic Poster

Electro-Magnetic Tissue Properties Mapping

Exhibition Hall Monday 16:30-17:30

Computer 49 3284. Continuous Monitoring of Radiofrequency Ablation Using MR-Based Fast Conductivity Imaging Method

Woo Chul Jeong¹, Saurav ZK Sajib¹, Ji Eun Kim¹, Hyung Joong Kim¹, Oh In Kwon², Eung Je Woo²

¹Kyung Hee University, Yongin, Gyeonggi, Korea; ²Konkuk University, Seoul, Korea

Computer 50 3285. Simultaneous Dual-Frequency Range Conductivity Mapping MR Method for Tissue Characterization: In Vivo Canine Brain Disease Model Study

Woo Chul Jeong¹, Min Oh Kim¹, Saurav ZK Sajib¹, Ji Eun Kim¹, Hyung Joong Kim¹, Oh In Kwon³, Dong Hyun Kim³, Eung Je Woo²

¹Kyung Hee University, Yongin, Gyeonggi, Korea; ²Konkuk University, Seoul, Korea; ³Yonsei University, Seoul, Korea

Computer 51 3286. Simultaneous Quantitative Imaging Method for Neuroimaging

Sung-Min Gho¹, Jaewook Shin¹, Min-Oh Kim¹, Dongyeob Han¹, Dong-Hyun Kim¹

¹Electrical and Electronic Engineering, Yonsei University, Sinchon-dong, Seoul, Korea

Computer 52 3287. Electrical Conductivity Images of Brain Metabolites Using MR-Based Tissue Property Mapping

Saurav ZK Sajib¹, Ji Eun Kim¹, Woo Chul Jeong¹, Hyung Joong Kim¹, Oh In Kwon², Eung Je Woo²

¹Kyung Hee University, Yongin, Gyeonggi, Korea; ²Konkuk University, Seoul, Korea

Computer 53 3288. Current-Controlled Alternating Reversed DESS MREIT for Joint Estimation of Tissue Relaxation and Electrical Properties

Hyunyeol Lee², Jaeseok Park²

¹Center for Neuroscience Imaging Research, Institute for Basic Science (IBS), Sungkyunkwan University, Suwon, Gyeonggi, Korea; ²Department of Global Biomedical Engineering, Sungkyunkwan University, Suwon, Gyeonggi, Korea

Computer 54 3289. Geometrical Shift Results in Erroneous Appearance of Low Frequency Tissue Eddy Current Induced Phase Maps: Theory, Simulations and Measurements

S. Mandija¹, A.L.H.M.W. van Lier², P. Petrov², S.W.F. Nегgers², P.R. Luijten¹, C.A.T. van den Berg¹

¹Imaging Division, UMC Utrecht, Utrecht, Netherlands; ²Brain Center Rudolf Magnus, UMC Utrecht, Utrecht, Netherlands
Electrical properties tomography (EPT) is recently introduced for imaging the electrical properties of tissue using MRI. This technique is particularly useful in the field of medical imaging, as it allows for the non-invasive assessment of electric tissue properties such as conductivity. One of the main advantages of EPT is the ability to directly measure the conductivity of tissue, which can provide valuable information about the tissue's metabolic and structural characteristics.

In this study, we focus on the application of EPT in living conditions. The method of retrieving conductivities of human tissues through eddy currents induced by pulsed field gradient was developed. This process is critical for obtaining meaningful phase maps for the retrievals of conductivity. Both theoretical and experimental results are presented. The method has been successfully applied in both phantom and healthy human brain experiments.

The proposed method uses a low pass filter (LPF) based EPT reconstruction method without the Laplacian operator, which is beneficial for in vivo applications. This approach eliminates the need for pre-assigned boundary condition and is therefore more suitable for real-time imaging of living tissues. The method has been successfully applied in both phantom and healthy human brain experiments, demonstrating its potential for clinical applications.

Convection-reaction equation based MREPT (cr-MREPT) is known to reconstruct electrical properties (EPs) also in the presence of blood flow. A recent paper has introduced a new method for the reconstruction of EPs, which utilizes the convection-reaction equation to account for the effects of blood flow. The method has been successfully applied in both phantom and healthy human brain experiments, demonstrating its potential for clinical applications.

Phase-based conductivity mapping makes use of a noise amplifying operation and often relies on spatial filtering to reduce noise. A recent paper has introduced a new method for the reconstruction of conductivity maps, which utilizes a regularized model-based approach. The method has been successfully applied in both phantom and healthy human brain experiments, demonstrating its potential for clinical applications.

On the Signal-To-Noise Ratio of MR-Based Electrical Properties Tomography. A recent paper has investigated the signal-to-noise ratio (SNR) of MR-based electrical properties tomography (EPT). The results showed that the SNR improved significantly when using a multi-channel B1 transmission setup. This finding has important implications for the clinical application of EPT, as it suggests that multi-channel B1 transmission can improve the accuracy and reliability of conductivity measurements.

Water-Content-Map Assisted Electrical Properties Reconstruction of Brain Tissue at 3T. A recent paper has investigated the effects of water content on the reconstruction of electrical properties of brain tissue. The results showed that using a water-content-map as a priori information can improve the accuracy of conductivity measurements. This finding has important implications for the clinical application of EPT, as it suggests that the inclusion of water content information can improve the accuracy of conductivity measurements.

Simulating Charge at Electrical Property Interfaces. A recent paper has investigated the effects of charge accumulation on the accuracy of conductivity measurements. The results showed that using a charge simulation approach can improve the accuracy of conductivity measurements. This finding has important implications for the clinical application of EPT, as it suggests that the inclusion of charge simulation can improve the accuracy of conductivity measurements.
Quantitative Susceptibility Mapping

Exhibition Hall  Monday 16:30-17:30

Computer 73  3308. COMbining Phased Array Data Using Offsets from a Short Echo-Time Reference Scan (COMPOSER)
Simon Daniel Robinson1, Wolfgang Bogner1, Barbara Dymerska1, Pedro Cardoso1, Günther Grabner1, Xeni Deligianni2, Oliver Bieri2, Siegfried Trattnig1
1High Field MR Centre, Department of Biomedical Imaging and Image-guided Therapy, Medical University of Vienna, Vienna, Austria; 2Division of Radiological Physics, Department of Radiology, University of Basel Hospital, Basel, Switzerland

Computer 74  3309. Multi-Channel Data Combination with Linear Phase Baseline Correction
Yicun Wang1, Xiaotong Zhang1, Jiaen Liu1, Pierre-Francois Van de Moortele2, Bin He1,3
1The MRI Institute for Biomedical Research, Waterloo, Ontario, Canada; 2Department of Radiology, Wayne State University, Detroit, MI, United States; 3School of Biomedical Engineering, McMaster University, Hamilton, Ontario, Canada

Computer 75  3310. Multi-Echo Multi-Receiver MR Phase Reconstruction with Bipolar Acquisitions
Joseph Dagher1
1Department of Medical Imaging, University of Arizona, Tucson, AZ, United States
The Impact of Background Removal Techniques on the Quantification of Magnetic Susceptibility in the Human Cortex

Diana Khabipova¹, José P. Marques¹
¹CIBM, Lausanne, Vaud, Switzerland

Enhancing K-Space Methods for Quantitative Susceptibility Mapping by Exploiting Consistency in Cone Data

Yan Wen¹,², Yi Wang²,³, Tian Liu¹
¹MedImageMetric LLC, New York, United States; ²Biomedical Engineering, Cornell University, Ithaca, NY, United States; ³Radiology, Weill Cornell Medical College, New York, United States

Streaking Artifacts Reduction for QSM

Hongjiang Wei¹, Wei Li², Nian Wang³, Chunlei Liu¹,³
¹Brain Imaging and Analysis Center, Duke University, Durham, NC, United States; ²University of Texas Health Science Center at San Antonio, TX, United States; ³Department of Radiology, School of Medicine, Duke University, Durham, NC, United States

Enhancing K-Space Methods for Quantitative Susceptibility Mapping by Exploiting Consistency in Cone Data

Yan Wen¹,², Yi Wang²,³, Tian Liu¹
¹MedImageMetric LLC, New York, United States; ²Biomedical Engineering, Cornell University, Ithaca, NY, United States; ³Radiology, Weill Cornell Medical College, New York, United States

Quantitative Susceptibility Mapping Using Segmentation-Enabled Dipole Inversion

Jakob Meineke², Julien Senegas¹, Ulrich Katscher¹, Fabian Wenzel¹
¹Image Sciences Institute, University Medical Center Utrecht, Utrecht, Netherlands
Electronic Poster

Computer 87 3322. Structural Feature Based Collaborative Reconstruction for Quantitative Susceptibility Mapping
Lijun Bao1,2, Zhong Chen1, Peter C.M. van Zijl3, Xu Li4
1Department of Electronic Science, Xiamen University, Xiamen, Fujian, China; 2Department of Radiology, School of Medicine, Johns Hopkins University, Baltimore, MD, United States

Computer 88 3323. Distribution Specified Dipole Inversion for Quantitative Susceptibility Mapping
Yilin Yang1, Tian Liu2, Jianwu Dong2, Pascal Spincemaille4, Yi Wang5
1Department of Electronic Engineering, Tsinghua University, Beijing, China; 2MedImageMetric, LLC, New York, NY, United States; 3Department of Automation, Tsinghua University, Beijing, China; 4Department of Radiology, Weill Medical College of Cornell University, New York, NY, United States; 5Department of Biomedical Engineering, Cornell University, Ithaca, NY, United States

Computer 89 3324. Quantitative Susceptibility Mapping Using Piecewise Gradient Weighting
Zhiwei Zheng1, Shuhui Cai1, Congbo Cai2, Zhong Chen1
1Department of Electronic Science, Xiamen University, Xiamen, Fujian, China; 2Department of Communication Engineering, Xiamen University, Xiamen, Fujian, China

Olaf Dietrich1, Seyed-Ahmad Ahmadi2, Johannes Levin2, Juliana Maiostre2, Annika Plate2, Armin Giese3, Kai Bötzel2
1Josef Lissner Laboratory for Biomedical Imaging, Institute for Clinical Radiology, LMU Ludwig Maximilian University of Munich, Munich, Germany; 2Department of Neurology, LMU Ludwig Maximilian University of Munich, Munich, Germany; 3Center for Neuropathology and Prion Research, LMU Ludwig Maximilian University of Munich, Munich, Germany

Computer 91 3326. On the Feasibility of QSM in MR-Invisible Regions
Diego Hernando1, Debra E. Horng2, Samir D. Sharma1, Scott B. Reeder1,2
1Radiology, University of Wisconsin-Madison, Madison, WI, United States; 2Medical Physics, University of Wisconsin-Madison, Madison, WI, United States

Sarah Eskreis-Winkler1, Dong Zhou1, Tian Liu1, Ajay Gupta1, Susan Gauthier2, Yi Wang2, Pascal Spincemaille2
1Weill Cornell Medical College, New York, NY, United States; 2MedImageMetric, LLC, New York, NY, United States

Computer 93 3328. p-Space Imaging: Where Does the Contrast Come From?
Sina Straub1, Andreas Wetscherek1, Mark E. Ladd2, Frederik B. Laun3
1Medical Physics in Radiology, German Cancer Research Center (DKFZ), Heidelberg, Germany; 2Medical Physics in Radiology, German Cancer Research Center (DKFZ), Heidelberg, Germany

Computer 94 3329. Compressed Sensing (CS) in Phase Imaging Requires Dedicated Reconstruction Strategies
Ukathu Nakarmi1, Shruti Prasad2, Leslie Ying3, Paul Polak4, Robert Zivadinov5, Ferdinand Schweser5
1Dept. of Electrical Engineering, State University of New York at Buffalo, Buffalo, NY, United States; 2Buffalo Neuroimaging Analysis Center, Dept of Neurology, School of Medicine and Biomedical Sciences, State University of New York at Buffalo, Buffalo, NY, United States; 3MRI Molecular and Translational Imaging Center, State University of New York at Buffalo, Buffalo, NY, United States; 4MRI Molecular and Translational Imaging Center, State University of New York at Buffalo, Buffalo, NY, United States; 5MRI Molecular and Translational Imaging Center, State University of New York at Buffalo, Buffalo, NY, United States

Computer 95 3330. Improved Accuracy in Susceptibility-Based OEF Measurements by Mitigation of Partial-Volume Effects Via Combined Magnitude and Phase Reconstruction
Patrick McDaniel1, Audrey Fan2, Berkin Bölgic2, Jeffrey N. Stout3, Elfar Adalsteinsson4, 5
1Electrical Engineering and Computer Science, Massachusetts Institute of Technology, Cambridge, MA, United States; 2Radiology, Richard M. Lucas Center for Imaging, Stanford University, Stanford, CA, United States; 3A. A. Martinos Center for Imaging, Department of Radiology, Massachusetts General Hospital, Charlestown, MA, United States; 4Health Sciences and Technology, Harvard-MIT, Cambridge, MA, United States

458
Electronic Poster

CEST Technologies & Molecular Applications of CEST

Exhibition Hall  Monday 17:30-18:30

Computer 1  3332. Transfer Rate Edited Experiment for the Selective Detection of Chemical Exchange
Ding Xiu1, Joshua I. Friedman2, Jae-Seung Lee1, 2, Ravinder R. Regatte1, Alexej Jerschow1
1Department of Radiology, New York University Langone Medical Center, New York, NY, United States; 2Department of Chemistry, New York University, New York, NY, United States

Computer 2  3333. Slice Multiplexed Chemical Exchange Saturation Transfer
Bing Wu1, Han Ouyang2, Zhenyu Zhou1
1GE healthcare China, Beijing, China; 2China academy of sciences cancer hospital, Beijing, China

Computer 3  3334. R1 Correction for Quantitative Amide Proton Transfer Imaging
Hua Li1, Ke Li2, Xiao-Yong Zhang1, Zhongliang Zu1, Moritz Zais2, Daniel F. Gochberg1, John C. Gore1, Junzhong Xu1
1Institute of Imaging Science, Vanderbilt University, Nashville, TN, United States; 2Department of Medical Physics in Radiology, DKFZ, Heidelberg, BW, Germany

Computer 4  3335. A Length and Offset Varied Saturation (LOVARS) CEST MRI: A New Tool in Early Detecting Both Intracerebral Hemorrhage and Infarct
Meiyun Wang1, Erning Zhang1, Carlos Torres2, Yan Bai, Xiaowei He1, Dapeng Shi, Panli Zuo1, Michael T. McMahon5, Meiyun Wang1, Erning Zhang1, Carlos Torres2
1Department of Radiology, Henan Provincial People’s Hospital, Zhengzhou, Henan, China; 2Department of Radiology, The Ottawa Hospital, The University of Ottawa, Ottawa, ON, Canada; 3School of Information Sciences and Technology, Northwest University, Xian, Shanxi, China; 4Siemens Healthcare, Beijing, China; 5Dept. of Radiology, The Johns Hopkins University School of Medicine, Baltimore, MD, United States; 6Siemens Ltd Australia, Macquarie Park, Australia; 7Department of Radiology, The Johns Hopkins University School of Medicine, Baltimore, MD, United States

Computer 5  3336. Applying Variable RF-Power CEST (VCEST) to Detect Exchangeable Hydroxyl Protons in the Presence of MT at 3 Tesla
Daniel James Clark1, 2, Alex K. Smith3, 4, Michael V. Knopp1, Seth A. Smith3, 4
1Wright Center of Innovation, Department of Radiology, The Ohio State University, Columbus, OH, United States; 2Department of Biomedical Engineering, The Ohio State University, Columbus, OH, United States; 3VUIIS, Department of Radiology and Radiological Sciences, Vanderbilt University, Nashville, TN, United States; 4Department of Biomedical Engineering, Vanderbilt University, Nashville, TN, United States

Computer 6  3337. Improving Sensitivity to Hydroxyl Protons and Simultaneous Measurement of Amide and NOE Signals at 3T Using Variable Pre-Saturation Power CEST (VCEST)
Daniel James Clark2, 3, Alex K. Smith1, 4, Michael V. Knopp1, Seth A. Smith3, 4
1Wright Center of Innovation, Department of Radiology, The Ohio State University, Columbus, OH, United States; 2Department of Biomedical Engineering, The Ohio State University, Columbus, OH, United States; 3VUIIS, Department of Radiology and Radiological Sciences, Vanderbilt University, Nashville, TN, United States; 4Department of Biomedical Engineering, Vanderbilt University, Nashville, TN, United States

Computer 7  3338. Saturation Parameters Influence on SAFARI Performance
Shu Zhang1, Jochen Keupp2, Zheng Liu1, Robert E. Lenkinski1, 3, Elena Vinogradov1, 4
1Radiology, UT Southwestern Medical Center, Dallas, TX, United States; 2Philips Research, Hamburg, Germany; 3Advanced Imaging Research Center, Oregon Health & Science University, Portland, OR, United States; 4Advanced Imaging Research Center, UT Southwestern Medical Center, Dallas, TX, United States

ISMRM MERIT AWARD

On the Limitations of Brain Lesion Characterization by Direct Assessment of MRI Phase
Paul Polak1, Robert Zivadinov1, 2, Ferdinand Schweser1, 2
1Department of Neurology, Buffalo Neuroimaging Analysis Center, State University of New York at Buffalo, Buffalo, NY, United States; 2Molecular and Translational Imaging Center, MRI Center, Clinical and Translational Research Center, Buffalo, NY, United States

Exhibition Hall Monday 17:30-18:30

Electronic Poster

Computer 96  3331. Saturation Parameters Influence on SAFARI Performance
Paul Polak1, Robert Zivadinov1, 2, Ferdinand Schweser1, 2
1Department of Neurology, Buffalo Neuroimaging Analysis Center, State University of New York at Buffalo, Buffalo, NY, United States; 2Molecular and Translational Imaging Center, MRI Center, Clinical and Translational Research Center, Buffalo, NY, United States
It is based on a matrix-algebra based calculation of the Bloch- McConnell equations for n spin pools, including the exchange saturation transfer (CEST) and magnetization transfer involving a macromolecular pool (MT) on MR experiments. We introduce an efficient modeling and simulation method, capable of simulating MR experiments for arbitrary many spin pools.

MTR asymmetry is often used as a CEST parameter. However, it is influenced by other Z-spectrum peaks or high B1 of the saturation pulse. In this study, the peak area were calculated with raw egg white phantom. As a CEST parameter, CEST peak area was better than MTR asymmetry.

We have designed a new curve fitting method for CEST data using the L1/2 and L1 norms. This method overcomes the limitations of the traditional curve fitting algorithm, and makes it feasible to obtain robust and quantitative estimates of CEST parameter in vivo.

Image registration has been widely used as a preprocessing step for ensuring high-quality CEST images, especially for in vivo studies. However, over-registration degrades the quality of CEST images, and the 3.5 ppm dynamic is the best reference for amide proton transfer imaging.

Amide proton transfer (APT) is capable of detecting the contrast to the protein level. High-resolution APT may be applicable to this study and a small brain tumor (size < 0.8 cm³) was used to evaluate the clinical performance of rFOV APT.

CEST acquisition usually consists a series of frequency saturation, which constrains the acquisitions to be single shot methods. We present an excitation method to exploit this knowledge, and its benefits are demonstrated in a prostate CEST acquisition.
1Department of Radiology, New York University, New York, NY, United States; 2Department of Chemistry, New York University, New York, NY, United States

Computer 19 3350.  
**Mapping Glutamate in Mice Using Chemical Exchange Saturation Transfer at 9.4T**  
*Alex Li*, *Miranda Bellyou-Camilleri*, *Joseph Gati*, *Robert Bartha*, *Ravi Menon*  
1Centre for Functional and Metabolic Mapping, The University of Western Ontario, London, ON, Canada

Computer 20 3351.  
**Combining CEST with CESL to Differentiate Slow Exchanging Pool from Fast Exchanging Pool: Mapping the Concentration of Glutamate and Amides Separately**  
*Olivier E. Mougin*, *Penny A. Gowland*  
1Sir Peter Mansfield Imaging Centre, University of Nottingham, Nottingham, Nottinghamshire, United Kingdom

Computer 21 3352.  
**Separated Quantification of Creatine and Phosphocreatine Based on a Novel Proton MR Method Combing 1H-MRS and CEST MRI**  
*Rong-Wen Tsai*, *Wei-Go Li*, *Shaolin Yang*, *Xiaohong Joe Zhou*, *Kejia Cai*  
1Radiology, College of Medicine, University of Illinois at Chicago, Chicago, IL, United States; 2Center for MR Research, College of Medicine, University of Illinois at Chicago, Chicago, IL, United States; 3Research Resource Center, University of Illinois at Chicago, IL, United States; 4Psychiatry, College of Medicine, University of Illinois at Chicago, Chicago, IL, United States

Computer 22 3353.  
**In Vivo Measurement of Free Creatine and Phosphocreatine Kinetics in Lower Leg Muscle.**  
*Olusegun Adegbite*, *Prodromos Parasoglou*, *Lee Jae Seung*, *Ding Xia*, *Ravinder R. Regatte*  
1Radiology, NYU, Langone Medical Centre, New York, United States

Computer 23 3354.  
**A Smart CEST Imaging Sensor Based on Thermo-Sensitive Micelle**  
*Xiaolei Zhu*, *Shizhen Chen*, *Qing Luo*, *Xin Zhou*  
1National Center for Magnetic Resonance in Wuhan, Wuhan Institute of Physics and Mathematics, Wuhan, Hubei, China

Computer 24 3355.  
**Reconstituted HDL for PARACEST-Fluorescence Multimodal Imaging**  
*Qi Wang*, *Shizhen Chen*, *Qing Luo*, *Xin Zhou*  
1National Center for Magnetic Resonance in Wuhan, Wuhan Institute of Physics and Mathematics, Wuhan, Hubei, China

**Electronic Poster**

**Magnetization Transfer & CEST**

**Exhibition Hall**  
Monday 17:30-18:30

Computer 25 3356.  
**Whole Brain Inhomogeneous MT Using an IhMT Prepared 3D GRE Sequence at 1.5T**  
1CRMBM UMR 7339, CNRS and Aix-Marseille University, Marseille, France; 2Radiology Department, Beth Israel Deaconess Medical Center and Harvard Medical School, Boston, MA, United States; 3Pôle d'Imagerie Médicale, CEMEREM, APHM, Marseille, France

Computer 26 3357.  
**Extracting a Robust Inhomogeneous Magnetization Transfer (IhMT) Rate Parameter, IhMT-\(R_{ex}\)**  
*Gopal Varma*, *Olivier M. Girard*, *Valentin Prévost*, *Guillaume Duhamel*, *David C. Alsop*  
1Radiology, Division of MR Research, Beth Israel Deaconess Medical Center, Harvard Medical School, Boston, MA, United States; 2CRMBM UMR 7339, CNRS and Aix-Marseille Université, Marseille, France

Computer 27 3358.  
**Rapid, Motion Robust, and Quiet Quantitative Magnetization Transfer (QMT) Imaging Using a Zero Echo Time (ZTE) Acquisition**  
*James H. Holmes*, *Alexey Samsonov*, *Pouria Mossahebi*, *Diego Hernandez*, *Aaron S. Field*, 4, *Kevin M. Johnson*  
1Global MR Applications and Workflow, GE Healthcare, Madison, WI, United States; 2Radiology, University of Wisconsin-Madison, Madison, WI, United States; 3Department of Medicine, University of Wisconsin-Madison, Madison, WI, United States; 4Biomedical Engineering, University of Wisconsin-Madison, Madison, WI, United States; 5Medical Physics, University of Wisconsin-Madison, Madison, WI, United States
Electronic Poster

Computer 28 3359. Optimisation of Magnetisation Transfer Ratio Sequence Acquisition Parameters: Application to the Spinal Cord
Marco Battiston1, James E M Fairney2, Marios C. Yiannakas3, Claudia A M Wheeler-Kingshott4, Rebecca S. Samson5
1NMR Research Unit, Department of Neuroinflammation, Queen Square MS Centre, UCL Institute of Neurology, London, England, United Kingdom; 2Department of Medical Physics and Biomedical Engineering, UCL, London, England, United Kingdom; 3Department of Brain Repair and Rehabilitation, UCL Institute of Neurology, London, England, United Kingdom

Computer 29 3360. Correction for Residual Effects of B1+ Inhomogeneity on MT Saturation in FLASH-Based Multi-Parameter Mapping of the Brain
Gunther Helms1, 2
1Medical Radiation Physics, Lund University, Lund, Scania, Sweden; 2Cognitive Neurology, Göttingen University Medical Center, Göttingen, Lower Saxony, Germany

Computer 30 3361. Initial Investigation Into Effect of Radiation Damping on Magnetization Transfer Parameters Extracted from Inversion Recovery Experiments
Emily Willson1, Heather Whitney2
1Wheaton College, Wheaton, IL, United States; 2Physics, Wheaton College, Wheaton, IL, United States

Computer 31 3362. MT Spectra Asymmetry and NOE Studies in the Brachial Plexus
Zaid Bin Mahbub1, Olivier Mougin2, Penny Gowland2
1Arts & Sciences, Ahsanullah University of Science & Technology, Dhaka, Bangladesh; 2SPMMRC, University of Nottingham, Nottingham, Nottinghamshire, United Kingdom

Computer 32 3363. Nuclear Overhauser Enhancement Imaging of Glioblastoma Patients at 7 Tesla: Region Specific Correlation with Diffusion Weighted MRI
Daniel Paech1, Sina Burth1, Johannes Windschuh2, Jan Eric Meisner2, Moritz Zais2, Oliver Eidel1, Philipp Kickingereider1, Peter Bachert1, Wolfgang Wick1, Heinz Peter Schlemmer1, Ralf Omar Floca2, Mark Edward Ladd1, Sabine Helland1, Martin Bendzus3, Alexander Radbruch1
1Neuroradiology, University Hospital Heidelberg, Heidelberg, Baden-Württemberg, Germany; 2Department of Medical Physics in Radiology, German cancer research center, Baden-Württemberg, Germany; 3Neurooncology, University Hospital Heidelberg, Heidelberg, Baden-Württemberg, Germany; *Department of Radiology, German cancer research center, Baden-Württemberg, Germany

Computer 33 3364. Impaired Biophysical Integrity of Default Mode Network in Type 2 Diabetes Revealed by Magnetization Transfer Imaging
Shaolin Yang1, Minjie Wu1, Oluwasa Ajilore1, Anand Kumar2
1Department of Psychiatry, University of Illinois at Chicago, Chicago, IL, United States; 2Department of Radiology, University of Illinois at Chicago, Chicago, IL, United States

Computer 34 3365. Magnetization Transfer Ratio (MTR) Imaging in the Presence of Fat
James H. Holmes1, Kevin M. Johnson1, Diego Hernandez2, Scott B. Reeder3, Alexey Samsonov3
1Global MR Applications and Workflow, GE Healthcare, Madison, WI, United States; 2Medical Physics, University of Wisconsin-Madison, Madison, WI, United States; 3Radiology, University of Wisconsin-Madison, Madison, WI, United States

Computer 35 3366. Whole-Brain Amide Proton Transfer (APT) and Nuclear Overhauser Enhancement (NOE) Imaging in Glioma Patients Using Low-Power Steady State Pulsed CEST at 7T
Hye-Young Heo1, Shruti Agarwal1, Craig Jones1, Jun Hua1, Nirbhay Yadav1, Jinyuan Zhou2, Peter C.M van Zijl3, Jay J. Pillai2
1Division of MR Research, Russell H Morgan Department of Radiology and Radiological Science, Johns Hopkins University, Baltimore, MD, United States; 2Division of Neuroradiology, Russell H Morgan Department of Radiology and Radiological Science, Johns Hopkins University, Baltimore, MD, United States; 3F.M. Kirby Research Center for Functional Brain Imaging, Kennedy Krieger Institute, Baltimore, MD, United States

Computer 36 3367. On the Distribution of Pure Amide Proton Transfer and Pure Nuclear Overhauser Enhancement Signals in Gray and White Matter in the Human Brain at 7T
Vitaliy Khlebnikov1, Jeroen Siero1, Jannie Wijnen1, Fredy Visser2, Peter Luijten2, Dennis Klomp3, Hans Hoogduin1
1Department of Radiology, University Medical Center Utrecht, Utrecht, Netherlands; 2Philips Healthcare, Best, Netherlands

462
Shuzhong Chen1, Min Deng1, Jing Yuan2, Yi-Xiang Wang1, Alex K. Smith1, 2, Lindsey M. Dethrage, 2, Samantha By1, 2, Siddharama Pawate4, Seth A. Smith2, 3, Ke Li1, 2, Hua Li1, 3, Xiao-Yong Zhang7, 2, Ashley M. Stokes2, Hakmook Kang1, Zhongliang Zu1, 2, Chad C. Quarles1, 2, Daniel F. Gochberg1, 2, John C. Gore1, 2, Junzhong Xu1, 2

1Institute of Imaging Science, Vanderbilt University, Nashville, TN, United States; 2Department of Radiology and Radiological Sciences, Vanderbilt University, Nashville, TN, United States; 3Department of Physics and Astronomy, Vanderbilt University, Nashville, TN, United States; 4Department of Biostatistics, Vanderbilt University, Nashville, TN, United States

Electronic Poster

Chemical Exchange Saturation Transfer (CEST) MR Imaging of Rat Liver with Fasting or CCl4 Intoxication

Shuzhong Chen1, Min Deng1, Jing Yuan2, Yi-Xiang Wang1

1Department of Imaging and Interventional Radiology, The Chinese University of Hong Kong, Shatin, N.T., Hong Kong; 2Department of Biostatistics, Vanderbilt University, Nashville, TN, United States
Electronic Poster

**Computer 46 3377.** Can Brain Tumor Microenvironment and Associated Structures Be Probed by Amide Proton Transfer at 7T?

Vitaly Khlebnikov1, Daniel Polders2, Dennis Klomp1, Jeroen Hendrikse1, Pierre Robel1, Eduard Voormolen1, Peter Luijten1, Hans Hoogduin1

1Department of Radiology, University Medical Center Utrecht, Utrecht, Netherlands; 2Philips Healthcare, Best, Netherlands; 3Brain Division, University Medical Center Utrecht, Utrecht, Netherlands

**Computer 47 3378.** Z-Spectral Modeling for CEST-MRI of Bladder Cancer

Ryan Nicholas Scharf1, Huyen T. Nguyen2, Kamal Pohar3, Amir Mortazavi4, Zarine Shah2, Debra Zynger5, Michael V. Knopp1, Guang Jia1

1Department of Physics and Astronomy, Louisiana State University, Baton Rouge, LA, United States; 2Department of Radiology, The Ohio State University, OH, United States; 3Department of Urology, The Ohio State University, OH, United States; 4Department of Internal Medicine, The Ohio State University, OH, United States; 5Department of Pathology, The Ohio State University, OH, United States

**Computer 48 3379.** Modulation and Regulation of Intracellular PH in Healthy Human Brain Studied by Means of Chemical Exchange Saturation Transfer (CEST) at 7T

Vitaly Khlebnikov1, Alex Bhogal1, Jeroen Siero1, Michel Italiaander2, Vincent Boer1, Peter Luijten1, Hans Hoogduin1, Dennis Klomp1

1Department of Radiology, University Medical Center Utrecht, Utrecht, Netherlands; 2MR Coils BV, Drunen, Netherlands

**Electronic Poster**

**MR Fingerprinting & Quantitative Imaging**

**Exhibition Hall**

**Monday 17:30-18:30**

**Computer 49 3380.** Nonlinear Dimensionality Reduction for Magnetic Resonance Fingerprinting with Application to Partial Volume

Debra McGivney1, Anagha Deshmane2, Yun Jiang2, Dan Ma2, Mark Griswold1, 2

1Radiology, Case Western Reserve University, Cleveland, OH, United States; 2Biomedical Engineering, Case Western Reserve University, Cleveland, OH, United States

**Computer 50 3381.** A Bayesian Approach to the Partial Volume Problem in Magnetic Resonance Fingerprinting

Debra McGivney1, Anagha Deshmane2, Yun Jiang2, Dan Ma2, Mark Griswold1, 2

1Radiology, Case Western Reserve University, Cleveland, OH, United States; 2Biomedical Engineering, Case Western Reserve University, Cleveland, OH, United States

**Computer 51 3382.** MR Fingerprinting Based on Realistic Vasculature in Mice: Identifiability of Physiological Parameters

Philippe Pouliot1, 2, 3, Louis Gagnon1, Tina Lam1, Pranod Avti1, Michèle Desjardins1, Ashok Kakkar1, Sava Sakadzic1, David Boas1, Frédéric Lesage1

1Electrical Engineering, École Polytechnique Montréal, Montreal, QC, Canada; 2Research Centre, Montreal Heart Institute, Montreal, QC, Canada; 3Athinoula A. Martinos Center for Biomedical Imaging, Massachusetts General Hospital, Harvard Medical School, MA, United States; 4Chemistry Department, McGill University, QC, Canada; 5Montreal Heart Institute, QC, Canada

**Computer 52 3383.** Uncertainty Volume Analysis - A Measure for Protocol Performance

Cristoffer Cordes1, Matthias Günther1, 2

1Fraunhofer MEVIS, Bremen, Germany; 2MR-Imaging and Spectroscopy, University of Bremen, Bremen, Germany

**Computer 53 3384.** Tier-Specific Weighted Echo Sharing Technique (WEST) for Extremely Undersampled Cartesian Magnetic Resonance Fingerprinting (MRF)

Taejoon Eo1, Jinseong Jang1, Minoh Kim1, Dong-hyun Kim1, Dosik Hwang1

1Yonsei University, Seoul, Korea

**Computer 54 3385.** 3D Balanced-EPI Magnetic Resonance Fingerprinting at 6.5 MT

Mathieu Sarracanie1, 2, Ouri Cohen1, Matthew S. Rosen1, 2

1MGH/A.A. Martinos Center for Biomedical Imaging, Charlestown, MA, United States; 2Department of Physics, Harvard University, Cambridge, MA, United States

464
We present a comparison of different pattern matching algorithms for tissue characterization based on Magnetic Resonance ... regimes. We find that, in many cases, machine learning algorithms can offer higher accuracy and faster matching.

1Philips Research Europe, Hamburg, Germany
Electronic Poster

Computer 65 3396. Undersampled High-Frequency Diffusion Signal Recovery Using Model-Free Multi-Scale Dictionary Learning
Enhao Gong1, Qiyuan Tian1, John M. Pauly1, Jennifer A. McNab2
1Electrical Engineering, STANFORD UNIVERSITY, Stanford, CA, United States; 2Radiology, STANFORD UNIVERSITY, Stanford, CA, United States

Computer 66 3397. Limitations of T2-Contrast 3D-Fast Spin Echo Sequences in the Differentiation of Radiation Fibrosis Versus Tumor Recurrence
Andrea Vargas1, Laurent Milot2, Simon Graham1, Philip Beatty1
1Medical Biophysics, University of Toronto, Toronto, Ontario, Canada; 2Sunnybrook Research Institute, Toronto, Canada

Computer 67 3398. Optimization of Magnetization-Prepared Rapid Gradient-Echo (MP-RAGE) Sequence for Neonatal Brain MRI
Lili He1, Jinghua Wang2, Mark Smith1, Nehal A. Parikh1,4
1Center for Perinatal Research, The Research Institute at Nationwide Children's Hospital, Columbus, OH, United States; 2Center for Cognitive and Behavioral Brain Imaging, The Ohio State University, Columbus, OH, United States; 3Radiology Department, Nationwide Children's Hospital, Columbus, OH, United States; 4Department of Pediatrics, The Ohio State University College of Medicine, Columbus, OH, United States

Computer 68 3399. T2 Shuffling: Multic和平 3D Fast Spin Echo Imaging
Jonathan I. Tamir1, WeiGian Chen1, Peng Lai1, Martin Uecker2, Shreyas S. Vasanawala1, Michael Lustig1
1Electrical Engineering and Computer Sciences, University of California, Berkeley, Berkeley, CA, United States; 2Global Applied Science Laboratory, GE Healthcare, Menlo Park, CA, United States; 3Radiology, Stanford University, Stanford, CA, United States

Computer 69 3400. High Contrast-To-Noise Ratio Brain Structural Images Using Magnetization Preparation and TrueFISP AcquAnalysis
Yi-Cheng Hsu1, Ying-Hua Chu1, Shang-Yueh Tsai1, Wen-Jui Kuo1, Fa-Hsuan Lin1
1Institute of Biomedical Engineering, National Taiwan University, Taipei, Taiwan; 2Institute of Applied Physics, National Chengchi University, Taipei, Taiwan; 3Institute of Neuroscience, National Yang Ming University, Taipei, Taiwan

Computer 70 3401. Rapid Whole Brain T1 Rho Mapping
Bing Wu1, Nan Hong2, Zhenyu Zhou1
1GE healthcare China, Beijing, China; 2Peking university people's hospital, Beijing, China

Computer 71 3402. Suppression of Artifacts in Simultaneous 3D T1 and T2*-Weighted Dual-Echo Imaging
Won-Joon Do1, Qiyuan Tian1, John M. Pauly1, Jennifer A. McNab2
1Electrical Engineering, STANFORD UNIVERSITY, Stanford, CA, United States; 2Radiology, STANFORD UNIVERSITY, Stanford, CA, United States

Computer 72 3403. 2D Reduced Field of View Spiral Inversion Recovery Sequence for High Resolution Multiple Inversion Time Imaging in a Single Breath Hold
Galen D. Reed2, Reeve Ingle1, Ken O. Johnson1, Juan M. Santos1, Bob S. Hu1, William R. Overall1
1HeartVista, Menlo Park, CA, United States; 2Cardiology, Palo Alto Medical Foundation, Menlo Park, CA, United States

Electronic Poster
Reconstruction & Processing Algorithms
Exhibition Hall Monday 17:30-18:30

Computer 73 3404. An Approach to Improve the Effectiveness of Wavelet and Contourlet Compressed Sensing Reconstruction
Panz Adiropoulos1, Michael R. Smith1,2
1Electrical and Computer Engineering, University of Calgary, Calgary, Alberta, Canada; 2Radiology, University of Calgary, Calgary, Alberta, Canada

Computer 74 3405. Enhanced Reconstruction of Compressive Sensing MRI Via Cross-Domain Stochastically Fully-Connected Random Field Model
Edward Li1, Mohammad Javad Shafiee1, Audrey Chung1, Farzad Khalvati2, Alexander Wong1, Masoom A. Haider3
1Electrical and Computer Engineering, University of Calgary, Calgary, Alberta, Canada; 2Radiology, University of Calgary, Calgary, Alberta, Canada; 3Cognitive and Behavioral Brain Imaging, The Ohio State University, Columbus, OH, United States
Electronic Poster

3406. Overcoming the Image Position-Dependent Resolution Inherent in DFT and CS Reconstructions
Michael R. Smith1, Jordan Woehr2, Mathew E. MacDonald, Paniz Adipour1

1Electrical and Computer Engineering, University of Calgary, Calgary, Alberta, Canada; 2Radiology, University of Calgary, Calgary, Alberta, Canada.

3407. Simultaneous Magnitude and Phase Regularization in MR Compressed Sensing Using Multi-Frame FREBAS Transform
Satoshi Ito1, Mone Shibu1, Kenji Ito1, Yoshifumi Yamada1

1Usutomiya University, Usutomiya, Tochigi, Japan

3408. Extended Phase Graphs: Understanding a Common Misconception of the Framework Which Leads to the Failure of Programming It Correctly
Matthias Weigel1

1Radiological Physics, Dept. of Radiology and Nuclear Medicine, University of Basel Hospital, Basel, Switzerland

3409. Acquisition Strategy for Limited Support Compressed Sensing
Pavan Poojar1, Bikkamene Jayadev Nutandev1, Amaresha Sridhar Konar1, Rashmi R. Rao1, Ramesh Venkatesan2, Sairam Geethanath2

1Medical Imaging Research Centre, Dayananda Sagar Institutions, Bangalore, Karnataka, India; 2Wipro-GE Healthcare, Bangalore, Karnataka, India

3410. MRI Constrained Reconstruction Without Tuning Parameters Using ADMM and Morozov's Discrepancy Principle
Weiyi Chen1, Yi Guo1, Ziyoue Wu2, Krishna S. Nayak1, 2

1Electrical Engineering, University of Southern California, Los Angeles, CA, United States; 2Biomedical Engineering, University of Southern California, Los Angeles, CA, United States

3411. A Fast Algorithm for Tight Frame-Based Nonlocal Transform in Compressed Sensing MRI
Xiaobo Qu1, Yansong Liu1, Jing Ye1, Di Guo2, Zhifang Zhan1, Zhong Chen1

1Department of Electronic Science, Xiamen University of Technology, Xiamen, Fujian, China; 2Department of Computer and Information Engineering, Xiamen University of Technology, Xiamen, Fujian, China

Nishant Zachariah1, Johannes M. Flake2, Qiu Wang3, Boris Mailhe1, Justin Romberg1, Xiaoping Ha1, Mariappan Nadar1

1Department of Electrical and Computer Engineering, Georgia Institute of Technology, Atlanta, GA, United States; 2Department of Mathematics, Rutgers University, New Brunswick, NJ, United States; 3Imaging and Computer Vision, Siemens Corporate Technology, Princeton, NJ, United States; 4Department of Biomedical Engineering, Emory University and Georgia Institute of Technology, Atlanta, GA, United States

3413. Momentum Optimization for Iterative Shrinkage Algorithms in Parallel MRI with Sparsity-Promoting Regularization
Matthew J. Muckley1, Douglas C. Noll1, Jeffrey A. Fessler2

1Biomedical Engineering, University of Michigan, Ann Arbor, MI, United States; 2Electrical Engineering and Computer Science, University of Michigan, Ann Arbor, MI, United States

3414. Parameter-Free Sparsity Adaptive Compressive Recovery (SCoRe)
Rizwan Ahmad1, Philip Schniter2, Orlando P. Simonetti2

1Electrical and Computer Engineering, The Ohio State University, Columbus, OH, United States; 2Internal Medicine and Radiology, The Ohio State University, Columbus, OH, United States
Graph-Based Compressed Sensing MRI Image Reconstruction: View Image Patch as a Vertex on Graph
Zongying Lai1,2, Yunsong Liu1, Di Guo1, Jing Ye1, Zhifang Zhan1, Zhong Chen1, Xiaobo Qu1
1Department of Electronic Science, Xiamen University, Xiamen, Fujian, China; 2Department of Communication Engineering, Xiamen University, Fujian, China

MR Image Reconstruction with Optimized Gaussian Mixture Model for Structured Sparsity
Zechen Zhou1, Niranjan Balu2, Rui Li1, Jinnan Wang2, Chen Yuan1,2
1Center for Biomedical Imaging Research, Department of Biomedical Engineering, School of Medicine, Tsinghua University, Beijing, China; 2Vascular Imaging Lab, Department of Radiology, University of Washington, Seattle, WA, United States

Partial Discreteness: A New Type of Prior Knowledge for MRI Reconstruction
Gabriel Ramos-Llordén1, Hilde Segers1, Willem Jan Palenstijn1, Arnold J. den Dekker1,2, Jan Sijbers1
1iMinds Vision-Lab, University of Antwerp, Antwerp, Belgium; 2Delft Center for Systems and Control, Delft University of Technology, Delft, Netherlands

Novel Non-Local Total Variation Regularization for Constrained MR Reconstruction
Andres Saucedo1,2, Stamatis Lefkimmiatis1, Stanley Osher3, Kyunghyun Sung1,2
1Department of Radiological Sciences, David Geffen School of Medicine, University of California Los Angeles, Los Angeles, CA, United States; 2Biomedical Physics Interdepartmental Graduate Program, University of California Los Angeles, Los Angeles, CA, United States; 3Department of Mathematics, University of California Los Angeles, Los Angeles, CA, United States

Highly Undersampling MR Image Reconstruction Using Tree-Structured Wavelet Sparsity and Total Generalized Variation Regularization
Ryan Wen Liu1, Lin Shi2, Simon C.H. Yu1, Defeng Wang1,3
1Department of Imaging and Interventional Radiology, The Chinese University of Hong Kong, Shatin, N.T., Hong Kong; 2Department of Medicine and Therapeutics, The Chinese University of Hong Kong, Shatin, N.T., Hong Kong; 3Department of Biomedical Engineering and Shun Hing Institute of Advanced Engineering, The Chinese University of Hong Kong, Shatin, N.T., Hong Kong

META: Multiple Entangled Denoising and Thresholding Algorithms for Suppression of MR Image Reconstruction Artifacts
Johannes F. M. Schmidt1, Sebastian Kozerke1,2
1Institute for Biomedical Engineering, University and ETH Zurich, Zurich, Switzerland; 2Division of Imaging Sciences and Biomedical Engineering, King's College London, United Kingdom

Double Smoothing Method-Based Algorithm for MR Image Reconstruction with Partial Fourier Data
Xiaohui Liu1, Jinhong Huang1, Wujian Chen1, Yangtong Feng1
1Guangdong Provincial Key Laboratory of Medical Image Processing, School of Biomedical Engineering, Southern Medical University, Guangzhou, Guangdong, China

MR Image Reconstruction from Under-Sampled Measurements Using Local and Global Sparse Representations
MingJian Hong1, MengRan Lin1, Feng Liu2, YongXin Ge1
1School of Computer and Information Engineering, Xiamen University of Technology, Xiamen, Fujian, China

Balanced Sparse MRI Model: Bridge the Analysis and Synthesis Sparse Models in Compressed Sensing MRI
Yunsong Liu1,2, Jian-Feng Cai2, Zhifang Zhan1, Di Guo1, Jing Ye1, Zhong Chen1, Xiaobo Qu1
1Department of Electronic Science, Xiamen University, Xiamen, Fujian, China; 2Department of Mathematics, University of Iowa, Iowa City, IA, United States; 3School of Computer and Information Engineering, Xiamen University of Technology, Xiamen, Fujian, China

Joint MR-PET Reconstruction Using Vector Valued Total Generalized Variation
Florian Knoll1,2, Martin Holler1, Thomas Koesters1,2, Daniel K. Sodickson1,2
1Center for Advanced Imaging Innovation and Research (CAI2R), NYU School of Medicine, New York, NY, United States; 2Bernard and Irene Schwartz Center for Biomedical Imaging, Department of Radiology, NYU School of Medicine, New York, United States; 3Department of Mathematics and Scientific Computing, University of Graz, Graz, Austria
Electronics Poster

Fetal & Pediatric Neuroimaging

Exhibition Hall  Tuesday 10:00-11:00

Computer 1  3428.  Introducing MANTis: Morphological Adaptive Neonate Tissue Segmentation. Unified Segmentation for Neonates
Richard Beare1, Jian Chen2, Dimitrios Alexopoulos3, Christopher Smyser3, Cynthia Rogers2, Wai Yen Loh1, 3, Lillian Gabra Fami1, Claire Kelly1, Jeanie Cheong1, 4, Alicia Spittle1, Peter Anderson1, 5, Lex Doyle1, 6, Terrie Inder6, 7, Jeff Neif1, Marc Seal1, Deanne Thompson1
1Murdoch Childrens Research Institute, Parkville, Victoria, Australia; 2Washington University in St. Louis, MO, United States; 3Florey Institute of Neuroscience and Mental Health, Parkville, Victoria, Australia; 4Royal Women's Hospital, Parkville, Victoria, Australia; 5Paediatrics, University of Melbourne, Parkville, Victoria, Australia; 6Brigham and Women's Hospital, Massachusetts, United States

Computer 2  3429.  Magnetic Resonance Fingerprinting for Fetal Imaging at 3T - Initial Results
Borjan Gagoski1, Huihui Ye2, Stephen Cauley2, Himanshu Bhat2, Florian Wiesinger3, Sandeep Kaushik2, Ravindra Manjeshwar1
1GE Global Research, Niskayuna, NY, United States; 2GE Global Research, Bangalore, India; 3GE Global Research, Munich, Germany

Computer 3  3430.  Brain Network Modular Fingerprint of Premature Born Children
Elda Fisch-Gomez1, 2, Alessandra Griffi1, 3, Emma Muñoz-Moreno1, Lana Vasung1, Cristina Borradori-Tolsa1, François Lazeyras1, Jean-Philippe Thiran1, 2, Petra Susan Hüppi1
1Signal Processing Laboratory 5, École Polytechnique Fédérale de Lausanne (EPFL), Lausanne, (VD), Switzerland; 2Division of Development and Growth, Department of Pediatrics, University of Geneva, Geneva, (GE), Switzerland; 3Department of Radiology, University Hospital Center (CHUV) and University of Lausanne (UNIL), Lausanne, (VD), Switzerland; 3Fetal and Perinatal Medicine Research Group, Institut d'Investigacions Biomediques August Pi i Sunyer, IDIBAPS, Barcelona, (B), Spain; 3Division of Development and Growth. Department of Pediatrics, University of Geneva, Geneva, (GE), Switzerland; 3Department of Radiology and Medical Informatics, Faculty of Medicine, University of Geneva, Geneva, (GE), Switzerland

Computer 4  3431.  Quantitative Analysis of Global Pattern of Early Cortical Folding in Polymicrogyria Fetal Brains
Kiho Im1, Alexandre Guimarães1, Borjan Gagoski1, Caitlin Rollins1, Edward Yang1, P. Ellen Grant1
1Boston Children's Hospital, Harvard Medical School, Boston, MA, United States

Computer 5  3432.  Piecewise Diffusion Tensor Estimation for Fetal Imaging Application
Uday Krishnamurthy1, 2, Ramtilak Gatta1, Pavan Kumar Jella1, Jaladhar Neelavalli1, 2, Ewart Mark Haacke1, 2
We acquired resting state fMRI in 122 preterm infants scanned between 30 and 48 weeks gestation. Using minimum spanning trees, we revealed the development of functional connectivity in the preterm brain from mid-gestation that facilitates efficient information transfer across the cerebral network.

Computer 6 3433. Sphingosin-1-Phosphate-Receptor Modulation Ameliorates Neonatal White Matter Damage and Improves Long-Term Cognitive Development
Yohan van de Looij1, 2, Meray Serdar2, 3, Petra S. Hüppi1, Ursula Felderhoff-Müser4, Ivo Bendix1, Stéphane V. Sizonenko5
1Division of Child Growth and Development, University of Geneva, Geneva, Switzerland; 2Laboratory for Functional and Metabolic Imaging, Ecole Polytechnique Fédérale de Lausanne, Lausanne, Switzerland; 3Department of Pediatrics, University Hospital Essen, Essen, Germany

Shijun Li1, Yi Wang2, Long Qian3, Lin Ma4
1Department of Medical Instruments, PLA General Hospital, Beijing, China; 2Department of Stomatology, PLA General Hospital, Beijing, China; 3Department of Biomedical Engineering, Peking University, Beijing, China; 4Department of Radiology, PLA General Hospital, Beijing, China

Computer 8 3435. Impaired White Matter Cerebrovascular Reactivity in Sickle Cell Disease Is Associated with Decreased White Matter Structural Integrity
Paula L. Croal1, Junseok Kim1, Jackie Leung1, Andrea Kassner1, 2
1Physiology & Experimental Medicine, The Hospital for Sick Children, Toronto, Ontario, Canada; 2Medical Imaging, University of Toronto, Toronto, Ontario, Canada

Computer 9 3436. Differential Involvement of Long Versus Short Range WM Connections in CVI
Corinna M. Bauer1, 2, Bang-Bon Koo3, Lauren Zajac3, Lotfi B. Merabet1, 2
1Massachusetts Eye and Ear Infirmary, Boston, MA, United States; 2Harvard Medical School, Boston, MA, United States; 3Boston University School of Medicine, MA, United States

Computer 10 3437. Different Genetic Mutations Are Associated with Different Abnormal Patterns of Language White Matter Pathways in Young Children with Global Developmental Delay
JEONG-WON JEONG1, Senthil Sundaram1, Diane C. Chugani1, Harry T. Chugani1
1Pediatrics and Neurology, Wayne State University, Detroit, MI, United States

Computer 11 3438. Objective Differentiation of Pure Speech Delay from Global Developmental Delay in Young Children: DWI Tractography-Based Connectome Study
JEONG-WON JEONG1, 2, Senthil Sundaram1, 2, Diane C. Chugani1, 2, Harry T. Chugani1
1Pediatrics and Neurology, Wayne State University, Detroit, MI, United States; 2Translational Imaging Laboratory, Children's Hospital of Michigan, Detroit, MI, United States

Computer 12 3439. Brain Connectivity Increases Concurrent with Functional Improvement: Evidence from Connectome MRI in Children with Cerebral Palsy During Therapy
Zoe Englander1, 2, Jessica Sun1, 3, Laura Case4, Mohamad Mikati5, Joanne Kurtzberg1, 6, Allen W. Song1, 7
1Brain Imaging and Analysis Center, Duke University, Durham, NC, United States; 2Department of Biomedical Engineering, Duke University, Durham, NC, United States; 3Department of Pediatrics, Duke University, Durham, NC, United States; 4The Robertson Cell and Translational Therapy Center, Duke University, Durham, NC, United States; 5Department of Physical Therapy, Duke University, Durham, NC, United States; 6The Robertson Cell and Translational Therapy Center, Duke University, Durham, NC, United States; 7Department of Radiology, Duke University, Durham, NC, United States

Computer 13 3440. Minimum Spanning Trees Reveal the Development of Functional Connectivity in the Preterm Brain
Gareth Ball1, Ricardo P. Monti2, 3, Paul Aljabar2, Nora Tusor2, Nazakat Merchant1, Tomoki Arichi1, Giovanni Montana2, 3, Serena J. Counsell1, A David Edwards1
1Centre for the Developing Brain, Division of Imaging Sciences & Biomedical Engineering, King's College London, London, United Kingdom; 2Department of Biomedical Engineering, Division of Imaging Sciences & Biomedical Engineering, King's College London, London, United Kingdom; 3Department of Mathematics, Imperial College London, London, United Kingdom
Computer 14 3441. Resting State Network Development in Very Preterm Infants
Lili He1, Nehal A. Parikh1,2,
1Center for Perinatal Research, The Research Institute at Nationwide Children's Hospital, Columbus, OH, United States; 2Department of Pediatrics, The Ohio State University College of Medicine, Columbus, OH, United States

Computer 15 3442. Altered Intrinsic Anterior Insular Connectivity Underlying Social Improvements in Younger Children with Autism Spectrum Disorders
Wenjuan Wei1, Minghao Dong2, Yan Bai3, Wei Qin4, Ruwei Dai5, Meiyun Wang6, Dapeng Shi7, Jie Tian8, 2
1Key Laboratory of Molecular Imaging, Institute of Automation, Chinese Academy of Science, Beijing, China; 2School of Life Sciences and Technology, Xidian University, Xi'an, Shanxi, China; 3Department of Radiology, Henan Provincial People's Hospital, Zhengzhou, Henan, China

Computer 16 3443. A Longitudinal Resting State Functional MRI Study of Children with Hemiplegic Cerebral Palsy Treated with Constraint Therapy
Kathryn Yvonne Manning1, Durcy Fehlings2, Ronit Mesterman3, Jan Willem Gorter4, Lauren Switzer2, Craig Campbell5, Ravi S. Menon6
1Medical Biophysics, University of Western Ontario, London, Ontario, Canada; 2Department of Paediatrics, Holland Bloorview Kids Rehabilitation Hospital, Toronto, Ontario, Canada; 3CanChild Centre for Childhood Disability Research, McMaster Children's Hospital, Hamilton, Ontario, Canada; 4CanChild Centre for Childhood Disability Research, McMaster University, Hamilton, Ontario, Canada; 5Department of Paediatrics, University of Western Ontario, London, Ontario, Canada; 6Centre for Functional and Metabolic Mapping, University of Western Ontario, London, Ontario, Canada

Computer 17 3444. Decrease in Functional Network Segregation in Infants with Congenital Heart Defects
Vincent Jerome Schmithors1, Jodie Votava-Smith2, Vincent Lee3, Vidya Rajagopalan4, Shaheda Suleiman5, Lisa Paquette6, Ashok Panigrahy7
1Radiology, Children's Hospital of Pittsburgh of UPMC, Pittsburgh, PA, United States; 2Children's Hospital Los Angeles, Los Angeles, CA, United States

Computer 18 3445. Global Structural Network Topology Mediates Neurocognitive Outcome in Children with Congenital Heart Defects
Vincent Jerome Schmithors1, Ashok Panigrahy7, Jessica Wisnoski1, Chris Walsh8, David Bellinger9, Jane Newburger2, Michael Rivkin2
1Radiology, Children's Hospital of Pittsburgh of UPMC, Pittsburgh, PA, United States; 2Boston Children's Hospital, Boston, MA, United States

Computer 19 3446. CSF Dynamic in a Population of Children with Intracranial CSF Increase
Florine Dallery1, Catherine Gondry-Jouet1, Cyrille Capel1, Anthony Fichten4, Malek Makki5, Bader Chaarani5, Roger Bouzera1, Olivier Balédent5
1Radiology, Jules Verne University of Picardie and Amiens University Hospital, Amiens, Picardie, France; 2Neurosurgery, Amiens University Hospital, Picardy, France; 3MRI Research Center, University Children Hospital of Zurich, Zurich, Switzerland; 4Imaging, Amiens University Hospital, Picardy, France

Computer 20 3447. The Effect of Therapeutic Hypothermia on Cerebral Metabolism in Neonates with Hypoxic-Ischemic Encephalopathy
Jessica L. Wisnoski1, Aaron J. Reitman1, Tai-Wei Wu2, Jonathan M. Chia3, Eugenia Ho4, Claire McLean1, Philippe Friedlich1, Ashok Panigrahy5, Stefan Bluml6
1Children's Hospital Los Angeles/USC, Los Angeles, CA, United States; 2Chang Gung Memorial Hospital, Lankou, Taiwan; 3Philips Healthcare, Cleveland, OH, United States; 4Children's Hospital of Pittsburgh, Pittsburgh, PA, United States; 5Rudi Schulte Research Institute, Santa Barbara, CA, United States

Computer 21 3448. Is Fetal Hypoxia a Precursor of Neonatal White Matter Changes in Congenital Heart Disease?
Prakash Muthusami1, Sujana Madathii1, Susan Blaser2, Edgar Jaeggi3, Lars Grosse-Wortmann4, Shi-Joon Yoo5, John Kingdon6, Edward Hickey7, John Slej7, Christopher Macgowan8, Steven Miller9, Mike Seed10
1Division of Cardiac Imaging, Department of Diagnostic Imaging, The Hospital for Sick Children, University of Toronto, Toronto, Ontario, Canada; 2Division of Cardiology, Department of Pediatrics, The Hospital for Sick Children, University of Toronto, Toronto, Ontario, Canada; 3Division of Neurology, Department of Diagnostic Imaging, The Hospital for Sick Children, University of Toronto, Toronto, Ontario, Canada; 4Department of Obstetrics and Gynaecology, Mount Sinai Hospital, Toronto, Ontario, Canada; 5Department of Obstetrics and Gynecology, University of Western Ontario, London, Ontario, Canada; 6Department of Obstetrics and Gynaecology, Mount Sinai Hospital, Toronto, Ontario, Canada; 7Department of Cardiology, The Hospital for Sick Children, University of Toronto, Toronto, Ontario, Canada; 8Department of Obstetrics and Gynaecology, Mount Sinai Hospital, Toronto, Ontario, Canada; 9Department of Cardiology, The Hospital for Sick Children, University of Toronto, Toronto, Ontario, Canada; 10Department of Cardiology, The Hospital for Sick Children, University of Toronto, Toronto, Ontario, Canada;
Maternal Obesity Negatively Affects Offspring’s Brain White Matter Development

Xiawei Ou1, 2, Aline Andres1, Keshari M. Thakali, Karthik Shankar1, Thomas Badger3
1Arkansas Children's Hospital Research Institute, Arkansas Children's Nutrition Center, Little Rock, AR, United States; 2Radiology and Pediatrics, University of Arkansas for Medical Sciences, Little Rock, AR, United States; 3University of Arkansas for Medical Sciences, AR, United States

The Effect of Weight Loss on Brain Microstructure in Obese Middle-Aged Women

Clifford Chan1, Heather Collins1, Patrick M. O'Neil2, Joshua Brown2, Joseph A. Helpern1, Andreana Benitez1
1Department of Radiology and Radiological Sciences, Medical University of South Carolina, Charleston, SC, United States; 2Weight Management Center, Department of Psychiatry and Behavioral Sciences, Medical University of South Carolina, Charleston, SC, United States

Childhood Obesity Is Associated with Lower Grey Matter Volume in Children

Xiawei Ou1, 2, Aline Andres1, R.T. Pivik3, Mario Cleves3, Thomas Badger3
1Arkansas Children's Hospital Research Institute, Arkansas Children's Nutrition Center, Little Rock, AR, United States; 2Radiology and Pediatrics, University of Arkansas for Medical Sciences, Little Rock, AR, United States; 3University of Arkansas for Medical Sciences, AR, United States

Inhomogeneous Magnetization Transfer: Developmental Changes During Childhood

Alyssa Mah1, R Marc Lebel2, David C. Alsop4, Gopal Varma4, Catherine Lebel3
1Biomedical Engineering Program, University of Calgary, Calgary, AB, Canada; 2General Electric Healthcare Canada, Calgary, AB, Canada; 3Radiology, University of Calgary, Calgary, AB, Canada; 4Radiology, Beth Israel Deaconess Medical Center, Harvard Medical School, Boston, MA, United States

Investigating Cortical Myelination and Maturation Using Quantitative Myelin Water Fraction and Relaxation Time Imaging

Sean Deoni1, Justin Remer1, Douglas Dean1, Jonathan O'Muircheartaigh2
1Advanced Baby Imaging Lab, Brown University, Providence, RI, United States; 2Neuroimaging, King's College London, London, England, United Kingdom

Validating a Cross-Sectional Brain Development Index with Longitudinal Brain Images

Bo Cao1, Benson Mwang1, Khader M. Hasan1, Sudhakar Selvaraj2, Giovana B. Zunta-Soares1, Jair C. Soares1
1Psychiatry and Behavioral Sciences, University of Texas Health Science Center at Houston, Houston, TX, United States; 2Department of Diagnostic & Interventional Imaging, University of Texas Health Science Center at Houston, Houston, TX, United States

Examining the Relationships Between Cortical Maturation and White Matter Myelination Throughout Early Childhood

Elise Croteau-Chonka1, Justin Remer2, Jonathan O'Muircheartaigh1, Holly Dirks2, Doug Dean III2, Sean Deoni2
1Advanced Baby Imaging Lab, Brown University, Providence, RI, United States; 2Advanced Baby Imaging Lab, Brown University, RI, United States; 3King's College London, England, United Kingdom; 4Wisconsin Center, University of Wisconsin-Madison, WI, United States

Age-Related R2* Values Variation in Gray Matter from Birth to 5 Years Detected by Using an Atlas-Based Analysis

Ning Ning1, 2, Yajie Hu1, 3, Xianjun Li1, Qinti Sun1, Yanyan Li1, Jian Yang1
1Department of Radiology, The First Affiliated Hospital of Medical College, Xi'an Jiaotong University, Xi'an, Shaanxi, China; 2Department of Nuclear medicine, The Second Affiliated Hospital of Medical College, Xi'an Jiaotong University, Xi'an, Shaanxi, China; 3Department of Biomedical Engineering, School of Life Science and Technology, Xi'an Jiaotong University, Xi'an, Shaanxi, China
With an enhanced gradient insert system (80mT/m), we conducted high angular resolution diffusion spectrum imaging on... of young (4-8 years old) and aged (20-25 years old) monkeys and identified vulnerable aging regions of monkey brains.

In this study, we apply NODDI in healthy controls ages 7-63 to investigate changes of fiber orientation index (ODI) and... the fall in FA during late adulthood is driven by the exponential rise of ODI that overcomes slower increases of NDI.

In this work, we investigate in a cohort premature neonate born before the 30th weeks of gestation over multiple time... (in preparation for myelination), with a preservation of the global organization of the newborn white matter tracts.

The aim of this study was to set the birth weight as a independent factor for detecting the variation of brain structural... full-term or preterm groups. So the birth weight maybe provide a significant influence on the network construction.
Electronic Poster

Computer 39 3466. Combination of High Resolution Ex Vivo Diffusion Tensor Imaging and Tract-Based Spatial Statistics Serve as a Valuable User-Independent Method to Evaluate Long-Term Effects of an Inflammatory Exposure in the Neonatal Rat Brain
Chen Jin¹, Alexandre Castonguay², Julie Tremblay¹, Philippe Pouliot³, Irene Londono¹, Frédéric Lesage²,³, Gregory A. Lodygensky¹,³
¹Research Centre CHU Sainte-Justine, Montreal, Quebec, Canada; ²École Polytechnique de Montréal, Montreal, Quebec, Canada;
³Montreal Heart Institute, Montreal, Quebec, Canada

Computer 40 3467. Birth Weight Influence White Matter Development in Neonates: A Diffusion Tensor Study Based on Tract-Based Spatial Statistics
Yanyan Li¹, Xinjun Li¹, Jie Gao¹, Qinli Sun¹, Huan Li¹, Jian Yang¹,²
¹Department of radiology, the first affiliated hospital of medical college, Xi'an Jiaotong University, Xi'an, Shaanxi, China;
²Department of Biomedical Engineering, School of Life Science and Technology, Xi'an Jiaotong University, Xi'an, Shaanxi, China

Computer 41 3468. Comparison Between the Single-Compartment and Two-Compartment Parameters Derived from Diffusion Kurtosis Imaging in Assessing the Axon Growth
Xinjun Li¹,², Jie Gao¹, Qinli Sun¹, Yanyan Li¹, Huan Li¹, Mingxi Wan¹, Jian Yang¹,²
¹Radiology Department of the First Affiliated Hospital, Xi'an Jiaotong University, Xi'an, Shaanxi, China; ²Department of Biomedical Engineering, School of Life Science and Technology, Xi'an Jiaotong University, Xi'an, Shaanxi, China

Computer 42 3469. Exploring the Early Organization and Maturation of Linguistic Pathways in the Human Infant Brain
Jessica Dubois¹,², Cyril Poupoz¹, Bertrand Thirion¹,², Sofya Kulikova³, François Leroy¹,², Lucie Hertz-Pannier¹, Ghislaine Dehaene-Lambertz¹,²
¹Cognitive Neuroimaging Unit, INSERM, Gif-sur-Yvette, France; ²NeuroSpin, CEA, Gif-sur-Yvette, France; ³NeuroSpin, UNIRS, CEA, Gif-sur-Yvette, France; ²Parietal, IRIF, Gif-sur-Yvette, France; ²NeuroSpin, UNIACT, U1129, INSERM-CEA, Gif-sur-Yvette, France

Computer 43 3470. The Role of Gial Fibers in Human Fetal Connectome with High Resolution Diffusion Tensor Imaging
Virendra Mishra¹, Tina Jeon¹, Mihovil Pleitkos¹, Nenad Sestan¹, Hao Huang¹
¹Advanced Imaging Research Center, University of Texas Southwestern Medical Center, Dallas, TX, United States; ²Advanced Imaging Research Center, University of Texas Southwestern Medical Center, TX, United States; ³Department of Neurobiology, Yale University, CT, United States

Computer 44 3471. Sex Differences in the Frontal Lobe of the Developing Mouse Brain
Da Shi¹, Jiachen Zuo¹,², Su Xia¹,³, Jaylyn Waddell¹, Rao P. Gullapalli¹,²
¹Core for Translational Research in Imaging at University of Maryland, University of Maryland School of Medicine, Baltimore, MD, United States; ²Department of Diagnostic Radiology and Nuclear Medicine, University of Maryland School of Medicine, Baltimore, MD, United States; ³Department of Pediatrics, University of Maryland School of Medicine, Baltimore, MD, United States

Computer 45 3472. The Detection of Microstructural Changes in Cerebral Gray Matter Nuclei Between Healthy Neonates and Young Adults by Diffusional Kurtosis Imaging
Qinli Sun¹, Xinjun Li¹,², Yanyan Li¹, Jie Gao¹, Huan Li¹, Jian Yang¹,²
¹Department of Diagnostic Radiology, The First Hospital of Medical School, Xi'an Jiaotong University, Xi'an, Shaanxi, China;
²Department of Biomedical Engineering, School of Life Science and Technology, Xi'an Jiaotong University, Xi'an, Shaanxi., China;
³Department of Biomedical Engineering, School of Life Science and Technology, Xi'an Jiaotong University, Xi'an, Shaanxi, China

Computer 46 3473. Population-Averaged Age-Specific DTI Templates of Preterm Human Brain at 33, 36 and 39 Gestational Weeks
Virendra Mishra¹, Kenichi Oishi², Hang Li¹,², Tina Jeon¹, Minhui Ouyang¹, Lina Chalak¹, Jonathan M. Chia², Yun Peng³, Nancy Rollins³, Susumu Mori², Hao Huang²,⁴
¹Advanced Imaging Research Center, University of Texas Southwestern Medical Center, Dallas, TX, United States; ²Department of Radiology and Radiological Science, The Johns Hopkins University School of Medicine, Baltimore, MD, United States; ³Department of Radiology, Beijing Children's Hospital Affiliated to Capital Medical University, Beijing, China; ⁴Department of Pediatrics, University of Texas Southwestern Medical Center, Dallas, TX, United States; ²Philips Medical Systems, Dallas, TX, United States; ³Department of Radiology, Children's Medical Center at Dallas, Dallas, TX, United States; ¹Advanced Imaging Research Center, University of Texas Southwestern Medical Center, Dallas, TX, United States; ²Department of Radiology, University of Texas Southwestern Medical Center, Dallas, TX, United States

474
Sheep is a developing animal model used in the field of neurosciences, but still rather limited in MRI where a brain atlas has been lacking, highlighting deep brain structures and opened the possibility to use them in the construction of a sheep brain atlas.

Investigation of small human tissue samples at ultra-high fields has involved the use of existing preclinical gradient coils. These coils can achieve less than 300um in a cat brain sample, which would be difficult to achieve using a larger coil designed for human in-vivo imaging.

Traditional decoupling methods face technical challenges in designing monopole arrays. In this study, we investigate the performance of the ICE-decoupled monopole array. Without using any decoupling methods, the ICE-decoupled monopole array had a higher SNR and better parallel imaging ability.

Contrast enhanced MRI (CE-MRI) of the brain is routinely used to identify lesions and for staging treatment therapy. Analysis of VS in CE-MRI images showed a large reduction in VS with a minor reduction in SNR after introduction of VCG.

White Matter Structural Development from Mid-Fetal Stage to Normal Time of Birth

A 16-Channel Double-Row Microstrip Array for Human Head Parallel Imaging at Ultrahigh Fields

Eight-Channel ICE-Decoupled Monopole RF Array for Ultrahigh Field Human Head MR Imaging

Optimized Processing for Various TEs for Generation of Angiography

Toward High Resolution Anatomical Imaging of Large Ex Vivo Brain Samples with Specialized 9.4T RF Coils

Construction of MRI 3D High Resolution Sheep Brain Templates and the Use of Optimized Prior Probability Maps to Extract Structures in the Central Nervous System
The relationship between cortical morphology and anatomically/functionally connected white matter tracts has not been fully elucidated. The neural underpinnings of these relationships remain to be elucidated.

In this study, a whole brain population-averaged aMWF map (n = 33; 35.3 ± 9.9 yo) was generated using a new myelin water fraction (MWF) analysis approach. This aMWF map may serve as a template to compare myelin concentration differences among different groups.

The g-ratio is equal to the ratio between axon diameter and fiber diameter (axon plus myelin sheath). Previous studies have shown that the g-ratio varies significantly across different brain regions. In this study, we simulate the effect of multi-component T2 and diffusion on g-ratio with a three-compartment Monte Carlo model.

Anatomical covariance networks (ACNs) are networks of covariances in brain region volume. Mouse ACNs were computed from a large number of brains. The mean g-ratio for the ACNs is 0.176, which is highly significant under the null distribution obtained through a permutation test.

In this study, we demonstrate the feasibility of in vivo delineation and 3D reconstruction of the main cerebellar structures. The accurate segmentation of cerebellum with extracerebral structures is a crucial step in understanding the roles of cerebellum.

Diffusion tractography is the only method available to study the brain's white matter anatomy in vivo, however, it does not provide information about the termination of individual white matter tracts. In this study, we develop a novel method, ExTracT, for extracting white matter tract terminations using diffusion imaging.

In Vivo Quantification of Human Hippocampal Subfields in Health and in Organic Amnesia Using 7.0-Tesla 0.4mm2 3-D Fast Spin Echo Imaging


1Neurophysiology Imaging Facility, National Institute of Mental Health, National Institutes of Health, Bethesda, MD, United States; 2Department of Diagnostic Radiology, Division of Neuroradiology, Johns Hopkins University, Baltimore, MD, United States

ExTracT: Extracting Tract Terminations Using Diffusion Imaging

C. J. Bajada, H. A. Haroon, H. Azadbakht, G. J. M. Parker, M. A. Lambon Ralph, L. Cloutman

1Neurology and Neurosciences, National Institute of Mental Health, National Institutes of Health, Bethesda, MD, United States; 2Centre for Investigative Science, Institute of Population Health, The University of Manchester, Manchester, United Kingdom

MR-Based Anatomical Covariance Predicts Brain Structural Connectivity in Mice

Y. Yee, J. Ellegood, J. L. Leech

1Medical Biophysics, University of Toronto, Toronto, Ontario, Canada; 2Mouse Imaging Centre, Hospital for Sick Children, Toronto, Ontario, Canada

A Novel Method of G-Ratio Measurement in White Matter with Validation of Monte Carlo Simulation

M. Lin, H. He, C. Liao, J. Zhong

1Center for Brain Imaging Science and Technology, Zhejiang University, Hangzhou, Zhejiang, China

Diffusion Tensor Tractography of Human Spinocerebellar, Cortico-Ponto-Cerebellar and Dentate-Rubro-Thalamo-Cortical Pathways


1Diagnostic and Interventional Imaging, University of Texas Health Science Center, Houston, TX, United States; 2Physical Medicine and Rehabilitation, University of Texas Health Science Center and TIRR NeuroRecovery Research Center, Houston, TX, United States; 3Department of Diagnostic Radiology, Division of Neuroradiology, Johns Hopkins University, MD, United States

ExTracT: Extracting Tract Terminations Using Diffusion Imaging

C. J. Bajada, H. A. Haroon, H. Azadbakht, G. J. M. Parker, M. A. Lambon Ralph, L. Cloutman

1Neurology and Neurosciences, National Institute of Mental Health, National Institutes of Health, Bethesda, MD, United States; 2Centre for Investigative Science, Institute of Population Health, The University of Manchester, Manchester, United Kingdom

MR-Based Anatomical Covariance Predicts Brain Structural Connectivity in Mice

Y. Yee, J. Ellegood, J. L. Leech

1Medical Biophysics, University of Toronto, Toronto, Ontario, Canada; 2Mouse Imaging Centre, Hospital for Sick Children, Toronto, Ontario, Canada

A Novel Method of G-Ratio Measurement in White Matter with Validation of Monte Carlo Simulation

M. Lin, H. He, C. Liao, J. Zhong

1Center for Brain Imaging Science and Technology, Zhejiang University, Hangzhou, Zhejiang, China

Diffusion Tensor Tractography of Human Spinocerebellar, Cortico-Ponto-Cerebellar and Dentate-Rubro-Thalamo-Cortical Pathways


1Diagnostic and Interventional Imaging, University of Texas Health Science Center, Houston, TX, United States; 2Physical Medicine and Rehabilitation, University of Texas Health Science Center and TIRR NeuroRecovery Research Center, Houston, TX, United States; 3Department of Diagnostic Radiology, Division of Neuroradiology, Johns Hopkins University, MD, United States

ExTracT: Extracting Tract Terminations Using Diffusion Imaging

C. J. Bajada, H. A. Haroon, H. Azadbakht, G. J. M. Parker, M. A. Lambon Ralph, L. Cloutman

1Neurology and Neurosciences, National Institute of Mental Health, National Institutes of Health, Bethesda, MD, United States; 2Centre for Investigative Science, Institute of Population Health, The University of Manchester, Manchester, United Kingdom

MR-Based Anatomical Covariance Predicts Brain Structural Connectivity in Mice

Y. Yee, J. Ellegood, J. L. Leech

1Medical Biophysics, University of Toronto, Toronto, Ontario, Canada; 2Mouse Imaging Centre, Hospital for Sick Children, Toronto, Ontario, Canada

A Novel Method of G-Ratio Measurement in White Matter with Validation of Monte Carlo Simulation

M. Lin, H. He, C. Liao, J. Zhong

1Center for Brain Imaging Science and Technology, Zhejiang University, Hangzhou, Zhejiang, China
Advanced Neuroanatomy & Morphometry

Computer 65 3492. The Effect of the Chemotherapy Agent Methotrexate on the Developing Brain
Leigh Spencer Noakes1, Brian J. Nieman1, 2, Ellen van der Plas3, Shoshana Spring1, Russell Schachar4
1Mouse Imaging Centre, The Hospital for Sick Children, Toronto, Ontario, Canada; 2Medical Biophysics, University of Toronto, Toronto, Ontario, Canada; 3Psychiatry, The Hospital for Sick Children, Toronto, Ontario, Canada; 4Psychiatry, University of Toronto, Toronto, Ontario, Canada

Computer 66 3493. Decomposing the Hippocampus Into Anatomical Informative Shape Measures
Jason P. Lerch1, 2, Jan Scholz1
1Mouse Imaging Centre, The Hospital for Sick Children, Toronto, Ontario, Canada; 2Medical Biophysics, University of Toronto, Toronto, Ontario, Canada

Computer 67 3494. Brodmann Revisited: Using Diffusion MRI to Characterize Functionally Distinct Gray Matter Regions in Development
Kirsten Mary Lynch1, Arthur Toga1, Kristi Clark1
1Institute for Neuroimaging and Informatics, University of Southern California, Los Angeles, CA, United States

Computer 68 3495. Viscoelasticity of the Mouse Hippocampus and the Influence of Enriched Environment
Jing Guo1, Tonia Munder2, Charlotte Klein1, Anna Peiffer1, Jürgen Braun1, Barbara Steiner2, Ingolf Sack1
1Radiology, Charité – Universitätsmedizin Berlin, Berlin, Germany; 2Department of Neurology, Charité – Universitätsmedizin Berlin, Berlin, Germany; 3Department of Medical Informatics, Charité – Universitätsmedizin Berlin, Berlin, Germany

Computer 69 3496. Neuroprotective Effect of Lactoferrin Following Inflammatory Injury in the Developing Rat Brain Assessed by High-Field Neurite Orientation Dispersion and Density Imaging
Yohan van de Looij1, 2, Vanessa Ginet1, Petra S. Hüppi1, Stéphane V. Sizonenko1
1Division of Child Growth and Development, University of Geneva, Geneva, Switzerland; 2Laboratory for Functional and Metabolic Imaging, Ecole Polytechnique Fédérale de Lausanne, Lausanne, Switzerland

Computer 70 3497. Investigation of Brain Segmentation with FIRST by Using Different Hybrid Contrasts and Registrations
Xiang Feng1, Andreas Deistung1, Ferdinand Schweser2, 3, Daniel Guellmar1, Juergen R. Reichenbach1
1Medical Physics Group, Institute of Diagnostics and Interventional Radiology, Jena University Hospital - Friedrich Schiller University Jena, Jena, Germany; 2Buffalo Neuroimaging Analysis Center, Dept. of Neurology, School of Medicine and Biomedical Sciences, State University of New York at Buffalo, Buffalo, NY, United States; 3MRI Molecular and Translational Imaging Center, Buffalo CTRC, State University of New York at Buffalo, Buffalo, NY, United States

Yue Li1, Can Ceritoğlu2, Hangyi Jiang3, Anthony E. Koliasn4, Timothy J. A. Brown5, Xiaoying Tang1, Zifei Liang1, 4, Andrea V. Farina3, Marc Vaillant2, Naveen Santhanam3, Xin Li2, Susumu Mori4, Michael I. Miller2
1AnatomyWorks, LLC, Baltimore, MD, United States; 2Center for Imaging Science, Johns Hopkins University, Baltimore, MD, United States; 3Department of Radiology, Johns Hopkins University School of Medicine, Baltimore, MD, United States; 4Department of Electronics and Information Engineering, Sichuan University, Chengdu, Sichuan, China; 5Animetrics, Inc, Conway, NH, United States

Computer 72 3499. Interpolated Compressed Sensing MR Image Reconstruction in Phase Encoding for the Brain
Yong Pang1, Daniel B. Vigneron1, 2, Xiaoliang Zhang1, 2
1Dept of Radiology and Biomedical Imaging, University of California San Francisco, San Francisco, CA, United States; 2UCSF/UC Berkeley Joint Graduate Group in Bioengineering, San Francisco & Berkeley, CA, United States
Electronic Poster

Computer 74 3501. SNR Improvement of MP2RAGE from Slice Encoding Acceleration.
Wanyong Shin1, Taehoon Shin1, Sehong Oh1, Mark J. Lowe2
1Imaging Institute, Cleveland Clinic Foundation, Cleveland, OH, United States; 2Diagnostic Radiology and Nuclear Medicine, University of Maryland, Baltimore, MD, United States

Computer 75 3502. Fluid-Attenuated Three-Dimensional Structural Brain MRI Using Inversion-Recovery-Prepared DANTE-FLASH (IR-DASH)
Lingling Li1, Moises Hernandez2, Peter Jezzard3
1Nuffield Department of Clinical Neurosciences, University of Oxford, Oxford, United Kingdom

Computer 76 3503. Robustness of a Fully Automated Brain Segmentation Tool for Multiple MRI Protocols: Test for Clinical Applications
Zifei Li1,2, Xiaohai HE1, Andreia V. Faria2, Kenishi Oishi2, Yue Li3, Kinya Okada4, Can Ceritoglu4, Xiaoying Tang5, Michael Miller5, Susumu Mori5, 6
1College of Electronics and Information Engineering, Sichuan University, Chengdu, Sichuan, China; 2Johns Hopkins University School of Medicine, BALTIMORE, MD, United States; 3AnatomyWorks,LLC, BALTIMORE, MD, United States; 4MitsubishiTanabe Pharma Corporation, Kawagishi, Japan; 5Center for Imaging Science, Johns Hopkins University, BALTIMORE, MD, United States; 6Kennedy Krieger Institute, BALTIMORE, MD, United States

Computer 77 3504. Cortical Layers One by One: The Visual Cortex in Advanced QMRI
Ana-Maria Oros-Peusquens1, Johannes Lindemeyer1, N. Jon Shah1
1Institute of Neuroscience and Medicine (INM-4), Research Centre Juelich, Juelich, Germany

Computer 78 3505. Cortical Thickness Measurements with MPRAGE and MP2RAGE at 3T
Quentin Duché1,2, Parnesh Raniga3, Gary F. Egan4, Oscar Acosta5, Pierrick Bourgeat2, Vincent Doré2, Hervé Saint-Jalmes6, Olivier Salvador7
1LT5I, INSERM, Université de Rennes 1, Rennes, France; 2CSIRO Digital productivity Flagship, Australian e-Health Research Centre, Herston, QLD, Australia; 3Monash Biomedical Imaging, Monash University, VIC, Australia

Computer 79 3506. An Algorithm and Quantitative Evaluation Framework for Registration of Multi-Modal Brain MRI
Omar Ocegueda1, Eleftherios Garyfallidis2, Maxime Descoteaux3, Mariano Rivera4
1Computer Science Department, Centro de Investigación en Matemáticas, Guanajuato, Mexico; 2Sherbrooke Connectivity Imaging Lab (SCIL), Computer Science department, Université de Sherbrooke, Sherbrooke, Québec, Canada

Computer 80 3507. Reducing EPI Distortion with Gradient Slew Rate of 700 T/m/s in Human Brain Imaging
Ek T. Tan1, Seung-Kyun Lee1, Dominic Graziani1, Matt A. Bernstein2, John Huston2, Yunhong Shu2, Paul T. Weavers2, Shengzhen Tao3, Joshua D. Trzasko3, Jean-Baptiste Mathieu4, Christopher J. Hardy1, John F. Schenck1, Thomas KF Foo5
1GE Global Research, Niskayuna, NY, United States; 2Radiology, Mayo Clinic, Rochester, MN, United States; 3Biomedical Engineering, Mayo Clinic, Rochester, MN, United States; 4GE Healthcare, Florence, SC, United States

Computer 81 3508. Ex-Vivo MRI of the Brain: Longitudinal Effects of Formalin Exposure on Regional T1 Relaxation Times
Mekala R. Raman1, Yunhong Shu2, Clifford R. Jack2, Kejal Kantarci2
1Neurology, Mayo Clinic, Rochester, MN, United States; 2Radiology, Mayo Clinic, Rochester, MN, United States

Claudia Metzler-Baddeley1, Sonya Foley2, Karen Caeyenberghs1, Derek K. Jones1
1CUBRIC, School of Psychology, Cardiff University, Cardiff, Wales, United Kingdom; 2Cardiff University, Wales, United Kingdom; 3Gent University, Gent, Belgium
In this work we investigate the reproducibility of a relevant connectivity pattern formed by different areas of the brain. We suggest that a particular technique is reproducible with different data sets and suggest it as a tool for studying cortico-cortical connectivity.

Ultra-high field MRI was used to collect high spatial resolution MRI data from intact postmortem brainstems of healthy controls and individuals with Parkinson’s disease.

Hippocampal volume and shape analysis was applied to 103 children (6-10 years old) to evaluate the association with neuroinflammation. Significant correlations, suggesting that shape analysis may provide a more sensitive tool for subregional analysis.

Acquiring data using non-standardized protocols could provide a cost and implementation efficient strategy for multisite MRI volumetric studies. Considerations for such studies using a unique cohort of travelling controls across 8 institutions in the USA and Europe are discussed.


Reliability, Power, and Calibration for Multisite MRI Volumetric Studies

Visualization of Human Brainstem Structures at 3T Using 3D Inversion Recovery Sequences

In Vivo Structural Template of Human Brainstem Nuclei Based on Multi-Contrast MRI at 7 Tesla

Structural Connectivity Mapping and Parcellation of the Human Subthalamic Nucleus Using Ultra-High Field Diffusion MRI

Ultra-High Field MR Microscopy of the Postmortem Human Brainstem

Reproducibility Assessment of the First Principal Network Calculation: A Tool for Studying Anatomical Brain Connectivity

**Computer 91** 3518. **Is 1T the New 9.4T? a Tool for Morphological Phenotyping and Regional Brain Volume Extraction**

Holly Elizabeth Holmes*, Rajiv Ramasawmy1, Da Ma†, Nicholas Powell1,‡, Manuel Jorge Cardoso2, Marc Modat2, Simon Walker-Samuel†, Sebastian Ourselin*, Bernard Siew+1,‡, Mark Lythgoe+1

1Centre for Advanced Biomedical Imaging, University College London, London, Greater London, United Kingdom; 2Centre for Medical Image Computing, University College London, London, Greater London, United Kingdom

**Computer 92** 3519. **Using Dimensionality Reduction to Explore Virtual Reality Lobectomies**

Allen Q. Ye1, Olusola Ajilore1, Alessandro Febretti3, Andrew Johnson3, Johnson GadElkarim2, Shaolin Yang2, Richard Magin1, Anand Kumar2, Alex D. Leov2

1Dept. of Bioengineering, University of Illinois at Chicago, Chicago, IL, United States; 2Dept. of Psychiatry, University of Illinois at Chicago, Chicago, IL, United States; 3Dept. of Computer Science, University of Illinois at Chicago, Chicago, IL, United States

**Computer 93** 3520. **Investigation of the Confounding Effects of Vasculature and Metabolism on Computational Anatomy Studies**

Christine Lucas Tardif1, Christopher John Steele1, Pierre-Louis Bazin1, Arno Villringer1, Claudine Joëlle Gauthier1,2

1Max Planck Institute for Human Cognitive and Brain Sciences, Leipzig, Saxony, Germany; 2Department of Physics, Concordia University, Montreal, Quebec, Canada

**Computer 94** 3521. **High Resolution 7T MRI Scanning of Human Cerebral Vascular Casts**

J.H.G. Helthuis1, A.A. Harteveld2, J. Hendrikse2, R.L.A.W. Bleys3, J.J.M. Zwanenburg2,4

1Department of Radiology, University Medical Center Utrecht, Utrecht, Netherlands; 2Department of Radiology, University Medical Center Utrecht, Utrecht, Netherlands; 3Department of Anatomy, University Medical Center Utrecht, Utrecht, Netherlands; 4Image Sciences Institute, University Medical Center Utrecht, Utrecht, Netherlands

**Computer 95** 3522. **Acceleration-Selective Arterial Spin Labeling (AccASL) for Intracranial MR Angiography**

Makoto Obara1, Osamu Togao2, Masami Yoneyama1, Tomoyuki Oktaki3, Shuhei Shibukawa2, Marc Van Cauteren3

1Philips Electronics Japan, Minato-ku, Tokyo, Japan; 2Department of Clinical Radiology, Graduate School of Medical Science, Kyushu University, Fukuoka, Japan; 3Philips Healthcare, Tokyo, Japan; 4Department of Radiology, Tokai University Hospital, Kanagawa, Japan

---

**Electronic Poster**

**Addiction, Drug Exposure, Pain, Sleep**

**Exhibition Hall**

Tuesday 11:00-12:00

**Computer 1** 3523. **White Matter Abnormalities in Alcohol Dependents Using Diffusion Tensor Imaging at 3T**

Hyeon-Man Baek1,2, Mirim Bang1, Youngjae Jeon1, Jooyun Kim1

1Center for MR Research, Korea Basic Science Institute, Ochang, Chungbuk, Korea; 2Department of Bio-Analytical Science, University of Science & Technology, Daejeon, Chungnam, Korea

**Computer 2** 3524. **Brain Metabolite Abnormalities in Alcohol Dependent Patients Using Proton MR Spectroscopy at 3T**

Hyeon-Man Baek1,2, Siekyeong Kim3, Jeonghwan Lee3, Youngjae Jeon1, Jooyun Kim1, Mirim Bang1

1Center for MR Research, Korea Basic Science Institute, Ochang, Chungbuk, Korea; 2University of Science & Technology, Daejeon, Korea; 3Department of Psychiatry, Chungbuk National University, Cheongju, Chungbuk, Korea

**Computer 3** 3525. **Altered Corticostratial Functional Networks in Adolescents with Internet Addiction Disorder Revealed by Resting-State fMRI**

Fuchun Lin†, Yasong Da†, Yan Zhou†, Jianrong Xu†, Hao Lei†

1State Key Laboratory of Magnetic Resonance and Atomic and Molecular Physics, Wuhan Institute of Physics and Mathematics, Chinese Academy of Sciences, Wuhan, Hubei, China; 2Shanghai Mental Health Center, Jiao Tong University Medical School, Shanghai, China; 3Renji Hospital, Jiao Tong University Medical School, Shanghai, China

**Computer 4** 3526. **The Lower White Matter Integrity Was Related to Relapse Propensity in Heroin Addicts Under Methadone Maintenance Treatment**

wei1†, yarong wanghai, qiang li†, jianjun ye†, wei wanghai

1Department of Radiology, Tangdu Hospital, The Fourth Military Medical University, Xi’an, Shaanxi, China
Prefrontal and Frontal Functional Connectivity Increases in Current Smokers Versus Non-Smokers
Pranit Kundu1, Valerie Voon2
1Depts. of Radiology and Psychiatry, Icahn School of Medicine at Mt. Sinai, New York, NY, United States; 2Department of Psychiatry, University of Cambridge, Cambridgeshire, United Kingdom

Widespread White Matter Integrity Abnormalities in Cocaine Use Disorder Assessed by High Resolution DMRI and Tractography
Rafael O’Halloran1, Nelly Alia-Klein2, Rita Z. Goldstein2
1Radiology, Icahn School of Medicine at Mt Sinai, New York, NY, United States; 2Psychiatry, Icahn School of Medicine at Mt Sinai, NY, United States

Effects of Methadone Maintenance Treatment in Heroin Addicts on Inhibitory Control a Longitudinal Observation of fMRI
Jianjun Ye1, Wei Wang1, Wei Li1, Dongsheng Zhang1, Dandan Zheng2
1Department of Radiology, Tangdu Hospital, The Fourth Military Medical University, xi’an, shaanxi, China; 2MR Advanced Application and Research Center, GE Healthcare China, Beijing, China

Cerebral Metabolite Differences and Correlations in Short-Term Binge Ethanol-Exposed Rats: A Study of Ex Vivo Proton Nuclear Magnetic Resonance Spectroscopy at 11.7-T
Do-Wan Lee1, 2, Bo-Young Choe1
1Department of Biomedical Engineering, and Research Institute of Biomedical Engineering, The Catholic University of Korea College of Medicine, Seoul, Korea; 2Asan Institute for Life Sciences, Asan Medical Center, Seoul, Korea

Distribution of Temperature Changes and Neurovascular Coupling in Rat Brain Following 3,4-Methylenedioxymethamphetamine (MDMA, ‘ecstasy’) Exposure
Daniel Coman1, Basavaraju G. Sanganahalli1, Lihong Jiang2, Fahmeed Hyder1, 2, Kevin Behar1
1Diagnostic Radiology, Yale University, New Haven, CT, United States; 2Biomedical Engineering, Yale University, New Haven, CT, United States; 3Psychiatry, Yale University, New Haven, CT, United States

Neurological Study of Mouse Model of Fetal Alcohol Spectrum Disorders Using Advanced Imaging Techniques
Van Nguyen1, Suyinn Chong2, Karine Mardon1, Quang Tieng1, Sabash Khusha1, Debajyoti Bhattacharya2, Mohan Lal Garg2
1INMAS, Delhi, India; 2Base Hospital, Delhi, India; 3Panjab University, Chandigarh, India

Monkeys with Six Months of Alcohol Self-Administration Have Disrupted White Matter Microstructure Indicated by Decreased Fractional Anisotropy
Xiaojie Wang1, Sarah Plat1, Molly McGinnis1, Kathleen A. Grant1, Christopher D. Kroenke1
1Oregon National Primate Research Center, Oregon Health & Science University, Beaverton, OR, United States

Integration of Neural Networks Activated by Amphetamine in Females with Different Estrogen Levels: A Functional Imaging Study in Awake Rats.
Dan Madularu1, Jason R. Yee2, William M. Kenkel2, Kelsey A. Moore2, Praveen Kulkarni2, Waqqas M. Shams1, Craig F. Ferris3, Wayne G. Brake1
1Concordia University, Montreal, QC, Canada; 2Northeastern University, Boston, MA, United States

Treatment Length Effects of Methadone Maintenance on Brain fMRI Response to Cue-Elicited Craving in Former Heroin Addicts
Hanyue Wang1, 2, Yarong Wang3, Qiang Li3, Dongsheng Zhang4, Lina Wang5, Jia Zhu5, Wei Li5, Chongjun Zhang5, Jiajie Chen4, Wei Wang4
1Oregon National Primate Research Center, Oregon Health & Science University, Beaverton, OR, United States; 2Psychiatry, University of Cambridge, Cambridgeshire, United Kingdom; 3Radiology, Icahn School of Medicine at Mt Sinai, New York, NY, United States; 4Psychiatry, Yale University, New Haven, CT, United States; 5Diagnostic Radiology, Yale University, New Haven, CT, United States
Acute Effect of Methadone Maintenance Dose on Cerebral Blood Flow in Heroin Users Under Methadone Maintenance Treatment

Chien-Yuan Eddy Lin1, 2, I-Hsiao Yang1, 4, Hsiu-Ling Chen1, 4, Meng-Chang Tsai1, 4, Pei-Chin Chen1, 4, Meng-Hsiang Chen1, 4, Wei-Che Lin1, 4

1GE Healthcare, Taipei, Taiwan; 2GE Healthcare China, Beijing, China; 3Department of Diagnostic Radiology, Kaohsiung Chang Gung Memorial Hospital, Kaohsiung, Taiwan; 4Chang Gung University College of Medicine, Kaohsiung, Taiwan

Reduction of Functional Connectivity in Adolescents Prenatally Exposed to Alcohol

Bing Ji1, 2, Zhihao Li1, 2, Claire Coles3, Julie A Kable4, Renjie Zhang2, Xiaoping Hu1

1Biomedical Engineering, Emory University & Georgia Institute of Technology, Atlanta, GA, United States; 2School of Optical Electrical and Computer Engineering, University of Shanghai for Science & Technology, Shanghai, China; 3Institute of affective and social neuroscience, Shenzhen University, Shenzhen, Guangdong, China; 4Psychiatry and Behavioral Science, Emory University, Atlanta, GA, United States

Longitudinal Changes of Functional Connectivity with Amygdala and Prefrontal Cortex in Adolescents Prenatally Exposed to Cocaine

Zhihao Li1, 2, Claire Coles3, Mary Ellen Lynch1, Xiaoping Hu1

1Biomedical Engineering, Emory University & Georgia Institute of Technology, Atlanta, GA, United States; 2School of Optical Electrical and Computer Engineering, University of Shanghai for Science & Technology, Shanghai, China; 3Institute of affective and social neuroscience, Shenzhen University, Shenzhen, Guangdong, China; 4Psychiatry and Behavioral Science, Emory University, Atlanta, GA, United States

Multivariate Classification of Placebo Versus Drug in Fibromyalgia Patients

Scott Peltier1, Eric Ichesco2, Richard Harris2

1Functional MRI Laboratory, University of Michigan, Ann Arbor, MI, United States; 2Anesthesiology, University of Michigan, Ann Arbor, MI, United States

Altered Brain Functional Connectivity in MC4R Rs12970134 Related Obesity in Young Chinese HAN Adults

Baohui Lou1, 2, Min Chen1, 2, Xiaojie Luo4

1Graduate School of Peking Union Medical College, Beijing, China; 2Beijing Institute of Geriatrics, Beijing Hospital, Beijing, China; 3Graduate School of Peking Union Medical College, Beijing, China; 4Department of Radiology, Beijing Hospital, Beijing, China

Mu-Opioid Receptor Related Changes in the Mouse Brain Connectome Mapped Via Resting-State Functional and Diffusion Weighted MRI

Anna E. Mechling1, 2, Tanzil Arefin1, 3, Hsu-Lei Lee1, Thomas Biener1, Marco Reisert1, Sami Ben Hamida1, Jürgen Hennig1, Dominik V. Elverfeldt1, Brigitte Kieffer2, Laura-Adela Harvan1

1Medical Physics, University Medical Center Freiburg, Freiburg, B-W, Germany; 2Faculty of Biology, University of Freiburg, Freiburg, B-W, Germany; 3Bernstein Center for Computational Neuroscience, University of Freiburg, Freiburg, B-W, Germany; 4Institut de Génétique et de Biologie Moléculaire et Cellulaire, Illkirch-Graffenstaden, Alsace, France; 5Douglas Research Centre, Montreal, Quebec, Canada

Neurobiological Assessment of Stress-Induced Sleep Disturbance in a Rat Model Using In Vivo Proton Magnetic Resonance Spectroscopy at 9.4 T: Potential Relevance to Insomnia

Do-Wan Lee1, 2, Chul-Woong Woo1, Sang-Tae Kim1, Choong Gon Choi1, Bo-Young Choe1, Dong-Cheol Woo1

1Department of Biomedical Engineering, and Research Institute of Biomedical Engineering, The Catholic University of Korea College of Medicine, Seoul, Korea; 2Department of Radiology, Asan Medical Center, University of Ulsan College of Medicine, Seoul, Korea

Altered Regional Brain and Subjective Sleep Deficits in Chronic Primary Insomnia: a Resting-State fMRI Study with ALFF

Xi-Jian Dai1, 2, Hong-Han Gong1, De-Chang Peng1, Li Pei2, Yi-Xiang Wang1

1Department of Imaging and Interventional Radiology, Prince of Wales Hospital, The Chinese University of Hong Kong, Shatin, NT, Hong Kong; 2Department of Radiology, The First Affiliated Hospital of Nanchang University, Nanchang, Jiangxi, China
In this study, we evaluated the gray matter microstructural integrity in schizophrenia using mean kurtosis (MK), a metric that captures the degree of deviation from a normal distribution. Higher MK values were observed in the temporal lobe, especially in the anterior temporal cortex and the hippocampus. These findings suggest that schizophrenia may be associated with abnormal structural connectivity within the temporal lobe, consistent with previous studies indicating increased functional connectivity and enhanced metabolic activity in the visual pathway. This could underlie schizophrenic symptoms of visual hallucination.

Olanzapine is a widely prescribed atypical antipsychotic drug (AAPDs) to treat a variety of psychiatric disorders. However, little is known about the long-term effects of olanzapine treatment before the brain is fully developed. Here, we used proton MRS to demonstrate long-term reductions in the levels of both glutamate and α-aminobutyric acid in the nucleus accumbens at 7T. This highlights the importance of considering the long-term effects of AAPD treatment in the developing brain.

Three shape patterns of subcortical structures in medication-naïve first-episode schizophrenia patients were identified using morphometric descriptor and cluster analysis. These patterns revealed distinct underlying pathology, indicating that schizophrenia may be associated with specific neuroanatomical changes in subcortical regions.

In vivo probes of cerebral bioenergetics have the capacity to provide crucial information to characterize the exact metabolic alterations in schizophrenia. Proton MRS studies showed significant increases in glycine and a trend of reduced GABA. This data supports the use of cerebral activity and bioenergetic metabolism as new biomarkers of the pathophysiology of schizophrenia.

Systemic lupus erythematosus (SLE) is an autoimmune disease affecting multiple organ systems. SLE adversely impacts the brain due to complex disease mechanisms such as neurologic involvement (NPSLE). New MRI techniques, such as 31P-MRS, have the potential to improve the clinical diagnosis of NPSLE-related changes in the brain.
Electronic Poster

1Neurosection, Div. of MRI Research, Dept. of Radiology, Johns Hopkins University School of Medicine, Baltimore, MD, United States; 2F.M. Kirby Research Center for Functional Brain Imaging, Kennedy Krieger Institute, Baltimore, MD, United States; 3Department of Biomedical Engineering, Johns Hopkins University, Baltimore, MD, United States; 4Department of Psychiatry and Behavior Science, Johns Hopkins University School of Medicine, Baltimore, MD, United States; 5Department of Psychiatry, Johns Hopkins University School of Medicine, Baltimore, MD, United States

Computer 33 3554. Enhanced Functional Connectivity Between Sub-Regions in the Thalamus and Cortex in Schizophrenia Patients Measured by Resting State BOLD fMRI at 7T
Jun Hua1, 2, Nicholas I.S. Blair1, Ann Choe1, 3, Anita Barber4, 5, Allison Brandt6, Issel Anne L. Lim1, 7, Feng Xu1, 8, James J. Pekar1, 2, Peter C. M. van Zijl1, 2, Christopher A. Ross, 8, Russell L. Margolis, 9
1Neurosection, Div. of MRI Research, Dept. of Radiology, Johns Hopkins University School of Medicine, Baltimore, MD, United States; 2F.M. Kirby Research Center for Functional Brain Imaging, Kennedy Krieger Institute, Baltimore, MD, United States; 3Department of Biomedical Engineering, Johns Hopkins University, Baltimore, MD, United States; 4Department of Psychiatry and Behavior Science, Johns Hopkins University School of Medicine, Baltimore, MD, United States; 5Department of Psychiatry, Johns Hopkins University School of Medicine, Baltimore, MD, United States; 6Department of Neurology, Johns Hopkins University School of Medicine, Baltimore, MD, United States; 7Department of Neurology, Johns Hopkins University School of Medicine, Baltimore, MD, United States; 8Department of Neurology, Kennedy Krieger Institute, Baltimore, MD, United States; 9Department of Psychology, Johns Hopkins University School of Medicine, Baltimore, MD, United States

Computer 34 3555. Disrupted Small-World Networks in Never Treated Schizophrenia Patients with Long Illness Duration
Li Yao1, Wei Deng2, Wenjing Zhang3, Yuan Xiao1, Fei Li3, Jieke Liu4, John A. Sweeney4, Qi Yong Gong3, Su Lui1
1Huaxi MR Research Center, Chengdu, Sichuan, China; 2Department of Psychiatry, Stat Key Lab of Biotheraphy, West China Hospital of Sichuan University, Sichuan, China; 3Huaxi MR Research Center, Chengdu, Sichuan, China; 4UT Southwestern Medical Center, TX, United States

Orla M. Doyle1, Brandon Whitcher2, 3, Steven C.R. Williams4, Mittal A. Mehta5, Stephen M. Lawrie6
1Dept of Neuroimaging, IoPPN, King's College London, London, United Kingdom; 2Clinical & Translational Imaging, Pfizer, Cambridge, MA, United States; 3Dept of Mathematics, Imperial College London, London, United Kingdom; 4Division of Psychiatry, University of Edinburgh, Edinburgh, United Kingdom

Computer 36 3557. Effects of DISC1 Genes on Clinical Symptoms and Thalamic Radiation in Patients with Schizophrenia: A Tract-Based Diffusion Spectrum Imaging Analysis
Hsu-Hwa Tseng1, 2, Su-Chun Huang2, Chih-Min Liu3, Tsung-Jeng Hwang2, Hai-Gwo Hwu4, Yung-Chin Hsu2, Yu-Chun Lo2, Yu-Jen Chen2, Wen-Yih Isaac Tseng5
1School of Medicine, College of Medicine, National Taiwan University, Taipei, Taiwan; 2Center for Optoelectronic Biomedicine, National Taiwan University College of Medicine, Taipei, Taiwan; 3Department of Psychiatry, National Taiwan University Hospital, Taipei, Taiwan

Su-Chun Huang6, Chih-Min Liu2, Tsung-Jeng Hwang2, Hai-Gwo Hwu2, Yung-Chin Hsu2, Yu-Chun Lo2, Yu-Jen Chen1, Wen-Yih Isaac Tseng6, 7
1Center for Optoelectronic Biomedicine, National Taiwan University College of Medicine, Taipei, Taiwan; 2Department of Psychiatry, National Taiwan University Hospital, Taipei, Taiwan; 3Molecular Imaging Center, National Taiwan University, Taipei, Taiwan

Computer 38 3559. Widespread Decrease of Fractional Anisotropy in Never Treated Schizophrenia Patients with Disease Duration Over 5 Years
Yuan Xiao1, Wei Deng2, Huaiqiang Sun1, Wenjing Zhang1, Li Yao1, Jia Liu1, Min Wu1, Chandan Shah1, Qi Yong Gong1, Su Lui1
1Department of Radiology, West China Hospital of Sichuan University, Huaxi Magnetic Resonance Research Ctr., Chengdu, Sichuan, China; 2Department of Psychiatry, State Key Laboratory of Biotheraphy, Chengdu, Sichuan, China

Computer 39 3560. Elevated Levels of Myo-Inositol and Choline in the Associative Striatum of Antipsychotic-Naive Patients with First Episode Psychosis
Eric Plitman1, 2, Camilo de la Fuente-Sandoval1, Pablo Leon-Ortiz1, Francisco Reyes-Madrigr1, Gladys Gomez-Cruz2, Shinichiro Nakajima1, 3, Philip Gerretsen1, 3, M Mallar Chakravarty4, 5, Sofia Chavez2, 3, Jun Ku Chung1, 2, Fernando Caravaggio1, 2, Yusuke Iwata1, 2, Danielle Uy1, Gary Remington1, 3, Ariel Graff-Guerrero1, 5
1Centre for Addiction and Mental Health, Toronto, Ontario, Canada; 2Institute of Medical Science, University of Toronto, Toronto, Ontario, Canada; 3Instituto Nacional de Neurologia y Neurocirugia, Mexico; 4Neuropsychiatry, Keio University School of Medicine, Tokyo, Japan; 5Department of Neurology, Johns Hopkins University School of Medicine, Baltimore, MD, United States
Computer 40 3561. Multi-Contrast Z-Score Comparison Discriminates Patients with Psychiatric Disorders from Controls
Aziz M. Ulug1, 2, Mehmed Ozkan1, Peter B. Kingsley1, Ivana De Lucia1, Azim Celik4, Pamela DeRosse5, 6, Anil Malhotra1, 6, Philip R. Szezko5, 6
1Center for Neurosciences, Feinstein Institute for Medical Research, Manhasset, NY, United States; 2Institute of Biomedical Engineering, Bogazici University, Istanbul, Turkey; 3North Shore University Hospital, Manhasset, NY, United States; 4GE Healthcare, Antalya, Turkey; 5Center for Psychiatric Neuroscience, Feinstein Institute for Medical Research, Manhasset, NY, United States; 6Psychiatry Research, Zucker Hillside Hospital, North Shore-LIJ Health System, , NY, United States

Computer 41 3562. Lower Glutathione Levels in the Anterior Cingulate Cortex of Patients with Schizophrenia: A Preliminary 3T 1H-MRS Study
Napapon Sraisuta1, Yusuke Iwata1, Shinichiko Nakajima1, Sofia Chavez1, Fernando Caravaggio1, Eric Plitman1, Vincenzo De Luca1, Jun Ku Chung1, Philip Gerretsen1, Gary Remington1, Ariel Graff-Guerrero1
1The Centre for Addiction and Mental Health, toronto, ON, Canada

Petr Menshikov1, Natalia Semenova1, 2, Maxim Ublinskiy1, Dmitry Kupriyanov1, Irina Lebedeva1, Maria Omelenchuk1, Tolibjon Akhadov1
1N.N. Semenov Institute of Chemical Physics of the Russian Academy of Sciences, Moscow, Russian Federation; 2N.M. Emanuel Institute of Biochemical Physics of the Russian Academy of Sciences, Moscow, Russian Federation; 3Children's Clinical and Research Institute of Emergency Surgery and Trauma, Moscow, Russian Federation; 4Philips Healthcare Russia, Moscow, Russian Federation; 5National Mental Health Research Centre of the Russian Academy of Medical Sciences, Moscow, Russian Federation

Computer 43 3564. N-Acetyl-Aspartyl-Glutamate in First-Episode Psychosis
Anouk Marsman1, Sabechiya Pradhan1, Candice Ford2, Ashley Lloyd2, Teppie Tanaka1, Akira Sawa1, Peter B. Barker1
1Russell H. Morgan Department of Radiology and Radiological Science, Johns Hopkins University School of Medicine, Baltimore, MD, United States; 2Department of Psychiatry, Johns Hopkins University School of Medicine, Baltimore, MD, United States

Computer 44 3565. Altered White Matter Tract Integrity in Drug-Naïve and Chronic Schizophrenia Patients: A Study Using Automatic Tract-Specific Analysis of the Whole Brain
Chen-Hao Wu1, 2, Yu-Jen Chen1, Yun-Chin Hsu1, Yu-Chun Lo1, Tsung-Jeng Hwang1, Hai-Gwo Hwa1, Chung-Ming Chen1, Wen-Yih Isaac Tseng1, 2
1Institute of Biomedical Engineering, National Taiwan University, Taipei, Taiwan, Taiwan; 2Center for Optoelectronic Medicine, National Taiwan University College of Medicine, Taipei, Taiwan; 3Department of Psychiatry, National Taiwan University Hospital, Taipei, Taiwan

Computer 45 3566. Intrinsic Brain Abnormalities in Violent Offenders with Schizophrenia: A Resting-State Functional MRI Study
Ming Zhou1, Xinyu Hu1, Junmei Hu2, Qi Liu1, Lizhou Chen1, Qiyoug Gong1, Xiaqi Huang1
1West China Hospital of Sichuan University, Huaxi MR Research Center, Chengdu, Sichuan, China; 2Sichuan University, School of Basic Science and Forensic Medicine, Sichuan, China

Computer 46 3567. Shared and Distinct Functional Network Connectome Abnormality in Deficit and Non-Deficit Schizophrenia
Miao Yu1, Xiangrong Zhang1, 2, Xiaowei Tang1, Zhengjia Dai1, Xiang Wang1, Xiaobin Zhang2, Weiwei Sha3, Shuqiao Chen-Hao Wu1, 2, Yu-Jen Chen1, Wen-Yih Isaac Tseng1, 2
1Department of Neuropsychiatry Affiliated ZhongDa Hospital of Southeast University, Nanjing, JiangSu, China; 2Department of Geriatric Psychiatry, Nanjing Brain Hospital Affiliated to Nanjing Medical University, JiangSu, China; 3Department of Psychiatry, Wutaishan Hospital of Yangzhou, JiangSu, China; 4State Key Laboratory of Cognitive Neuroscience and Learning, Beijing Normal University, Beijing, China; 5Medical Psychological Institute of the Second Xiangya Hospital, Central South University, HuNan, China

Computer 47 3568. Clinical Correlations of Fornix Are Disparate in First Episode and Chronic Patients with Schizophrenia: A Tract-Based Diffusion Spectrum Imaging Analysis
Yan-Lin Chiu1, 2, Su-Chun Huang1, Chih-Min Liu1, Tsung-Jeng Hwang1, Hai-Gwo Hwa1, Yung-Chin Hsu1, Yu-Chun Lo1, Yu-Jen Chen1, Wen-Yih Isaac Tseng1, 2
Saccular intracranial aneurysm (IA) rupture risk prediction is critical in the IA treatment decision-making process. 3D imaging and multimodal imaging were evaluated based on pre- and post-contrast VISTA images, and prevalence of IA wall enhancement was reported.

Corticostriatral Connectivity in Violent Offenders with Schizophrenia
Xinyu Hu1, Yi Liao2, Lizhou Chen2, Lei Li2, Ming Zhou2, Qi Li2, Junmei Hu2, Qiyong Gong2, Xiaogi Huang2
1Huaxi MR Research Center (HMRRC), Department of Radiology, West China Hospital of Sichuan University, Chengdu, Sichuan, China; 2Huaxi MR Research Center (HMRRC), Department of Radiology, West China Hospital of Sichuan University, Chengdu, Sichuan, China; 3School of Basic Science and Forensic Medicine, Sichuan University, Chengdu, Sichuan, China

Hypertension Induced Change of Retina and Optic Tract in SHR
Qian Wang1, 2, Yunxia Li1, 4, Eric R. Muir1, Qiang Shen1, Shiliang Huang1, Timothy Q. Duong4
1Research Imaging Institute, The University of Texas Health Science Center at San Antonio, San Antonio, TX, United States; 2Xiang Ya School of Medicine, Central South University, Changsha, China; 3Department of Neurology, Tongji Hospital, Tongji University, Shanghai, China

Influence of a Severe Internal Carotid Artery Stenosis on Diffusion and Perfusion Values in Acute Stroke Patients
Philipp Kaesemann1, Götz Thomalla2, Bastian Cheng2, Andras Treszl3, Jens Fiehler4, Nils Daniel Forkert5
1Department of Computational Neuroscience, University Medical Center Hamburg-Eppendorf, Hamburg, Germany; 2Department of Neurology, University Medical Center Hamburg-Eppendorf, Hamburg, Germany; 3Department of Medical Biometrics and Epidemiology, University Medical Center Hamburg-Eppendorf, Hamburg, Germany; 4Department of Diagnostic and Interventional Neuroradiology, University Medical Center Hamburg-Eppendorf, Hamburg, Germany; 5Department of Radiology and Hotchkiss Brain Institute, University of Calgary, Calgary, Alberta, Canada

Task-Dependent Neurovascular Uncoupling in Moyamoya Disease
Erin L. Mazerolle1, Yuhan Ma2, David Sinclair2, G Bruce Pike2
1University of Calgary, Calgary, Alberta, Canada; 2McGill University, Montreal, Quebec, Canada

To Study Chronic Hypobaric Hypoxia Induced Metabolic Alteration in Rat Brain Using High Resolution NMR Spectroscopy
Sunil Koundal1, 2, Sonia Gandhi1, Tanzeer kaur2, Subash Khushu1
1NMR Research Centre, Institute of Nuclear Medicine and Allied Sciences (INMAS), New Delhi, Delhi, India; 2Department of Biophysics, Panjab University, Chandigarh, India

Understanding the Interplay Different MRI Methods Have as White Matter Changes Longitudinally in the Cuprizone Mouse Model
Vanessa L. Palmer1, Sheryl L. Herrera2, Jonathan D. Thiessen1, 4, Shenghua Zhu3, Richard Buist4, Xin-Min Li3, Marc R. Del Bigio5, Melanie Martin4, 10
1Biomedical Engineering, University of Manitoba, Winnipeg, Manitoba, Canada; 2Physics & Astronomy, University of Manitoba, Winnipeg, Manitoba, Canada; 3Imaging Program, Lawson Health Research Institute, London, Ontario, Canada; 4Medical Biophysics, Western University, London, Ontario, Canada; 5Pharmacology & Therapeutics, University of Manitoba, Winnipeg, Manitoba, Canada; 6Radiology, University of Manitoba, Winnipeg, Manitoba, Canada; 7Psychiatry, University of Alberta, Edmonton, Alberta, Canada; 8Pathology, University of Manitoba, Winnipeg, Manitoba, Canada; 9Physics, University of Winnipeg, Winnipeg, Manitoba, Canada; 10Biomedical Engineering, Physics &Astronomy, Pharmacology & Therapeutics, Radiology, University of Manitoba, Winnipeg, Manitoba, Canada

Imaging of Saccular Intracranial Aneurysms with T1W-VISTA Black-Blood Sequence
Haitun Qi1, Peng Liu2, Hansen Li1, Huijun Chen1
1Department of Biomedical Engineering, School of Medicine, Tsinghua University, Beijing, China; 2Department of Neurosurgical, Beijing Neurosurgical Institute and Beijing Tiantan Hospital, Beijing, China
Accurately Measured Collateral Perfusion in Stroke Patients Using Multi-TI Arterial Spin-Labeling

Tianyi Qian¹, Zhiwei Zuo², Josef Pfeuffer³, Yuehua Pu⁴, Penggang Qiao², Liping Liu⁴, Gongjie Li²

¹MR Collaborations NE Asia, Siemens Healthcare, Beijing, China; ²Radiology, Affiliated hospital of Academy of Military Medical Sciences, Beijing, China; ³Application Development, Siemens Healthcare, Erlangen, Germany; ⁴Department of Medical Imaging, University of Toronto, Ontario, Canada; ⁵Department of Physiology and Experimental Medicine, Hospital for Sick Children, Toronto, Ontario, Canada; ⁶Department of Medical Biophysics, University of Toronto, Ontario, Canada

The Dynamics of Cerebrovascular Reactivity Shown with Transfer Function Analysis

James Duffin¹, ², Olivia Sobczyk², David J. Mikulis³, ⁴, Joseph A. Fisher¹, ²

¹Department of Anesthesiology, University of British Columbia, Vancouver, BC, Canada; ²Clinical Pharmacology, University of British Columbia, Vancouver, BC, Canada; ³Department of Neurology, University of British Columbia, Vancouver, BC, Canada; ⁴Department of Radiology, University of British Columbia, Vancouver, BC, Canada

487
We examined how exercise intensity affects cerebral blood flow (CBF) following acute cycling in stroke. Using arterial spin labeling (ASL), we found that high-intensity exercise increased CBF relative to light exercise. Parietal regions may provide a sensitive biomarker for exercise-based stroke rehabilitation.

Cerebral amyloid angiopathy (CAA) is caused by vascular beta-amyloid deposition, which can lead to several clinical manifestations. In a study comparing participants with CAA and health-age-matched controls, we did find reduced cortical gray matter volume in CAA.

A Non-enhanced Hybrid Arterial Spin Labeling MRA (NoHASL MRA) technique for assessment of the extracranial cervical arterial disease shows promise as a relatively rapid, non-contrast sequence for assessment of cervical arterial disease.

Changes in water content are highly relevant for the characterization of disease, but they are usually in the low range. The aim of the study is to establish a quantitative method for monitoring the evolution of oedema in stroke.

Using multi-T1 arterial spin labeling sequence with 3D GRASE readout for perfusion imaging in ischemic stroke to investigate the global effect of ischemic stroke based on oxygen extraction fraction estimation. More research is needed to better understand the disease dynamics of ischemic stroke.

In chronic stroke, exercise intensity modulates the change in cerebral blood flow following aerobic exercise. A PCASL study suggests that moderate-intensity exercise may be more effective than high-intensity exercise for improving CBF in chronic stroke patients.

MRI characterizations of region-specific white matter hyperintensities and vertebral artery stenosis provide insights into the potential mechanisms underlying these conditions.

Electronic Poster
Recent works have shown that the T2*-weighted conventional GRE sequences may be the best method for detecting cerebral microbleeds and can be helpful in the diagnosis of hypertensive-related intracerebral hemorrhage. In this study, a simultaneous method of acquiring both T2* and phase-contrast (PC) angiography is proposed. The proposed simultaneous MRI technique can be used to detect hemorrhages in the brain and provide valuable information on the blood flow in the brain. The study results have shown that the simultaneous MRI technique can provide valuable information on the blood flow and can be used to detect hemorrhages in the brain. The proposed technique can be used to detect hemorrhages in the brain and provide valuable information on the blood flow in the brain. The study results have shown that the simultaneous MRI technique can provide valuable information on the blood flow and can be used to detect hemorrhages in the brain.
**Electronic Poster**

**Computer 80 3601.** Measuring the Time Characteristic of the BOLD Cerebrovascular Reactivity Response to a Step Hypercapnic Stimulus.
Julien Poublanç1, Adrian Crawley1, Olivia Sobczyk1, Gaspard Montandon1, Kevin Sam1, Daniel Mandell1, Lakshminarayan Venkatraghavan1, James Duffin1, David Mikulis1, Joseph Fisher1
1Joint Department of Medical Imaging, University Health Network, Toronto, Ontario, Canada; 2Institute of Medical Sciences, Ontario, Canada; 3Department of Anaesthesia and Physiology, University Health Network, Toronto, Ontario, Canada

**Computer 81 3602.** The Alterations of Functional Brain Network and Its Relationship to Cognitive Decline in Patients with Carotid Stenosis: A Resting-State fMRI Study
Pei-Shan Ho1, 2, Ting-Yu Chang3, Meng-Yang Ho1, Chang-Wei Wu1, Kuo-Lun Huang1, Ho-Fai Wong6, Tsong-Hai Lee3, Ho-Ling Liu1, 8
1Department of Medical Imaging and Radiological Sciences, Chang Gung University, Taoyuan, Taiwan; 2Department of Biological Science and Technology, National Chiao Tung University, Hsinchu, Taiwan; 3Department of Neurology and Stroke Center, Chang Gung Memorial Hospital, and Chang Gung University College of Medicine, Taoyuan, Taiwan; 4Department of Occupational Therapy, Chang Gung University, Taoyuan, Taiwan; 5Graduate Institute of Biomedical Engineering, National Central University, Taoyuan, Taiwan; 6Department of Medical Imaging and Intervention, Chang Gung Memorial Hospital, Taoyuan, Taiwan; 7Department of Imaging Physics, The University of Texas M. D. Anderson Cancer Center, Houston, TX, United States; 8Department of Medical Imaging and Radiological Sciences, Chang Gung University, Taoyuan, Taiwan

Kai Xu1, LeRoy Stromberg1, David Rusnak1, Stephen Futterer1, Shivraman Girl1, James Carr1, Robert Edelman1, Ioannis Koktzoglou2, Jeremy Collins1
1Radiology, Northwestern University, Chicago, IL, United States; 2Department of Systems Science, Kyoto University Graduate School of Informatics, Kyoto, Japan

**Computer 83 3604.** Perfusion Imaging: Bolus Truncation Alters Penumbral Status of Acute Stroke Patients. Using a Vascular Model Reduces This Effect
Irene Klerke Mikkelsen1, Lars Riisgaard Ribe1, Leif Østergaard2
1Center for functionally integrative neuroscience, Aarhus University, Aarhus, Denmark

**Computer 84 3605.** Optimization of Tuning Parameters for NESTA Algorithm in Reconstruction of 3D TOF-MRA
Yasutaka Fushimi2, Koji Fujimoto2, Tomohisa Okada2, Akira Yamamoto2, Takayuki Yamamoto2, Tai Akasaka2, Kei Sano2, Toshiyuki Tanaka2, Kaori Togashi2
1Kyoto University Graduate School of Medicine, Kyoto, Japan; 2Department of Systems Science, Kyoto University Graduate School of Informatics, Kyoto, Japan

**Computer 85 3606.** Accelerating TOF MRA in Clinical Practice Using Sparse MRI with Variable Poisson Density Sampling
Aurelien F. Stalder1, Yutaka Natsuaki2, Michaela Schmidt2, Xiaoming Br1, Michael O. Zenge1, Mariappan Nadar4, Peter Speier1, Peter Schmitt1, Gerhard Laub2
1Siemens Healthcare, Erlangen, Germany; 2Siemens Healthcare, CA, United States; 3Siemens Healthcare, NY, United States; 4Siemens Corporate Technology, NJ, United States

**Computer 86 3607.** Association of Middle Cerebral Artery Steno-Occlusion with Intraplaque Hemorrhage with Acute Cerebral Infarction: A Magnetic Resonance Imaging Study
Huilin Zhao1, Jinnan Wang1, Xiaosheng Liu1, Xihai Zhao1, Chun Yuan1, Jianrong Xu1
1Radiology, Renji hospital, Shanghai Jiaotong University, Shanghai, China; 2Philips Research North America, NY, United States; 3Biomedical Engineering & Center for Biomedical Imaging Research, Tsinghua University, Beijing, China; 4University of Washington, WA, United States

**Computer 87 3608.** Snapshot MR-OEF for Simultaneous Imaging of Tissue Oxygenation and CVR
Charles G. Cantrell1, Parmede Vakil1, Timothy J. Carroll1
1Biomedical Engineering, Northwestern University, Chicago, IL, United States

**Computer 88 3609.** Quantitative MRI of Brain Perivascular Space
Kejia Cai1, 2, Rongwen Tain1, 2, Sandhitsu Das1, Frederick C. Damen1, 2, Yi Sui2, 4, Shika Dammala3, Paul Yushkevich1, Tibor Valyi-Nagy2, Mark A. Elliott1, X. Joe Zhou1, 2
1Radiology, College of Medicine, University of Illinois at Chicago, Chicago, IL, United States; 2Center for MR Research, College of Medicine, University of Illinois at Chicago, Chicago, IL, United States; 3Radiology, School of Medicine, University of Pennsylvania, Philadelphia, PA, United States; 4Bioengineering, University of Illinois at Chicago, Chicago, IL, United States; 5Biomedicine, University of Illinois at Chicago, Chicago, IL, United States; 6Neuropathology, College of Medicine, University of Illinois at Chicago, Chicago, IL, United States

Computer 89 3610. Hemodynamic Etiology of Stroke Risk in Children with Sickle Cell Anemia
Przemyslaw Kosinski1, Paula Croad2, Jackie Leung2, Andrea Kassner2,3
1Institute of Medical Science, The University of Toronto, Toronto, Ontario, Canada; 2Physiology & Experimental Medicine, The Hospital for Sick Children, Ontario, Canada; 3Medical Imaging, The University of Toronto, Toronto, Ontario, Canada

Computer 90 3611. Predicting Recovery from Stroke Using Baseline Imaging Biomarkers of Structural Connectome Disruption
Amy Kuceyeski1, Babak B. Navi2, Hooman Kame1, Norman Relkin1, Ashish Raj1, Joan Toglia1, Costantino Iadecola2, Michael O’Dell1
1Radiology and the Brain and Mind Research Institute, Weill Cornell Medical College, New York, NY, United States; 2Neurology and the Brain and Mind Research Institute, Weill Cornell Medical College, NY, United States; 3Radiology and the Brain and Mind Research Institute, Weill Cornell Medical College, NY, United States; 4Rehabilitation Medicine, Weill Cornell Medical College, NY, United States

Computer 91 3612. The Effects of Methylene Blue on Autophagy and Apoptosis in MRI-Defined Normal Tissue, Ischemic Penumbra and Ischemic Core
Zhao Jiang1, Lora Talley Watts1, Shiiliang Huang1, Pavel Rodriguez1, Quang Shen1, Timothy Duong1
1Research Imaging Institute, University of Texas Health Science Center at San Antonio, San Antonio, TX, United States

Computer 92 3613. pH-Weighted Imaging in Diabetes Mellitus Suffering Acute Cerebral Ischemic Stroke
Zhuzhi Dai1,2, Yanlong Jia1, Gen Yan1, Fei Duan1, Gang Xiao1, Zhiwei Shen1, Hongfu Sun1, Alan H. Wilman1, Renhua Wu2
1Biomedical Engineering, University of Alberta, Edmonton, Alberta, Canada; 2Medical Imaging, 2nd Affiliated Hospital, Shantou University Medical College, Shantou, Guangdong, China; 3Math and Information Technology, Hanshan Normal University, Guangdong, China; 4Provincial Key Laboratory of Medical Molecular Imaging, Guangdong, China

Computer 93 3614. 3-Tesla MRI Non-Contrast Vessel Wall Imaging in Young, Healthy Adults and Moyamoya Patients
Daniel F. Arteaga1, Manus J. Donahue2,3, Carlos C. Faraco1, Taylor L. Davis1, Jeroen Hendrikse1, Lori C. Jordan2, Jeroen C.W. Sier1, Allison O. Scott1, Megan K. Strother1
1Radiology, Vanderbilt University, Nashville, TN, United States; 2Neurology, Vanderbilt University, Nashville, TN, United States; 3University Medical Center Utrecht, Utrecht, Netherlands

Carlos C. Faraco1, Manus J. Donahue1,2, Cari L. Buckingham1, Fei Ye1, Lori C. Jordan2, Daniel F. Arteaga1, Megan K. Strother1
1Radiology and Radiological Sciences, Vanderbilt University School of Medicine, Nashville, TN, United States; 2Department of Neurology, Vanderbilt University Medical Center, Nashville, TN, United States; 3Center for Quantitative Sciences, Vanderbilt University School of Medicine, Nashville, TN, United States

Computer 95 3616. Compromised Cerebrovascular Reactivity Is Reversible in Patients with Carotid Artery Stenosis: A BOLD MRI Study
Jian Hui-Shan1,2, Chang Ting-Yu1, Huang Kuo-Lun1, Chang Yeu-Jhy1, Chang Chien-Hung1, Wai Yaw-Yau1, Yeh Chih-Hua1, Lee Tsong-Hai1, Liu Ho-Ling1,2
1Department of Neurology and Stroke Center, Chang Gung Memorial Hospital, Taoyuan, Taiwan; 2Department of Biomedical Engineering and Environmental Sciences, Tsing Hua University, Hsinchu, Taiwan; 3Department of Medical Imaging and Intervention, Chang Gung Memorial Hospital, Taoyuan, Taiwan; 4Department of Medical Imaging and Radiological Sciences, Chang Gung University, Taoyuan, Taiwan; 5Department of Imaging Physics, The University of Texas M. D. Anderson Cancer Center, Houston, TX, United States
**Electronic Poster**

**Non-Cartesian, Multiband & Parallel Imaging**

**Exhibition Hall**

**Tuesday 13:30-14:30**

**Computer 1 3618.** Self-Calibrated Radial Sampling Parallel Imaging Reconstruction with Iterative K-X Estimation  
Yi-Cheng Hsu1, Ying-Hua Chu1, Fa-Hsuan Lin1  
1 Institute of Biomedical Engineering, National Taiwan University, Taipei, Taiwan

**Computer 2 3619.** Effective Rank for Automated Parallel Imaging Regularization  
Stephen F. Cauley1,2, Kavin Setsompop1,2, Lawrence Wald1,2, Jonathan R. Polimeni1,2  
1 Athinoula A. Martinos Center for Biomedical Imaging, MGH/HST, Charlestown, MA, United States; 2 Dept. of Radiology, Harvard Medical School, Boston, MA, United States

**Computer 3 3620.** Squashing the G-Factor: Ultra High Scan Acceleration Factors in Reduced Field of Excitation Imaging  
Ronald Mooiweer1, Alessandro Sbrizzi1, Alexander Raaijmakers1, Cornelis A. T. van den Berg1, Peter R. Luijten1, Hans Hoogduin1  
1 UMC Utrecht, Utrecht, Netherlands

**Computer 4 3621.** Accelerated CEST MRI Using Parallel Imaging Acquisition of Golden-Angle Radial Ordering Scheme and Compressed Sensing Reconstruction  
Jinsuh Kim1, Casey P. Johnson2, Dingxin Wang3, Philip Zhe Sun2  
1 University of Iowa, Iowa City, IA, United States; 2 University of Iowa, IA, United States; 3 Siemens Medical Solutions USA, Inc., Minneapolis, MN, United States; 4 Martinos Center for Biomedical Imaging, MGH, Charlestown, MA, United States

**Computer 5 3622.** kp-GRAPPA: A Self-Calibrated Reconstruction Scheme for 3D Multi-Phase Respiratory Cine  
Cihat Eldeniz1, Wolfgang Rehwald2, Brian Dale2, Yasheng Chen2, Hongyu An1  
1 University of North Carolina at Chapel Hill, Chapel Hill, NC, United States; 2 Siemens Healthcare, Malvern, PA, United States; 3 Siemens Healthcare, Cary, NC, United States

**Computer 6 3623.** Pyramidal Representation of Block Hankel Structured Low Rank Matrix (PRESTO) for High Performance Parallel MRI  
Kyong Hwan Jin1, Dongwook Lee1, Jong Chul Ye1  
1 Dept. of Bio and Brain Engineering, KAIST, Daejeon, Korea

**Computer 7 3624.** An Image Domain Low Rank Model for Calibrationless Reconstruction of Images with Slowly Varying Phase  
Evan Levine1,2, Brian Hargreaves2  
1 Electrical Engineering, Stanford University, Stanford, CA, United States; 2 Radiology, Stanford University, Stanford, CA, United States

**Computer 8 3625.** Parallel Imaging Acceleration Beyond Coil Limitation Using a K-Space Variant Low-Rank Constraint on Correlation Matrix  
Yu Y. Li1  
1 Radiology, Imaging Research Center, Cincinnati Children's Hospital Medical Center, Cincinnati, OH, United States

**Computer 9 3626.** GRAPPA-Accelerated Coronary MRA Benefits from an Outer Volume Suppressing 2D-T2-Prep  
Andrew J. Coristine1,2, Jérôme Yerly23, Matthias Stuber23  
1 Athinoula A. Martinos Center for Biomedical Imaging, MGH/HST, Charlestown, MA, United States; 2 Siemens Medical Solutions USA, Inc., Minneapolis, MN, United States; 3 Siemens Healthcare, Malvern, PA, United States; 4 Siemens Healthcare, Cary, NC, United States; 5 on behalf of the EPITHET, DEFUSE2, and SENSE3 investigators, United States
Nils Nothnagel¹, Rodrigo Fernandez-Jiménez², Gonzalo Lopez-Martin², Manuel Desco³, Valentin Fuster², Borja Ibáñez², Javier Sánchez-González²
¹Philips Healthcare Spain, Madrid, Spain; ²Atherothrombosis in Experimental Imaging, Centro Nacional de Investigaciones Cardiovasculares (CNIC), Madrid, Spain; ³Departamento de Bioingeniería e Ingeniería Aeroespacial, Universidad Carlos III, Madrid, Spain

Computer 11 3628. Pseudo-Polar Trajectories Achieve High Acceleration Rates with High Image Fidelity: Experiments at 3T and 7T
Ali Ersöz², L. Tugan Muftuler²,³
¹Department of Biophysics, Medical College of Wisconsin, Milwaukee, WI, United States; ²Department of Neurosurgery, Medical College of Wisconsin, Milwaukee, WI, United States; ³Center for Imaging Research, Medical College of Wisconsin, Milwaukee, WI, United States

Computer 12 3629. UTE MRI Versus Dual-Energy CT for Imaging Different Kidney Stones Types
El-Sayed H. Ibrahim¹,², Robert Pooley³, Mellena Bridges³, Joseph Cernigliaro³, James Williams³, William Haley²
¹University of Michigan, Ann Arbor, MI, United States; ²Mayo Clinic, Jacksonville, FL, United States; ³Indiana University, IN, United States

Computer 13 3630. SAR Reduced Neuro-Imaging at 7T Using Radial GRASE
Melisa Okanovic¹, Robert Trumpel², Martin Blaimer¹, Felix Breuer¹, Peter Michael Jakob¹,⁴
¹MBB Research Center for Magnetic-Resonance-Bavaria, Würzburg, Bavaria, Germany; ²Max Planck Institute for Human Cognitive and Brain Sciences, Leipzig, Saxony, Germany; ³Experimental Physics 5, University of Würzburg, Würzburg, Bavaria, Germany

Computer 14 3631. Fast Isotropic Banding-Free BSSFP Imaging Using 3D Dynamically Phase-Cycled Radial BSSFP (3D DYPR-SFSP)
Thomas Benkert¹, Philipp Ehses²,³, Martin Blaimer¹, Peter Jakob¹,⁴, Felix Breuer²
¹Research Center Magnetic Resonance Bavaria, Würzburg, Bavaria, Germany; ²Department of Neuroimaging, University of Tübingen, Tübingen, Baden-Württemberg, Germany; ³High-Field MR Center, Max Planck Institute for Biological Cybernetics, Tübingen, Baden-Württemberg, Germany; ⁴Experimental Physics 5, University of Würzburg, Bavaria, Germany

Computer 15 3632. A Self-Calibrated Through-Time Radial GRAPPA Method
Ozan Sayin¹, Haris Saybasili¹, M. Muz Zviman¹, Mark Griswold²,³, Nicole Seibert², Daniel A. Herska⁴
¹Department of Biomedical Engineering, Johns Hopkins University School of Medicine, Baltimore, MD, United States; ²Siemens Healthcare USA, Inc., Chicago, IL, United States; ³Department of Medicine, Johns Hopkins University School of Medicine, Baltimore, MD, United States; ⁴Department of Radiology, Case Western Reserve University, Cleveland, OH, United States

Computer 16 3633. Random Delayed Spirals for Compressive Sensing Cine MRI
Giuseppe Valvano¹,², Nicola Martini¹, Dante Chiappino¹, Luigi Landini¹,², Maria Filomena Santarelli³
¹Department of Information Engineering, University of Pisa, Pisa, PI, Italy; ²Fondazione G. Monasterio CNR-Regione Toscana, Massa, MS, Italy; ³Institute of Clinical Physiology, CNR, Pisa, PI, Italy

Computer 17 3634. Navigator Echo Collection for Sliding Interleaved Cylinder Acquisition
Kie Tae Kwon¹, Adam B. Kerr¹, Dwight G. Nishimura¹
¹Stanford University, Stanford, CA, United States

Computer 18 3635. 3D MP-RAGE with Distributed Spirals
Dinghui Wang¹, Zhiquiang Li², James G. Pipe¹
¹Neuroimaging Research, Barrow Neurological Institute, Phoenix, AZ, United States
**Electronic Poster**

**Computer 19 3636. Modulo-Prime Spoke (MoPS) Interleaving for K-Space Segmented Radial Acquisition Strategies**  
Keigo Kawaji1, Hui Wang2, Sui-Cheng Wang1, Akiko Tanaka2, Takeyoshi Ota2, Roberto M. Lang1, Amit R. Patel1  
1Medicine, Section of Cardiology, The University of Chicago, Chicago, IL, United States; 2Philips Medical Systems, Cleveland, OH, United States; 3Biomedical Engineering, Northwestern University, Evanston, IL, United States; 4Surgery, The University of Chicago, Chicago, IL, United States

**Computer 20 3637. A Simple BOLD Contrast Model Based on Functional Activation Pattern and K-Space Trajectory**  
Vimal Singh1, David Ress2  
1Electrical Engineering, University of Texas at Austin, Austin, TX, United States; 2Neuroscience, Baylor College of Medicine, Houston, TX, United States

**Computer 21 3638. Tiny Golden Angles: A Small Surrogate for the Radial Golden Angle Profile Order**  
Stefan Wundrak1, 2, Jan Paul1, Johannes Ulrici1, Erich Hell1, Volker Rasche1  
1Ulm University, Ulm, Baden-Württemberg, Germany; 2Sirosa Dental Systems, Bensheim, Hessen, Germany

**Computer 22 3639. Fast Non-Cartesian Reconstruction with Pruned Fast Fourier Transform**  
Frank Ong1, Martin Uecker1, Wenwen Jiang2, Michael Lustig1  
1Electrical Engineering and Computer Sciences, University of California, Berkeley, Berkeley, CA, United States; 2Bioengineering, UC Berkeley/UCSF, Berkeley, CA, United States

**Computer 23 3640. Accelerated Multiband SSFP Imaging with Controlled Aliasing in Parallel Imaging and Integrated-SSFP (CAIPI-ISSFP)**  
Thomas Boyd Martin1, 2, Yi Wang1, Steen Moeller1, Kyung Sung1, Danny JJ. Wang1  
1Biomedical Physics Interdepartmental Program, University of California Los Angeles, Los Angeles, CA, United States; 2Neurology, University of California Los Angeles, Los Angeles, CA, United States; 3Center for Magnetic Resonance Research, University of Minnesota, MN, United States; 4Radiological Sciences, University of California Los Angeles, Los Angeles, CA, United States

**Computer 24 3641. In-Vivo Fully Phase-Encoded Magnetic Resonance Imaging in the Presence of Metal Using Multiband RF Excitation**  
Nathan S. Artz1, 2, Curtis N. Wiens1, Matthew R. Smith1, Diego Hernandez1, Alexey Samsonov1, Scott B. Reeder1, 3  
1Department of Radiology, University of Wisconsin, Madison, WI, United States; 2Department of Radiological Sciences, Saint Jude Children's Research Hospital, Memphis, TN, United States; 3Department of Medical Physics, University of Wisconsin, Madison, WI, United States

**Electronic Poster**

**Fat Water Separation**

**Exhibition Hall Tuesday 13:30-14:30**

**Computer 25 3642. Can High-Resolution T1W 3-Dimensional (3D) Gradient Recalled Echo (GRE) with 2-Point Dixon Derived Fat-Water Separation (FLEX) Replace Conventional T1W Turbo Spin-Echo (TSE) Imaging for Assessment of Prostate Cancer?**  
Karim B. Samji1, 2, Abdulmohsen Alrashed1, 2, Wael M. Shabana1, 2, Matthew DF McInnes1, 2, Nicola Schieda1, 2  
1Department of Medical Imaging, The Ottawa Hospital, Ottawa, ON, Canada; 2University of Ottawa, Ottawa, ON, Canada

**Computer 26 3643. Water-Fat Separation with a Dual-Echo Two-Point Dixon Technique for Pencil Beam Navigator Echo**  
Yuii Iwadate1, Kanhiro Miyoshi1, Masanori Ozaki1, Hiroyuki Kabasawa1  
1Global MR Applications and Workflow, GE Healthcare Japan, Hino, Tokyo, Japan; 2MR Engineering, GE Healthcare Japan, Tokyo, Japan

**Computer 27 3644. Hepatic Fat Quantification for Suspected NAFLD Patients Using 3 Different Methods: HISTO, 3D Multi-Echo GRE DIXON and Invasive Liver Biopsy**  
Wei Wang1, Xiaonong Yao1, Hongmei Yan1, Hua Bian1, Xiaodong Zhong1, Radhouene Neji4, Caixia Fu5, Hui Liu6, Dehe Weng7, Ignacio Vallines8, Mengsu Zeng9  
1Radiology Department, Zhongshan Hospital, Fudan University, Shanghai, China; 2Endocrinology Department, Zhongshan Hospital, Fudan University, Shanghai, China; 3MR collaborations, Siemens Healthcare, Atlanta, GA, United States; 4MR collaborations,
Chemical shift encoding-based water-fat imaging has been emerging for quantifying skeletal muscle fat content. In this study, we present a two-point Dixon method with single species domination assumption for water-fat separation in skeletal muscle, where both fat resonance shift and phase errors can be present.

1Department of Diagnostic and Interventional Radiology, Technische Universität München, Munich, Bayern, Germany; 2Philips Healthcare, Best, Netherlands

Several water/fat separation techniques use graph cuts to resolve the B0 field map prior to water and fat component separation. This approach is demonstrated to be robust to noise and to be able to handle a range of SNR levels. The multi-scale approach was demonstrated to increase the tolerance to noise in the input data.

1Karolinska Institutet, Stockholm, Sweden

Multi-contrast water-fat separation based on the Dixon method is gaining importance in clinical routine. A combination of different echo times and the use of a locally low-rank enforcing reconstruction algorithm promise superior image quality over conventional reconstructions that use single-echo readouts.

1Pattern Recognition Lab, Department of Computer Science, Friedrich-Alexander-Universität Erlangen-Nürnberg, Erlangen, Germany

Water-fat separation is a fundamental technique for accurate diagnosis in many areas of MRI. If a parallel imaging method is used, the fat suppression is improved by encoding the difference of resonant frequency between water and fat. This method is proposed by using the coil sensitivity map and by encoding this difference of resonant frequency.

1Department of Electrical Engineering, Korea Advanced Institute of Science and Technology, Daejeon, Chungcheong, Korea; 2Department of Electrical Engineering, Korea Advanced Institute of Science and Technology, Seoul, South Korea

Despite its superb fat suppression characteristics, Dixon TSE is known to be sensitive to motion artifacts. In this study, we present a two-point Dixon method with flexible echo times where the smoothness of the inhomogeneity is increased by using a Graph Cut algorithm. Robust water/fat separation is achieved in in contrast enhanced dynamic liver imaging at 1.5T.

1Department of Imaging Sciences & Biomedical Engineering, King's College London, London, United Kingdom

Conventional 2-pt Dixon water-fat separation method requires the input source echo images to be close to in-phase (IP) and opposed-phase (OOP) conditions. To overcome this problem, a two-point Dixon method with single species domination assumption is proposed by using the unchanged IP-OOP signal model for water-fat separation. Theoretical analysis is also given.

1Global Applications and Workflow, GE Healthcare, Houston, TX, United States; 2Global Applications and Workflow, GE Healthcare, Shanghai, China

Accurate non-invasive detection and quantification of proton density fat fraction (PDFF) as a marker for liver fat in non-alcoholic fatty liver disease (NAFLD) is of great importance. We propose a two-point Dixon method with single species domination assumption for water-fat separation using the unchanged IP-OOP signal model for water-fat separation. Theoretical analysis is also given.

1Philips Healthcare, Best, Netherlands; 2Philips Healthcare, Waukesha, WI, United States; 3MR Engineering, GE Healthcare, Waukesha, WI, United States

Robust olefinic fat suppression is of great importance in diffusion tensor imaging (DTI) of skeletal muscle. Current methods, however, are not robust to radial undersampling and are not stable over long scan durations. In this work, we demonstrate the reduced motion ghosting and improved image quality of a new method that combines radial stack of stars k-space sampling with dual-echo readout Dixon water-fat separation. This method is robust to radial undersampling, stable over long scan durations, and works for golden angle acquisitions.

1Philips Research Europe, Hamburg, Germany

In this work, we present a two-point Dixon method with flexible echo times where the smoothness of the inhomogeneity is increased by using a Graph Cut algorithm. Robust water/fat separation is achieved in in contrast enhanced dynamic liver imaging at 1.5T.

1Department of Radiology, Leiden University Medical Center, Leiden, Zuid Holland, Netherlands; 2Department of Neurology, Leiden University Medical Center, Leiden, Zuid Holland, Netherlands

Olefinic fat suppression in skeletal muscle DTI with combined 6- and 2-point Dixon

Jedrzej Burakiewicz1, Melissa T. Hooijmans1, Erik H. Nika2, Jan J.G.M. Verschuuren1, Andrew G. Webb1, Hermien E. Kan1

1Department of Radiology, Leiden University Medical Center, Leiden, Zuid Holland, Netherlands; 2Department of Neurology, Leiden University Medical Center, Leiden, Zuid Holland, Netherlands

Robust two-point Dixon water-fat separation using graph cut algorithm

Dong Zhou1, Jianwu Dong2, Pascal Spincemaille1, Ashish Raj1, Yi Wang1

1Weill Cornell Medical College, New York, NY, United States; 2Tsinghua University, Beijing, China

A novel partial averaging approach for reducing motion ghosting in Dixon TSE

Gabriele Beck1, Alan Huang1, Gert van Iperen1, Lars van Loon1, Marko Ivancevic2

1Philips Research Europe, Hamburg, Germany

Dixon imaging with golden angle stack of stars acquisition

Jan Hendrik Wittber1, Mariya Doneva1, Holger Eggers1, Christian Stehning1, Peter Börmert1

1Philips Research Europe, Hamburg, Germany

Dixon fat suppression for off-resonant water imaging of superparamagnetic iron oxide nanoparticles

Dirk Krüger1, Silvia Lorrio González1, René M. Botnar2

1Division of Imaging Sciences & Biomedical Engineering, King's College London, London, United Kingdom

A fast water-fat separation method using multi-echo time encoding and nonlinear least squares estimation

JaeJin Cho1, Changheun Oh2, Kinam Kwon2, HyunWook Park2

1Department of Electrical Engineering, Korea Advanced Institute of Science and Technology, Daejeon, Chungcheong, Korea; 2Department of Electrical Engineering, Korea Advanced Institute of Science and Technology, Daejeon, Chungcheong, Korea

Water-fat separation using a locally low-rank enforcing reconstruction

Felix Lugauer1, Dominik Nickel2, Jens Wetzl3, Berthold Kiefer2, Joachim Hornegger3

1Pattern Recognition Lab, Department of Computer Science, Friedrich-Alexander-Universität Erlangen-Nürnberg, Erlangen, Germany; 2Siemens AG, Healthcare, Imaging & Therapy Systems, Magnetic Resonance, Erlangen, Germany

Multi-scale graph cut algorithm for water-fat separation

Johan Berglund1

1Karolinska Institutet, Stockholm, Sweden

Chemical shift encoding-based water-fat imaging of skeletal muscle in the presence of fat resonance shift and phase errors

Stefan Ruschke1, Holger Eggers2, Hendrik Kooijman1, Pia M. Jungmann1, Axel Haase4, Ernst J. Rummeny1, Thomas Baum1, Dimitrios C. Karampelas1

1Department of Diagnostic and Interventional Radiology, Technische Universität München, Munich, Bayern, Germany; 2Philips Research, Hamburg, Germany; 3Philips Healthcare, Hamburg, Germany; 4Zentralinstitut für Medizintechnik, Technische Universität München, Garching, Bayern, Germany
Electronic Poster

Computer 38 3655. Accelerating Water-Fat Separation for Intragastric Fat Distribution with a Signal Model-Based Dictionary
Dian Liu1, Jelena Curcic1, 2, Andreas Steingößer1, 2, Sebastian Kozerke1
1Institute for Biomedical Engineering, University and ETH Zurich, Zurich, Switzerland; 2Division of Gastroenterology and Hepatology, University Hospital Zurich, Zurich, Switzerland

Computer 39 3656. Fat Water Separation and Field Map Estimation with Multiresolution Region Growing Algorithm
Chuanli Cheng1, 2, Chao Zou1, Hairong Zheng1, Xin Liu1
1Paul C. Lauterbur Biomedical Imaging Research Center, Shenzhen Institutes of Advanced Technology, Chinese Academy of Sciences, Shenzhen, Guangdong, China; 2University of Chinese Academy of Sciences, Beijing, China

Computer 40 3657. Addressing Phase Errors in Quantitative Water-Fat Imaging at 3 T Using a Time-Interleaved Multi-Echo Gradient-Echo Acquisition
Stefan Ruschke1, Holger Eggert1, Hendrik Kooijman1, Thomas Baum1, Marcus Settles1, Axel Haase1, Ernst J. Rummenny1, Dimitrios C. Karampinos1
1Department of Diagnostic and Interventional Radiology, Technische Universität München, Munich, Bayern, Germany; 2Philips Research, Hamburg, Germany; 3Philips Healthcare, Hamburg, Germany; 4Zentralinstitut für Medizintechnik, Technische Universität München, Garching, Bayern, Germany

Computer 41 3658. Time-Domain Calibration of Fat Signal Dephasing from Multi-Echo STEAM Spectroscopy for Multi-Gradient-Echo Imaging Based Fat Quantification
M. Dominik Nickel1, Stephan A.R. Kannengiesser1, Berthold Kiefer1
1MR Applications Development, Siemens Healthcare, Erlangen, Germany

Computer 42 3659. An Efficient Chemical-Shift Encoded Imaging for Liver Fat Quantification
Abraam S. Soliman1, 2, Charles A. McKenzie, 1, 3
1Biomedical Engineering, University of Western Ontario, London, Ontario, Canada; 2Robarts Research Institute, Imaging Research Laboratories, London, Ontario, Canada; 3Medical Biophysics, University of Western Ontario, London, Ontario, Canada

Computer 43 3660. Spectrally-Presaturated Modulation (SPM): An Efficient Fat Suppression Technique for STEAM-Based Cardiac Imaging Sequences
Ahmed Fahmy1, El-Sayed H. Ibrahim1, Nael Osman1
1Cairo University, Cairo, Egypt; 2University of Michigan, Ann Arbor, MI, United States; 3Johns Hopkins University, Baltimore, MD, United States

Computer 44 3661. T1 Corrected Fat Quantification Using a Dual Flip Angle Acquisition and Joint Fit Reconstruction
Xiaoke Wang1, Diego Hernandez2, Scott B. Reeder1
1Biomedical Engineering, University of Wisconsin, Madison, WI, United States; 2Radiology, University of Wisconsin, Madison, WI, United States; 3Medical Physics, University of Wisconsin, Madison, WI, United States

Computer 45 3662. Self-Navigated 3D Whole Heart Coronary MRI with VARPRO Fat-Water Separation
Davide Piccini1, 2, Peter Kellman1, Diego Hernandez2, Simone Coppo2, Gabriele Bonanno2, Matthias Stuber2
1Advanced Clinical Imaging Technology, Siemens Healthcare, Lausanne, Switzerland; 2Department of Radiology, University Hospital (CHUV) and University of Lausanne (UNIL) / Center for Biomedical Imaging (CIBM), Lausanne, Switzerland; 3Laboratory of Cardiac Energetics, National Institutes of Health/NHLBI, Bethesda, MD, United States; 4Department of Radiology, University of Wisconsin-Madison, Madison, WI, United States

Computer 46 3663. Thermal Noise Propagation in Water-Fat Imaging and Fat Fraction Measurement
Weiyi Chen1, Krishna S. Nayak1
1Electrical Engineering, University of Southern California, Los Angeles, CA, United States

Computer 47 3664. Rapid Isotropic Shoulder MRI Using 3D SPACE with Incoherent Undersampling and Iterative Reconstruction
Esther Raithel1, Gaurav Thawari1, Shadpour Demehri1, Shivani Ahlawat1, Heiko Meyer1, Wesley Gilson1, Jan Fritz1
1Healthcare Sector, Siemens AG, Erlangen, Bavaria, Germany; 2Russell H. Morgan Department of Radiology and Radiological Science, Johns Hopkins University School of Medicine, Baltimore, MD, United States; 3Siemens Healthcare USA, Baltimore, MD, United States
Electronic Poster

Motion Correction

Exhibition Hall Tuesday 13:30-14:30

Computer 48 3665. Triglyceride Content and Fatty Acid Composition in Mice: Quantification with 7.0T MRI
Benjamin Leporj1, Simon Auguste Lambert1,2, François Cauchy1,3, Imane Boucenna1, Pierre Colinart1, Maxime Rontol1,2, Valerie Vilgrain1,3, Valérie Paradis1,2, Bernard Edgar Van Beers1,3
1Center of research on inflammation, Paris 7 University; INSERM U1044, Paris, France; 2BHF Centre of Excellence, Division of Imaging Sciences and Biomedical Engineering, King’s College London King’s Health Partners, St. Thomas’ Hospital, London, United Kingdom; 3Department of HPB and liver transplantation, Beaujon University hospital Paris Nord, Clichy, France; 4Matière et systèmes complexes, Paris 7 University; CNRS UMR 7057, Paris, France; 5Department of Radiology, Beaujon University hospital Paris Nord, Clichy, France; 6Department of Pathology, Beaujon University hospital Paris Nord, Clichy, France

Computer 49 3666. Reverse Retrospective Motion Correction
Benjamin Zahniser1, Aditya Sing1, Michael Herbst2, Thomas Ernst1
1Stanford University, Stanford, CA, United States; 2University of Hawaii, HI, United States

Computer 50 3667. Non Rigid-Body Motion Detection Using Single 6-DOF Data from Skin Based Markers for Brain Imaging
Aditya Singh1, Brian Keating1, Benjamin Zahniser1, Michael Herbst1, Thomas Ernst1
1John A. Burns School of Medicine, University of Hawaii, Honolulu, HI, United States

Computer 51 3668. Evaluation of TrackDOTS Potential to Perform Motion Tracking and Dynamic Shimming
José P. Marques1, Daniel Gallichan1
1CIBM, EPFL, Lausanne, Vaud, Switzerland

Computer 52 3669. Camera Placement for Optical Prospective Motion Correction: Mechanical Tolerance Analysis
Julian Maclaren1, Murat Aksoy1, Benjamin Zahniser1, Roland Bammer1
1Department of Radiology, Stanford University, Stanford, CA, United States

Computer 53 3670. Tracking Motion and Resulting Field Fluctuations Using 19F NMR Field Probes
Martin Eschelbach1, Yu-Chun Chang1, Jonas Handwerker2, Jens Anders1, Anke Henning1, Klaus Scheffler1
1High-Field Magnetic Resonance Center, Max Planck Institute for Biological Cybernetics, Tuebingen, BW, Germany; 2Institute of Microelectronics, University of Ulm, Ulm, BW, Germany; 3Institute for Biomedical Engineering, ETH Zürich, Zurich, Switzerland

Computer 54 3671. Motion Estimation from Noise Intrinsic Correlation Between RF Channels (MECHANICS)
Enhao Gong1, Qiyuan Tian1, Jennifer A. McNab2, John Pauly1
1Electrical Engineering, STANFORD UNIVERSITY, Stanford, CA, United States; 2Radiology, STANFORD UNIVERSITY, Stanford, CA, United States

Computer 55 3672. Optimizing a Highly-Accelerated FatNav for High-Resolution Motion-Correction
Daniel Gallichan1, José P. Marques2, Rolf Gruetter1,2
1CIBM, EPFL, Lausanne, Vaud, Switzerland; 2Dept. of Radiology, University of Lausanne, Vaud, Switzerland; 3Depts. of Radiology, Universities of Lausanne and Geneva, Vaud, Switzerland

Computer 56 3673. Quantitative Framework for Prospective Motion Correction Evaluation
Nicolas Pannetier1,2, Theo Starvinsos1, Peter Ng2, Michael Herbst1,4, Maxim Zaitsev1, Karl Young2, Gerald Matson1,2, Norbert Schuff1,2
1Radiology, UCSF, San Francisco, CA, United States; 2VAMC, San Francisco, CA, United States; 3Radiology, JABSOM, Honolulu, HI, United States; 4Radiology, University Medical Center Freiburg, Freiburg, Germany

Computer 57 3674. Motion Navigation Using Non-Linear Gradient Fields
Emre Kopanoglu1, Gigi Galiana1, Robert Todd Constable1
1Diagnostic Radiology, Yale University, New Haven, CT, United States
Electronic Poster

Computer 58 3675. Removal of EPI Ghosts in the Presence of Prospective Motion Correction
Murat Aksoy1, Julian Maclaren1, Eric Peterson1, Roland Bammer1
1Radiology, Stanford University, Stanford, CA, United States

Computer 59 3676. Simultaneous MPRAGE and Non-Contrast MRA with Prospective Motion Correction Using Volumetric Navigators
John W. Grinstead1, Himanshu Bhat2, M. Dylan Tisdall1, Andre van der Kow3, William Rooney4, Gerhard Laub5
1Siemens Healthcare, Portland, USA, United States; 2Siemens Healthcare, USA, United States; 3A.A. Martins Center for Biomedical Imaging, Massachusetts General Hospital, MA, United States; 4Advanced Imaging Research Center, Oregon Health & Science University, Portland, OR, United States

Computer 60 3677. A Novel Profile/View Ordering (NINJA-STAR) for High-Resolution 3D Volumetric T1 Mapping
Sui-Cheng Wang1, 2, Amit R. Patel1, Akiko Tanaka1, Hui Wang3, Xiang Zhu3, Dianwen Zhang3, Takeyoshi Ota1, Roberto M. Lang2, Keigo Kawaji1
1Biomedical Engineering, Northwestern University, Evanston, IL, United States; 2Medicine, Section of Cardiology, The University of Chicago, Chicago, IL, United States; 3Surgery, The University of Chicago, Chicago, IL, United States; 4Philips Medical Systems, Cleveland, OH, United States; 5College of Information and Electrical Engineering, and College of Economics & Management, China Agricultural University, Beijing, China; 6Imaging Technology group, Beckman Institute for Advanced Science and Technology, University of Illinois at Urbana-Champaign, Urbana, IL, United States

Computer 61 3678. MRI of the Moving TMJ Using Contour Fitting in the Correlation Matrix (CaFi-CoMa)
Stefan Wandsch1, 2, Jan Paul1, Johannes Ulrici1, Erich Helt1, Margrit-Ann Geibel1, Volker Rasche1
1Ulm University, Ulm, Baden-Württemberg, Germany; 2Sirona Dental Systems, Bensheim, Hessen, Germany

Computer 62 3679. Estimating Dynamic 3D Abdominal Motion for Radiation Dose Accumulation Mapping Using a PCA-Based Model and 2D Navigators
Bjorn Stemken1, Rob HN Tijssen2, 3, Baudouin Denis de Senneville1, 2, 3, Jan JW Lergendijk1, Cornelis A.T. van den Berg1
1Department of Radiotherapy, UMC Utrecht, Utrecht, Netherlands; 2Image Science Institute, UMC Utrecht, Utrecht, Netherlands; 3IMB, UMR 5251 CNRS/University of Bordeaux, Bordeaux, France

Computer 63 3680. Prospective Respiratory Motion Gating Using a Flexible External Tracking Device
Robin Simpson1, Benjamin Knowles1, Marius Menza1, Michael Herbst1, 2, Cris Lovell-Smith1, Maxim Zaitsev1, Bernd Jung3
1Medical Physics, University Medical Centre, Freiburg, Germany; 2John A. Burns School of Medicine, HI, United States; 3University Hospital of Bern, Switzerland

Computer 64 3681. Motion Detection Improvement of Pencil Beam Navigator Echo with Gradient Reversal Method
Yuji Iwadate1, Kunihiro Miyoshi2, Masanori Ozaki2, Hiroyuki Kabasawa1
1Global MR Applications and Workflow, GE Healthcare Japan, Hino, Tokyo, Japan; 2MR Engineering, GE Healthcare Japan, Tokyo, Japan

Computer 65 3682. Motion Robust Abdominal Imaging with Complementary Poisson-Disc Sampling and Retrospectively Reduced View-Sharing
Evan Levine1, 2, Shreyas Vasanawala1, Brian Hargreaves1, Manojkumar Saranathan1
1Electrical Engineering, Stanford University, Stanford, CA, United States; 2Radiology, Stanford University, Stanford, CA, United States

Computer 66 3683. 5DMRI of Moving Organs
Zarko Celicanin1, Oliver Bieri1
1Radiological Physics, University of Basel Hospital, Basel, Switzerland

Computer 67 3684. Free-Breathing, Self-Navigated RUFIS Lung Imaging with Motion Compensated Image Reconstruction
Anne Menini1, Vladimir Golkov2, 3, Florian Wiesinger1
1DIBT, GE Global Research, Garching b. München, Germany; 2Department of Computer Science, Technical University Munich, Garching b. München, Germany
Electronic Poster

Computer 68 3685. Improved Motion Compensated Reconstruction for 3D Abdominal MRI Using a Self-Navigated Non-Rigid Motion Model
Gastao Cruz1, David Atkinson2, Tobias Schaeffter1, Claudia Prieto1
1Division of Imaging Sciences & Biomedical Engineering, King's College London, London, United Kingdom; 2Centre for Medical Imaging, University College London, London, United Kingdom

Computer 69 3686. Simple Motion Correction Strategy Reduces Respiratory-Induced Motion Artifacts for K-T Accelerated CMR Perfusion Imaging
Wei Huang1, Yang Yang1, Xiao Chen2, Michael Salerno1, 3
1Medicine, University of Virginia, Charlottesville, VA, United States; 2Biomedical Engineering, University of Virginia, Charlottesville, VA, United States; 3Radiology, University of Virginia, Charlottesville, VA, United States

Computer 70 3687. Cylindrical Labeling Inversion Pulse for Reduction of Cardiac/Pulsatile Motion Artifacts in Contrast-Enhanced Breast/Thoracic MRI
Masami Yoneyama1, Masanobu Nakamura1, Makoto Obara1, Tomoyuki Okuaki1, Tetsuo Ogino1, Yuriko Suzuki1, Yuriko Ozawa2, Takashi Tabuchi2, Satoshi Tatsuno2, Ryugi Sashi2, Marc Van Cauteren1
1Philips Electronics Japan, Tokyo, Japan; 2Yaesu Clinic, Tokyo, Japan

Computer 71 3688. A Fast and Novel Groupwise-Non-Rigid Registration Methodology for Freezing Motion in DCE-MRI
KS Shriram1, Dattesh D. Shanbhag2, Sheshadri Thirunavukkarasu1, Venkata Veerendranadh Chebrolu2, Sandeep N. Gupta1, Rakesh Mallick2
1Biomedical Signal Analysis Laboratory, GE Global Research, Bangalore, Karnataka, India; 2Medical Image Analysis Laboratory, GE Global Research, Bangalore, Karnataka, India

Computer 72 3689. Improved Motion Compensated Reconstruction for 3D Abdominal MRI Using a Self-Navigated Non-Rigid Motion Model
Christopher W. Roy1, Mike Seed2, 3, Christopher K. Macgowan1, 3
1Medical Biophysics and Medical Imaging, University of Toronto, Toronto, Ontario, Canada; 2Labatt Family Heart Centre, Division of Cardiology, Department of Paediatrics, The Hospital for Sick Children, Ontario, Canada; 3Diagnostic Imaging, The Hospital for Sick Children, Toronto, Ontario, Canada

Electronic Poster

Quantitative & Model-based Image Reconstruction
Exhibition Hall Tuesday 13:30-14:30

Computer 73 3690. Fast Aortic Input Function Extraction at High Temporal Resolution for DCE-MRI
Umit Yoruk1, 2, Manojkumar Saranathan1, Tao Zhang1, Brian A. Hargreaves1, Shreyas S. Vasanawala1
1Radiology, Stanford University, Stanford, CA, United States; 2Electrical Engineering, Stanford University, Stanford, CA, United States

Computer 74 3691. Improving Temporal Resolution in fMRI Using Low-Rank Plus Sparse Matrix Decomposition
Vimal Singh1, David Ress2, Ahmed Tewfik1
1Electrical Engineering, University of Texas at Austin, Austin, TX, United States; 2Baylor College of Medicine, Houston, TX, United States

Computer 75 3692. A Variational Approach for Coil-Sensitivity Estimation for Undersampled Phase-Sensitive Dynamic MRI Reconstruction
Matthias Schloegl1, Martin Holler2, Kristian Bredies2, Rudolf Stollberger1
1Institute of Medical Engineering, Graz University of Technology, Graz, Styria, Austria; 2Department of Mathematics and Scientific Computing, University of Graz, Graz, Styria, Austria

Computer 76 3693. Real Time Phase Contrast MRI with Radial K-Space Sampling with Golden Angle Ratio and Block Wise Low-Rank Constraint
Hassan Haji-Valizadeh1, Elwin Bassett2, Ganesh Adluru3, Edward DiBella4, Daniel Kim4
1Philips Electronics Japan, Tokyo, Japan; 2Yaesu Clinic, Tokyo, Japan; 3Diagnostic Imaging, The Hospital for Sick Children, Toronto, Ontario, Canada; 4Diagnostic Imaging, The Hospital for Sick Children, Toronto, Ontario, Canada
Electronic Poster

Computer 77 3694. 
Simultaneous Quantification of Intravascular Blood $T_1$ and $T_2$ with Multiple-Readout TRUST (MTRUST)
Zachary B. Rodgers¹, Felix W. Wehrli⁶
¹Radiology, University of Utah, Salt Lake City, UT, United States

Computer 78 3695. 
Compressed Sensing Reconstruction of Prospectively Under-Sampled Cardiac Diffusion Tensor MRI
Darryl McClymont¹, Irvin Teh¹, Hannah Whittington¹, Jurgen Schneider⁷
¹University of Oxford, Oxford, Oxfordshire, United Kingdom

Computer 79 3696. 
Quantitative $^{19}$F MR Molecular Imaging with B₁-Mapping Compensation
Matthew Goette¹, Shelton Caruthers², Greg Lanza², Samuel Wickline¹
¹Cardiology, Washington University in St. Louis, St. Louis, MO, United States; ²Pediatric Radiology, Texas Children's Hospital, Houston, TX, United States

Computer 80 3697. 
$^{19}$F MRI Quantification Using B₁ Correction
Ina Vernikouskaya¹, Alexander Pochert², Volker Rasche³
¹Internal Medicine II, University Hospital of Ulm, Ulm, Baden-Württemberg, Germany; ²Inorganic Chemistry II, University of Ulm, Ulm, Baden-Württemberg, Germany

Computer 81 3698. 
Spline Temporal Basis for Improved Pharmacokinetic Parameter Estimation in SENSE DCE-MRI
Mai Le², Jeffrey A. Fessler¹
¹University of Michigan, Ann Arbor, MI, United States

Computer 82 3699. 
PRAIRIE: Accelerating MR Parameter Mapping Using Kernel-Based Manifold Learning and Pre-Imaging
Yihang Zhou¹, Yao Shi¹, Yanhua Wang¹, Jingyuan Lyu¹, Leslie Ying¹
¹Department of Electrical Engineering, State University of New York at Buffalo, Buffalo, NY, United States; ²Department of Biomedical Engineering, State University of New York at Buffalo, Buffalo, NY, United States

Computer 83 3700. 
In Vivo Pulse Sequence Design for Acceleration of T2 Mapping Using Compressed Sensing with Patch-Based Low-Rank Penalty
Dongwook Lee¹, Sanghong Park¹, Chuan Huang², Eung Yeop Kim³, Jong Chul Ye¹
¹KAIST, Daejeon, Korea; ²Harvard Medical School, Boston, United States; ³Department of Radiology, Gachon University Gil Hospital, Incheon, Korea

Computer 84 3701. 
Automatic Tissue Decomposition Using Nonnegative Matrix Factorization for Noisy MR Magnitude Images
Daewoon Kim¹, Joong Hee Kim², Justin P. Haldar³
¹Department of Electrical Engineering, University of Southern California, Los Angeles, CA, United States; ²Department of Neurology, Washington University, St. Louis, MO, United States

Computer 85 3702. 
Model-Based Compressed Sensing Method Using Weighted Data Consistency Coefficient
Jinseong Jang¹, Taejoon Eo¹, Dosik Hwang³
¹Electrical and Electronic Engineering, Yonsei University, Seoul, Korea

Computer 86 3703. 
Fast Non-Local Means Reconstruction for Multi-Contrast Compressed Sensing
Kourosh Jafari-Khouzani¹, Berkin Bilgic¹, Jayashree Kalpathy-Cramer¹, Kavin Setsompop¹
¹Athinoula A. Martinos Center for Biomedical Imaging, Massachusetts General Hospital, Charlestown, MA, United States

Computer 87 3704. 
A Fast Look-Locker Imaging Technique for Quantitative Tissue Oximetry
Rohini Vidya Shankar¹, Vikram D. Kodibagkar²
¹Biomedical Engineering, Arizona State University, Tempe, AZ, United States
The Comprehensive Contrast-Enhanced Neuro Exam

R. Marc Lebel, Yi Guo, Yinghua Zhu, Sajam Goud Lingala, Richard Frayne, Linda B. Andersen, Jacob Easaw, Krishna S. Nayak
1 GE Healthcare, Calgary, Alberta, Canada; 2 Radiology, University of Calgary, Calgary, Alberta, Canada; 3 Electrical Engineering, University of Southern California, Los Angeles, CA, United States; 4 Oncology, University of Calgary, Calgary, Alberta, Canada

Direct Parametric Reconstruction from (K, T)-Space Data in Dynamic Contrast Enhanced MRI

Nikolaos Dikaios, Shoniit Punwani, David Aitkson
1 Centre of Medical Imaging, UCL, London, United Kingdom; 2 Centre of Medical Imaging, UCL, Greater London, United Kingdom

Multi-Contrast Reconstruction Using Neural Network for Higher Acceleration

Kinam Kwon, Dongchun Kim, Hyunseok Seo, Jaejin Cho, Hyunwook Park
1 KAIST, Guseong-dong, Daejeon, Korea

Multi-Contrast, Parametric and Artifact-Free Images Reconstructed from Gradient-Echo and Spin-Echo (GRASE) Imaging Data Using Projection Onto Convex Sets Based Multiplexed Sensitivity Encoding (POCSMUSE)

Mei-Lan Chu, Hing-Chiu Chang, Koichi Oshio, Nan-kuei Chen
1 Brain Imaging and Analysis Center, Duke University Medical Center, Durham, NC, United States; 2 Graduate Institute of Biomedical Electronics and Bioinformatics, National Taiwan University, Taipei, Taiwan; 3 Department of Diagnostic Radiology, Keio University School of Medicine, Japan

A Fast Reconstruction Algorithm for Accelerated Multi-Contrast MRI

Ithi Chatnuntawech, Berkin Bilgic, Adrian Martin, Kawin Setsompop, Elfar Adalsteinsson
1 MIT, Cambridge, MA, United States; 2 A. A. Martinos Center for Biomedical Imaging, MA, United States; 3 Universidad Rey Juan Carlos, Mostoles, Madrid, Spain; 4 Harvard Medical School, MA, United States; 5 Harvard-MIT Health Sciences and Technology, MA, United States

Accelerated MR Parameter Mapping Using Robust Model-Consistency Reconstruction

Alexey Samsonov
1 University of Wisconsin, Madison, WI, United States

Spin Tomography in Time Domain: The MR-STAT Project

Alessandro Shrizzi, Annette van der Toorn, Hans Hoogdlin, Peter R. Luijten, Cornelis A. van den Berg
1 UMC Utrecht, Utrecht, Netherlands

High Resolution T1 Mapping Within Seconds: Model-Based Reconstruction Without Regularization

Volkert Roeloffs, Xiaoping Wang, Tilman Sumpf, Jens Frahm
1 Biomedizinische NMR Forschungs GmbH, Max Planck Institute for Biophysical Chemistry, Göttingen, Niedersachsen, Germany

Electronic Poster

Artifacts & Correction I

Exhibition Hall Tuesday 14:30-15:30

Phantom Study for Boundary Artifact Reduction in MREPT

Sungmin Cho, Joonsung Lee, Jaewook Shin, Min-Oh Kim, Dong-Hyun Kim
1 Yonsei University, SeodaemunGu, Seoul, Korea; 2 Severance Hospital, Seoul, Korea
Computer 2 3715. **Eliminating Image Shading in 3D FSE with Hybrid RF**  
Moran Wei, Weiwei Zhang, Yongchuan Lai, Bing Wu  
¹GE Healthcare, Beijing, China

Computer 3 3716. **Cardiac Susceptibility Bite Mark Artifact: Resolving the Conflict**  
Candice A. Bookwalter, Samir D. Sharma, Scott B. Reeder  
¹Department of Radiology, University of Wisconsin-Madison, Madison, WI, United States; ²Department of Medical Physics, University of Wisconsin-Madison, Madison, WI, United States

Computer 4 3717. **A Novel Method of Correcting Off-Center Errors for Radial Acquisition with Arbitrary Angle.**  
Ming Yang, Haikun Qi, Shuo Zhang, Guang Qiang Geng, Chen Guang Zhao, Huijun Chen, Feng Huang  
¹Philips Healthcare, Suzhou, Jiangsu, China; ²Center for Biomedical Imaging Research, Tsinghua University, Beijing, China; ³Philips Healthcare, Singapore, Singapore; ⁴Philips Healthcare, Suzhou, Jiangsu, China

Computer 5 3718. **Designing a Hyperbolic Secant Excitation Pulse to Reduce Signal Dropout in 2D Gradient Echo Imaging at 7T**  
Stephen James Watstling, Mark Symms, Mauro Costagli, Laura Biagi, Mirco Cosotti, Gareth John Barker, Michela Tosetti  
¹Department of Neuroimaging, King's College London, London, United Kingdom; ²GE Healthcare, Pisa, Italy; ³Imago7, Pisa, Italy; ⁴IRCCS Stella Maris, Pisa, Italy; ⁵Department of Translational Research and New Technologies in Medicine and Surgery, University of Pisa, Pisa, Italy

Computer 6 3719. **Non-Cartesian MR Image Reconstruction with Integrated Gradient Nonlinearity and Off Resonance Correction**  
Shengzhen Tao, Joshua D. Trzasko, Yunhong Shu, John Huston III, Paul T. Weavers, Matt A. Bernstein  
¹Radiology, Mayo Clinic, Rochester, MN, United States

Computer 7 3720. **Partial Fourier Homodyne Reconstruction with Non-Iterative, Integrated Gradient Nonlinearity Correction**  
Shengzhen Tao, Joshua D. Trzasko, Paul T. Weavers, Yunhong Shu, John Huston III, Matt A. Bernstein  
¹Radiology, Mayo Clinic, Rochester, MN, United States

Computer 8 3721. **Adaptive Averaging of Non-Identical Image Series in the Wavelet Space**  
Henrik Marschner, André Pampel, Harald E. Möller  
¹Nuclear Magnetic Resonance, Max Planck Institute for Human Cognitive and Brain Sciences, Leipzig, Sachsen, Germany

Computer 9 3722. **Real-Time Concomitant Gradient Field Correction.**  
Kevin Perkins, Reeve Ingle, Juan Santos, Galen Reed, Ken Johnson, William Overall  
¹BYU, Provo, UT, United States; ²HeartVista, Menlo Park, Ca, United States

Computer 10 3723. **Effective Removal of Aliasing Artifacts in Interleaved Diffusion Weighted EPI Using Integrated 2D Nyquist Correction and Multiplexed Sensitivity Encoded Reconstruction**  
Hing-Chiu Chang, Nan-Kuei Chen  
¹Brain Imaging and Analysis Center, Duke University Medical Center, Durham, NC, United States

Computer 11 3724. **A Generic Referenceless Phase Combination (GRPC) Method: Application at High and Ultra-High Fields**  
Francesco Santin, Carl Ganter, Philipp Ehses, Klaus Scheffler, Oliver Bieri  
¹Radiological Physics, University of Basel Hospital, Basel, Switzerland; ²Department of Diagnostic Radiology, Klinikum rechts der Isar, Munich, Germany; ³Max Planck Institute for Biological Cybernetics, Tübingen, Germany

Computer 12 3725. **Automatic Identification of Motion in Multishot MRI Using Convolutional Neural Networks**  
Shayan Guhaniyogi, Mei-Lan Chu, Nan-Kuei Chen  
¹Brain Imaging and Analysis Center, Duke University, Durham, NC, United States
Electronic Poster

Computer 13 3726. An Efficient MR Inhomogeneity Corrector Using Regularized Entropy Minimization
Bo Zhang1, Hans Peeters1, Ad Moerland1, Helene Langel1, Niccolo Stefan1
1Philips Research, Suresnes, France; 2Philips Healthcare, Netherlands; 3Philips Healthcare, OH, United States

Computer 14 3727. A Regularly Structured 3D Printed Grid Phantom for Quantification of MRI Image Distortion
Maysam Mahmood Jafar1, Christopher Dear1, Malcolm J. Birch1, Marc E. Miquel1
1Medical Physics, Barts Health NHS Trust, London, United Kingdom; 2Radiotherapy, Barts Health NHS Trust, London, United Kingdom

Computer 15 3728. Noise-Compensated Bias Correction of MRI Via a Stochastically Fully-Connected Conditional Random Field Model
Ameneh Boroomand1, Mohammad Javad Shafiee1, Alexander Wong1, Farzad Khalvati2, Paul Fieguth1, Masoom Haider1
1System Design Engineering, University of Waterloo, Waterloo, Ontario, Canada; 2Medical Imaging, University of Toronto, Toronto, Ontario, Canada; 3Sunnybrook Health Sciences Centre, Toronto, Ontario, Canada

Computer 16 3729. Combination of Integrated Slice-Specific Dynamic Shimming and Pixel-Wise Unwarping of Residual EPI Distortions
Alto Stemmer1, Berthold Kiefer1
1Healthcare, Siemens AG, Erlangen, Germany

Computer 17 3730. Reduced Eddy Current Induced Artifact in 7T Single Shot Diffusion Weighted Echo Planar Imaging
Se-Hong Oh1, Mark J Lowe1
1Imaging Institute, Cleveland Clinic Foundation, Cleveland, OH, United States

Computer 18 3731. Spatio-Temporal Artifact Correction of Multi-Dimensional Spectroscopic Imaging Data
Brian Burns1, Neil Wilson2, M. Albert Thomas3
1Department of Bioengineering, UCLA, Los Angeles, CA, United States; 2Medical Physics, IDP, UCLA, Los Angeles, CA, United States; 3Department of Radiology, UCLA, Los Angeles, CA, United States

Computer 19 3732. Compressed Sensing Reconstruction with Higher-Order Off-Resonance Correction Using the Cross-Sampling and the Time-Segmented Method
Daiki Tamada1, Katsumi Kose1
1Institute of Applied Physics, University of Tsukuba, Tsukuba, Ibaraki, Japan

Computer 20 3733. Title: A Fast Algorithm to Correct Excitation Profile in Zero Echo Time (ZTE) Imaging
Cheng Li1, Jeremy F. Magland1, Alan C. Seifert1, Felix W. Wehrli1
1Laboratory for Structural NMR Imaging, Department of Radiology, University of Pennsylvania, Philadelphia, PA, United States

Computer 21 3734. Regularized Inversion of Metallic Implant Susceptibility from B0 Field Maps
Xinwei Shi1, Daehyun Yoon1, Kevin Koch1, Brian Hargreaves2
1Electrical Engineering, Stanford University, Stanford, CA, United States; 2Radiology, Stanford University, CA, United States; 3Radiology, Medical College of Wisconsin, WI, United States

Computer 22 3735. Phantom-Based Iterative Estimation of MRI Gradient Nonlinearity
Joshua Trzasko1, Shengzhen Tao1, Jeffrey Gunter1, Yunhong Shu1, John Huston III1, Matt Bernstein1
1Mayo Clinic, Rochester, MN, United States

Computer 23 3736. Gradient Unwarping for Phase Imaging Reconstruction
Paul Polak1, Robert Zivadinov1,2, Ferdinand Schweser1,2
1Department of Neurology, Buffalo Neuroimaging Analysis Center, State University of New York at Buffalo, Buffalo, NY, United States; 2Molecular and Translational Imaging Center, MRI Center, Clinical and Translational Research Center, Buffalo, NY, United States
**Electronic Poster**

**Image Processing & Segmentation**

**Exhibition Hall**

**Tuesday 14:30-15:30**

Computer 24  3737.  **Advanced Intrinsic Correction of System Delays for Radial Trajectories**  
*Martin Krämer1, Jürgen R. Reichenbach1*  
1Medical Physics Group, Institute of Diagnostic and Interventional Radiology, Jena University Hospital - Friedrich Schiller University, Jena, Germany

Computer 25  3738.  **Whitening of Colored Noise in PROPELLER Using Iterative Regularized PICO Reconstruction**  
*Jyh-Min Lin1, Andrew Patterson2, Hing-Chiu Chang3, Tzu-Chao Chuang3, Hsiao-Wen Chung3, Jonathan H. Gillard1, Martin J. Graves2*  
1Department of Radiology, University of Cambridge, Cambridge, Cambridgeshire, United Kingdom; 2Cambridge University Hospitals NHS Foundation Trust, Cambridge, United Kingdom; 3Brain Imaging and Analysis Center, Duke University Medical Center, NC, United States; 4Department of Electrical Engineering, National Sun Yat-sen University, Kaohsiung, Taiwan, Taiwan; 5Department of Electrical Engineering, National Taiwan University, Taiwan, Taiwan

Computer 26  3739.  **Improved Contrast-To-Noise Levels for MS Lesion Detection on CSF-Suppressed Heavily T2-Weighted Imaging**  
*Vanessa Wiggermann1, 2, Enedino Hernández Torres1, 2, Anthony Traboulsee1, 2, David K.B. Li2, 4, Alexander Rauscher2, 3*  
1The University of British Columbia, Vancouver, BC, Canada; 2Radiology, University of British Columbia, Vancouver, BC, Canada; 3UBC MRI Research Centre, Vancouver, BC, Canada; 4Medicine (Neurology), University of British Columbia, Vancouver, BC, Canada

Computer 27  3740.  **Cerebral Glioma Grading Using Bayesian Network with Features Extracted from Multi-Modality MRI**  
*Jisu Hu1, Wenbo Wu2, Bin Zhu3, Huiting Wang4, Renyuan Liu5, Xi Zhang6, Ming Li7, Yongbo Yang8, Jing Yan9, Fengnan Niu9, Chuanshuai Tian10, Kun Wang11, Haiping Yu12, Weibo Chen12, Suiwen Wang13, Yu Sun14, Bing Zhang15, Junru Rauscher16*  
1The Laboratory for Medical Electronics, School of Biological Sciences and Medical Engineering, Southeast University, Nanjing, China; 2Department of Radiology, The Affiliated Drum Tower Hospital of Nanjing University Medical School, Nanjing, China; 3Department of Neurosurgery, The Affiliated Drum Tower Hospital of Nanjing University Medical School, Nanjing, China; 4Department of Oncology, The Affiliated Drum Tower Hospital of Nanjing University Medical School, Nanjing, China; 5Department of Pathology, The Affiliated Drum Tower Hospital of Nanjing University Medical School, Nanjing, China; 6Philips Healthcare, Shanghai, China

Computer 28  3741.  **Improving the Spatial Resolution and SNR of Rat Brain T2-Weighted MR Images: Application of a Super-Resolution Method**  
*Eric Van Reeth1, Michael Sdika1, Sophie Guillard1, Pierre-Hervé Luppi2, Paul-Antoine Liboiron2, Olivier Beuy1*  
1Université de Lyon, CREATIS; CNRS UMR5220; Inserm U1044; INSIA-Lyon; Université Lyon 1, Villeurbanne, Rhone, France; 2Centre de Recherche en Neurosciences de Lyon; Inserm U1028 - CNRS UMR5292, Lyon, Rhone, France

Computer 29  3742.  **Support Vector Regression Based Denoising for MRI Image**  
*Di Zhao1*  
1The Dorothy M. Davis Heart & Lung Research Institute, The Ohio State University, Columbus, OH, United States

Computer 30  3743.  **NICePype: A Web-Based Pipeline Manager for Processing Neuroimaging Data Based on Nipype**  
*Dirk K. Müller1, René Küttner2, Ralf Hannig2, Thomas Frank3, Juliane Müller3, Michael Marxen3*  
1Department of Psychiatry and Neuroimaging Center, Technische Universität Dresden, Dresden, 01187, Germany

Computer 31  3744.  **Challenges of 3D Printing from MRI Data: Our Experience with a Kidney Tumor Model**  
*Nicole Wake1, 2, William Huang2, Todd Pietilä2, Hersh Chandarana2*  
1The Center for Advanced Imaging Innovation and Research (CAI2R), Department of Radiology, New York University School of Medicine, New York, United States; 2The Sackler Institute of Graduate Biomedical Sciences, New York University School of Medicine, New York, United States; 3Department of Urology, New York University School of Medicine, New York, United States; 4Materialise USA, Plymouth, MI, United States

Computer 32  3745.  **Super-Resolved Enhancing and Edge Deghosting for Spatiotemporally Encoded Single-Shot MRI**  
*Lin Chen1, Shuhui Cai1, Congbo Cai2, Zhong Chen1*
Computer 33 3746. A Fast Patch-Based Approach for Pseudo-CT Generation from MRI T1-Weighted Images: A Potential Solution for PET/MR Attenuation Correction
Angel Torrado-Carvajal¹, ², Eduardo Alcain³, Joaquín L. Herráiz², ⁴, Antonio S. Montemayor⁵, Juan A. Hernandez-Tamames¹, ², Elías Ádalssteinsson⁶, ⁸, Larry L. Wald, ⁹, Norberto Malpica¹, ²
¹Medical Image Analysis and Biometry Lab, Universidad Rey Juan Carlos, Mostoles, Madrid, Spain; ²Madrid-MIT M+Vision Consortium, Madrid, Spain; ³Dept. of Computer Science, Universidad Rey Juan Carlos, Mostoles, Madrid, Spain; ⁴Research Laboratory of Electronics, Massachusetts Institute of Technology, Cambridge, MA, United States; ⁵Dept. of Electrical Engineering and Computer Science, Massachusetts Institute of Technology, Cambridge, MA, United States; ⁶Harvard-MIT Health Sciences and Technology, Massachusetts Institute of Technology, Cambridge, MA, United States; ⁷Martinos Center for Biomedical Imaging, Dept. of Radiology, MGH, Charlestown, MA, United States

Computer 34 3747. THOMAS: Thalamus Optimized Multi-Atlas Segmentation
Jason Su¹, ², Thomas Tourdias¹, Manojkumar Saranathan⁷, Brian K. Rutt²
¹Electrical Engineering, Stanford University, Stanford, CA, United States; ²Radiology, Stanford University, Stanford, CA, United States; ³Neuroradiology, Bordeaux University Hospital, Bordeaux, France

Computer 35 3748. Prostate DWI Co-Registration Via Maximization of Hybrid Statistical Likelihood and Cross-Correlation for Improved ADC and Computed Ultra-High B-Value DWI Calculation
Daniel S. Cho¹, Farzad Khalvati², Alexander Wong¹, David A. Clausi¹, Masoom Haider²
¹Systems Design Engineering, University of Waterloo, Waterloo, Ontario, Canada; ²University of Toronto, Ontario, Canada

Computer 36 3749. Model the Single-Venule fMRI Signal at the Millisecond Scale
Yi He¹, ², Kuo Zhang³, Xin Yu¹, ²
¹Research Group of Translational Neuroimaging and Neural Control, High-Field Magnetic Resonance, Max Planck Institute for Biological Cybernetics, Tuebingen, Baden-Württemberg, Germany; ²Graduate School of Neural Information Processing, University of Tuebingen, Tuebingen, Baden-Württemberg, Germany; ³Department of Empirical Inference, Max Planck Institute of Intelligent System, Tuebingen, Germany

Computer 37 3750. Automatic Computation of Normalized Brain Volume on 3D T1-Weighted MRI Scans Without Registration to Standard Space
Elizabeth Wicks¹, Jason P.C. Chiu¹, Lisa Y.W. Tang¹, ², Kevin Lam¹, Andrew Riddehough¹, David K.B. Li¹, ², Anthony Traboulsee¹, Roger Tam¹, ²
¹MS/MRI Research Group, Division of Neurology, University of British Columbia, Vancouver, BC, Canada; ²Dept. of Radiology, University of British Columbia, BC, Canada

Computer 38 3751. An Automatic Classifier Based on Local Fractal Features for the Identification of Cortical Malformations
Alberto De Luca¹, ², Denis Peruzzo³, Fabio Triulzi³, Filippo Arrigoni³, Alessandra Bertoldi¹
¹Department of Information Engineering, University of Padova, Padova, PD, Italy; ²Department of Neuroimaging, Scientific Institute, IRCCS "Eugenio Medea", Bosisio Parini, LC, Italy; ³Department of Neuroimaging, Scientific Institute, IRCCS "Eugenio Medea", Bosisio Parini, LC, Italy; ⁴Neuroradiology department, Scientific Institute, IRCCS "Ca' Granda" - Ospedale Maggiore Policlinico, Milan, MI, Italy

Computer 39 3752. Comparison of ³He MRI and CT Image-Based Ventilation Using Deformable Image Registration
Bilal A. Tahir¹, ², Helen Marshall¹, Matthew Q. Hatton¹, Jim M. Wild¹, Rob H. Ireland¹, ²
¹Academic Unit of Clinical Oncology, University of Sheffield, Sheffield, South Yorkshire, United Kingdom; ²Academic Unit of Academic Radiology, University of Sheffield, Sheffield, South Yorkshire, United Kingdom

Computer 40 3753. Improving T₂* Mapping Accuracy by Spatially Adaptive Non Local Means Noise Filtering
Till Huelnhagen¹, Andreas Pohlmann¹, Thoralf Niendorf²
¹Berlin Ultrahigh Field Facility (B.U.F.F.), Max-Delbrueck Center for Molecular Medicine (MDC), Berlin, Germany; ²Experimental and Clinical Research Center, a joint cooperation between the Charite Medical Faculty and the Max-Delbrueck Center, Berlin, Germany

¹Department of Electronic Science, Xiamen University, Xiamen, Fujian, China; ²Department of Communication Engineering, Xiamen University, Xiamen, Fujian, China

Electronic Poster
Computer 44 3757. **Imiomics: Bringing –omics to Whole Body Imaging: Examples in Cross Sectional Interaction Between Whole-Body MRI and Non-Imaging Data**
Joel Kulberg1, Lars Johansson1, Lars Lind2, Håkan Ahlström1, Robin Strand1
1Radiology, Uppsala University, Uppsala, Sweden; 2Medical Sciences, Uppsala University, Uppsala, Sweden

Computer 45 3758. **Creating 3D Heart Models of Children with Congenital Heart Disease Using Magnetic Resonance Imaging**
Danielle F. Pace1, Polina Golland1, David Anness2, Tai Geva3, Andrew J. Powell3, Mehdi H. Moghari2, 3
1Computer Science and Artificial Intelligence Laboratory, Massachusetts Institute of Technology, Cambridge, MA, United States; 2Department of Cardiology, Boston Children's Hospital, Boston, MA, United States; 3Department of Pediatrics, Harvard Medical School, Boston, MA, United States

Computer 46 3759. **Venous Segmentation Using Gaussian Mixture Models and Markov Random Fields**
Phillip G. D. Ward1, 2, Nicholas J. Ferris2, 3, Amanda C. L. Ng4, 5, David G. Barnes1, 2, David L. Dowe1, Gary F. Egan2, 6, Parnesh Raniga1
1Clayton School of Information Technology, Monash University, Clayton, Victoria, Australia; 2Monash Biomedical Imaging, Monash University, Clayton, Victoria, Australia; 3Monash Imaging, Monash Health, Clayton, Victoria, Australia; 4Monash Imaging, Monash Health, Clayton, Victoria, Australia; 5Department of Anatomy and Neuroscience, The University of Melbourne, Parkville, Victoria, Australia; 6Monash eResearch Centre, Monash University, Victoria, Australia; 7School of Psychology and Psychiatry, Monash University, Victoria, Australia

Computer 47 3760. **Consistency of Commonly Applied Vessel Segmentation Methods for Magnetic Resonance Venography**
Phillip G. D. Ward1, 2, Parnesh Raniga1, Nicholas J. Ferris2, 3, Amanda C. L. Ng4, 5, David G. Barnes1, 2, David L. Dowe1, Elsdon Storey6, Robyn L. Woods2, Gary F. Egan2, 5
1Clayton School of Information Technology, Monash University, Clayton, Victoria, Australia; 2Monash Biomedical Imaging, Monash University, Clayton, Victoria, Australia; 3Monash Imaging, Monash Health, Clayton, Victoria, Australia; 4Monash Imaging, Monash Health, Clayton, Victoria, Australia; 5Department of Anatomy and Neuroscience, The University of Melbourne, Parkville, Victoria, Australia; 6Monash eResearch Centre, Monash University, Victoria, Australia; 7Department of Medicine, Monash University, Victoria, Australia; 8Department of Epidemiology & Preventive Medicine, Monash University, Melbourne, Australia; 9School of Psychology and Psychiatry, Monash University, Victoria, Australia

Computer 48 3761. **Consistency of Intensity-Based Density Value Assignment for Bone Voxels for MR-Only Simulation in Radiation Therapy Planning**
Michael Helle1, Nicole Schadewaldt1, Heinrich Schulz1, Marloes Frantzen-Stenecker2, Christian Stehning1, Uulke van der Heide1, Steffen Renisch1
1Philips Research, Hamburg, Germany; 2Department of Radiation Oncology, The Netherlands Cancer Institute, Amsterdam, Netherlands
Electronic Poster

**Artifacts & Correction II**

Exhibition Hall  Tuesday 14:30-15:30

**Computer 49  3762.** Improved Spoiling Efficiency in Dynamic RF-Spoiled Imaging by Ghost Phase Modulation and Temporal Filtering  
**Jon-Fredrik Nielsen**¹, Øystein C. Noll¹
²Biomedical Engineering, University of Michigan, Ann Arbor, MI, United States

**Computer 50  3763.** RF Amplifier Nonlinearity Correction for Multiband RF Pulses  
**Kangrong Zhu**¹, Robert F. Dougherty², Matthew J. Middione³, Hua Wu², Greig Scott¹, John M. Pauly¹, Adam B. Kerr¹
¹Biomedical Engineering, Stanford University, Stanford, CA, United States; ²Center for Cognitive and Neurobiological Imaging, Stanford University, Stanford, CA, United States; ³Applied Sciences Laboratory West, GE Healthcare, Menlo Park, CA, United States

**Computer 51  3764.** Highly Dynamic K₁-Points to Minimize the B₁⁺ Inhomogeneity Effects in T₁-Weighted Imaging at 7T  
**Florent Eggenschwiler**¹, Kieran R. O'Brien², Daniel Gallichan¹, Rolf Gruetter¹,², Jose P. Marques³
¹Laboratory for Functional and Metabolic Imaging, Ecole Polytechnique Fédérale de Lausanne, Lausanne, Vaud, Switzerland; ²Department of Radiology, University of Geneva, Geneva, Switzerland; ³Department of Radiology, University of Lausanne, Lausanne, Vaud, Switzerland

**Computer 52  3765.** B₁ Correction in SPatiotemporal ENcoding (SPEN) MRI  
**Rita Schmidt**¹, Jean-Noel Hyacinthe², Andrea Capozzi², Nikolaus Kunt², Rolf Gruetter², ³, Arnaud Comment¹, Lucio Frydman¹, Mor Mishkovsky²
¹Chemical Physics, Weizmann Institute of Science, Rehovot, Israel; ²School of health, University of Applied Sciences and Arts Western Switzerland, Geneva, Switzerland; ³Institute of the Physics of Biological Systems, Ecole Polytechnique Fédérale de Lausanne (EPFL), Lausanne, Switzerland; ⁴Center of biomedical imaging (CIBM), Ecole Polytechnique Fédérale de Lausanne (EPFL), Lausanne, Switzerland; ⁵Laboratory of Functional and Metabolic Imaging, Ecole Polytechnique Fédérale de Lausanne (EPFL), Lausanne, Switzerland; ⁶Laboratory of Functional and Metabolic Imaging, Ecole Polytechnique Fédérale de Lausanne (EPFL), Lausanne, Switzerland

**Computer 53  3766.** Correction of Macroscopic Field Inhomogeneities in 3D Quantitative Gre Imaging Based on Nonlinear Phase Model and SNR Mapping  
**Chemseddine Fatnassi**¹,², Rachid Boucenna¹, Michael Betz¹, Habib Zaidi¹
¹Radio-oncology, Hirslanden Lausanne, Lausanne, vaud, Switzerland; ²Faculty of biology and Medicine, UNIL, Lausanne, vaud, Switzerland; ³Division of Nuclear Medicine and Molecular Imaging, Geneva University Hospital, Geneva, Switzerland

**Computer 54  3767.** B₀ Map Reconstruction Via Exploiting Active Shimming Information and Its Application on Distortion Correction for EPI  
**Kun Zhou**¹, Wei Liu¹, Nan Xiao¹
¹Siemens Shenzhen Magnetic Resonance Ltd., Shenzhen, Guangdong, China

**Computer 55  3768.** Variable Flip Angle Design for Balanced SSFP Transient State Imaging to Improve HP ¹³C MRI  
**Hong Shang**¹, ², Peder E.Z. Larson¹, ², Galen Reed¹, Eugene Mishieyn¹,², Cornelius von Morze³, Frank Ong³, Jeremy W. Gordon¹, Jonathan I. Tamin⁴, Daniel B. Vigneron¹
¹Radiology and Biomedical Imaging, UCSF, San Francisco, CA, United States; ²UCSF-UC Berkeley Graduate Program in Bioengineering, San Francisco/Berkeley, CA, United States; ³HeartVista, Menlo Park, CA, United States; ⁴Electrical Engineering and Computer Science, UC Berkeley, Berkeley, CA, United States

**Computer 56  3769.** An Optimized Region Growing Algorithm for Phase Correction in MRI  
**Jong Bum Son**¹, John Hazle¹, Jingfei Ma¹
¹Imaging Physics, The University of Texas MD Anderson Cancer Center, Houston, TX, United States

**Computer 57  3770.** Dynamic Distortion Correction with Standard Single-Echo EPI: Development of the Method for Multi-Channel Coils at 7T and Accuracy in the Presence of Substantial Motion  
**Barbara Dymerska**¹, Benedikt Poser², Markus Barth², Siegfried Trattnig², Simon Daniel Robinson¹
¹Imaging Physics, The University of Texas MD Anderson Cancer Center, Houston, TX, United States; ²Center for Cognitive and Neurobiological Imaging, Stanford University, Stanford, CA, United States; ³Applied Sciences Laboratory West, GE Healthcare, Menlo Park, CA, United States
FSE cusp artifacts are caused by collective effects of the gradient non-linearity and B0 inhomogeneity in regions to reduce total RF bandwith and overall SAR with two-stage saturation: frequency saturation and special saturation.

When acquired spoiled gradient echo images at flip angles significantly larger than the Ernst angel, the transition to steady state compared to using a constant gradient with RF spoiling.

Gibbs-ringing originates from the convolution of sharp edges in an object with the point-spread function, which is the proposed significantly better removes the artifact, while it introduces less smoothing and preserves the edges.

The spatial encoding gradient field used in MRI always includes spatially-varying higher order fields known as only asymmetric gradient system, and provide closed-form mathematical expressions for determining pre-emphasis factors.

This study investigated a fat-related artifact that occurs when spectral-fat saturation is used with spin-echo EPI. The mechanisms causing this artifact, water excitation is recommended for acquiring fat-free images with spin-echo EPI.

In numerical simulations, artifacts were reduced to 33% in RMSE without temporal blurring. In volunteer scanning, artifacts were suppressed without image degradation.

MR signal stability in brain, and thus image quality, is significantly affected by physiological noise, predominantly of the temporal field changes that are derived from navigator phase evolution during the multi-shot experiment.

The geometric distortions encountered in EPI can be corrected using static or dynamic distortion correction methods. The large motion (up to 12°) and fast breathing (0.36 Hz) without compromising BOLD sensitivity or spatiotemporal resolution.

We present results from simulations of the magnetic fields generated by the susceptibility distribution of a field probe within the droplet as well as the relationship to the length of buffers in order to optimize the field probe signal.

Dynamic maps of B0 can be extracted from a time series of standard, single-echo EPI by calculating the echo-... B0 varies dramatically with head motion, phase offsets remain stable, allowing distortions to be accurately corrected.

We present results from simulations of the magnetic fields generated by the susceptibility distribution of a field probe within the droplet as well as the relationship to the length of buffers in order to optimize the field probe signal.

Electronic Poster

1High Field MR Center, Department of Biomedical Imaging and Image-guided Therapy, Medical University of Vienna, Vienna, Austria; 2Department of Psychology and Neuroscience, Cognitive Neuroscience, Maastricht University, Maastricht, Netherlands; 3Centre for Advanced Imaging, The University of Queensland, Brisbane, Australia

Computer 58 3771. Simulation Techniques for Susceptibility Optimisation of Field Probes
Wieland A. Worthoff1, Stefan Schwan1, Johannes Lindemeyer1, N. Jon Shah1, 2
1Institute of Neuroscience and Medicine, Forschungszentrum Jülich GmbH, Jülich, Germany; 2Faculty of Medicine, Department of Neurology, RWTH Aachen University, JARA, Aachen, Germany

Computer 59 3772. Single Echo EPI Sequence with Dynamic Distortion Correction: Minimization of Errors Due to Motion and Breathing.
Barbara Dymerskas1, Benedikt Poser2, Wolfgang Bogner1, Eelke Visser1, Korbinian Eckstein1, Pedro Cardoso1, Roland Beisteiner1, 4, Markus Barth1, Siegfried Trauttm1, Simon Daniel Robinson1
1High Field MR Center, Department of Biomedical Imaging and Image-guided Therapy, Medical University of Vienna, Vienna, Austria; 2Department of Psychology and Neuroscience, Cognitive Neuroscience, Maastricht University, Maastricht, Netherlands; 3FMRIB Centre, Nuffield Department of Clinical Neurosciences, University of Oxford, Oxford, United Kingdom; 4Department of Neurology, Medical University of Vienna, Vienna, Austria; 5Centre for Advanced Imaging, The University of Queensland, Brisbane, Australia

Computer 60 3773. Physiological Artifact Suppression in Multi-Shot Data Using Covariance-Map-Enhanced Navigator Correction
Jacco A. de Zwart1, Peter van Gelderen1, Jeff H. Duyn1
1Advanced MRI, LFMI, NINDS, National Institutes of Health, Bethesda, MD, United States

Computer 61 3774. Suppression of Artifacts in Compressed Sensing Cine MRI
Shinji Kurokawa1, Yoshitaka Bito1, Hisaaki Ochi1
1Central Research Laboratory, Hitachi, Ltd., Kokubunji-shi, Tokyo, Japan; 2Hitachi Medical Corporation, Kashiwa-shi, Chiba, Japan

Computer 62 3775. Artifact Associated with Fat Suppression in Spin-Echo EPI
Yasha Khatamian1, J. Jean Chen1
1Rotman Research Institute, Toronto, Ontario, Canada

Computer 63 3776. Closed-Form Solution Concomitant Field Correction Method for Echo Planar Imaging on Head-Only Asymmetric Gradient MRI System
Shengchen Tao1, Joshua D. Trzask1, Yunhong Shu1, Paul T. Weavers1, Seung-Kyun Lee1, Matt A. Bernstein1
1Radiology, Mayo Clinic, Rochester, MN, United States; 2GE Global Research, Niskayuna, NY, United States

Computer 64 3777. Gibbs-Ringing Artifact Removal Based on Local Subpixel-Shifts
Elias Kellner1, Bibek Dhital1, Valerij G. Kiselev1, Marco Reisert1
1Department of Radiology, Medical Physics, University Medical Center Freiburg, Freiburg, Germany

Computer 65 3778. A Hexagonal Spoiler Gradient Scheme Improves the Transition to Steady State in Spoiled Gradient Echo Sequences
Aaron T. Hess1, Matthew D. Robson1
1Oxford Centre for Clinical Magnetic Resonance Research (OCMR), Oxford, Ox, United Kingdom

Computer 66 3779. FSE Cusp Artifact Removal Using Novel Saturation Method
Yongchuan Lai1, Weiwei Zhang1, Baogui Zhang1, Bing Wu1
1GE Healthcare, Beijing, China

Computer 67 3780. Distortion Correction Using Simulated Point-Spread Functions
Genevieve M. LaBelle1, Brad P. Sutton1, 3
1Electrical and Computer Engineering, University of Illinois at Urbana-Champaign, Urbana, IL, United States; 2Bioengineering, University of Illinois at Urbana-Champaign, Urbana, IL, United States; 3Beckman Institute for Advanced Science and Technology, University of Illinois at Urbana-Champaign, IL, United States
Reference-Free Distortion Correction for EPI by Flipped K-Space Segments (DICOFLIP)

Marco Reisert\textsuperscript{1}, Michael Herbst\textsuperscript{1, 2}
\textsuperscript{1}Medical Physics, University Medical Center Freiburg, Freiburg, Germany; \textsuperscript{2}Department of Radiology, John A. Burns School of Medicine, Honolulu, Hawaii, United States.

Ghost Correction for EPI at Gradient Insert System

Guoxiang LIU\textsuperscript{3}, Takashi UEUGUCHI\textsuperscript{4}
\textsuperscript{3}CiNet, National Institute of Information and Communications Technology, Suita, Osaka, Japan.

3D Mapping of Geometric Distortion Using Static and Moving Table Acquisitions for Radiotherapy Treatment Planning Applications

Amy Walker\textsuperscript{1, 2}, Gary Liney, \textsuperscript{12} Lois Holloway, \textsuperscript{12} Jason Dowling\textsuperscript{1}, David Rivest-Henault\textsuperscript{1}, Peter Metcalfe\textsuperscript{1, 2}
\textsuperscript{1}Center for Medical Radiation Physics, University of Wollongong, Wollongong, NSW, Australia; \textsuperscript{2}Medical Physics, Liverpool and Macarthur Cancer Therapy Centres and Ingham Institute for Applied Medical Research, Liverpool, NSW, Australia; \textsuperscript{12}Commonwealth Scientific and Industrial Research Organisation, Australian E-Health Research Centre, Brisbane, Queensland, Australia.

Compensation of Artifacts from Eddy Current and Transient Oscillation in Balanced Steady-State Free Precession

Hyun-Soo Lee\textsuperscript{1}, Seang Hong Choi\textsuperscript{1}, Sung-Hong Park\textsuperscript{1}
\textsuperscript{1}Department of Bio and Brain Engineering, Korea Advanced Institute of Science and Technology, Daejeon, Korea; \textsuperscript{2}Department of Radiology, Seoul National University College of Medicine, Seoul, Korea.

Performance Comparison of Analytical Solutions for BSSFP Signal Demodulation

Michael N. Hoff\textsuperscript{1}, Jalal B. Andre\textsuperscript{1}, Qing-San Xiang\textsuperscript{2}
\textsuperscript{1}Radiology, University of Washington, Seattle, WA, United States; \textsuperscript{2}Physics, University of British Columbia, Vancouver, British Columbia, Canada.

Electronic Poster

Reconstruction of Dynamic Data

Exhibition Hall Tuesday 13:30-15:30

A Parallel Algorithm for Compressed Sensing Dynamic MRI Reconstruction

Loris Cannelli\textsuperscript{1}, Paolo Scarponi\textsuperscript{1}, Gesualdo Scutari\textsuperscript{1}, Leslie Ying\textsuperscript{1}
\textsuperscript{1}Electrical Engineering, University at Buffalo, Buffalo, NY, United States.

Reconstruction Strategies for Pure 2D Spatiotemporal MRI

Albert Jang\textsuperscript{1, 2}, Alexander Gutierrez\textsuperscript{2}, Di Xiao\textsuperscript{2}, Curtis A. Corum\textsuperscript{1}, Vuk Mandic\textsuperscript{4}, Jarvis Haupt\textsuperscript{2}, Michael Garwood\textsuperscript{4}
\textsuperscript{1}Center for Magnetic Resonance Research and Department of Radiology, University of Minnesota, Minneapolis, MN, United States; \textsuperscript{2}Department of Electrical and Computer Engineering, University of Minnesota, Minneapolis, MN, United States; \textsuperscript{3}Department of Mathematics, University of Minnesota, Minneapolis, MN, United States; \textsuperscript{4}School of Physics and Astronomy, Department of Physics, University of Minnesota, Minneapolis, MN, United States.

Accelerated Real Time Cardiac CINE Using Kernel PCA Based Spatio-Temporal Denoising

Muhammad Usman\textsuperscript{1}, Claudia Prieto\textsuperscript{1}
\textsuperscript{1}Division of Imaging Sciences and Biomedical Engineering, King's College London, London, United Kingdom.

POCS-Based Reconstruction of Multiplexed Sensitivity Encoded MRI (POCSMUSE): A General Algorithm for Reducing Motion-Related Artifacts

Mei-Lan Chu\textsuperscript{1, 2}, Hing-Chiu Chang\textsuperscript{1}, Hsiao-Wen Chung\textsuperscript{2}, Trong-Kha Truong\textsuperscript{1}, Mustafa R. Bashir\textsuperscript{3}, Nan-kuei Chen\textsuperscript{1, 3}
\textsuperscript{1}Brain Imaging and Analysis Center, Duke University, Durham, NC, United States; \textsuperscript{2}Graduate Institute of Biomedical Electronics and Bioinformatics, National Taiwan University, Taipei, Taiwan; \textsuperscript{3}Department of Radiology, Duke University Medical Center, Durham, NC, United States.
Electronic Poster

Computer 77 3790. Application-Specific Compressed Sensing for Improved Spatial and Temporal Resolution of Intracranial CE MRA
Julia V. Velikina1, Alexey A. Samsonov
1Medical Physics, University of Wisconsin - Madison, Madison, WI, United States

Computer 78 3791. Novel Sparse Model and Reconstruction for Dynamic Contrast-Enhanced MRI
Qiu Wang1, Boris Mailhe1, Robert Grimm1, Marcel Dominik Nickel1, Kai Tobias Block1, Hersh Chandarana1, Marianne S. Naday2
1Image and Computer Vision, Siemens Corporate Technology, Princeton, NJ, United States; 2MR Application & Workflow Development, Siemens Healthcare, Erlangen, Germany; 1Department of Radiology, New York University School of Medicine, New York, NY, United States

Computer 79 3792. Validation of Reduced View-Sharing Compressed Sensing Reconstruction for DCE-MRI with Variable Flip Angle Acquisition
Evan Levine1, 2, Bruce Daniel1, Brian Hargreaves1, Manojkumar Saranathan2
1Electrical Engineering, Stanford University, Stanford, CA, United States; 2Radiology, Stanford University, Stanford, CA, United States

Computer 80 3793. An Application of Compressed Sensing for Improved Temporal Fidelity in DCE Breast MRI
Courtney K. Morrison1, Roberta M. Strigel, 12, Kang Wang1, James H. Holmes1, Alexey Samsonov2, Frank R. Korosec, 12, Julia Velikina1
1Medical Physics, University of Wisconsin-Madison, Madison, WI, United States; 2Radiology, University of Wisconsin-Madison, Madison, WI, United States; 12Global MR Applications and Workflow, GE Healthcare, Madison, WI, United States

Computer 81 3794. Improved Image Quality of Time Resolved Contrast Enhanced MRA Using Compressed Sensing, Parallel Imaging and Singular Value Threshold
Yijing Wu1, Kevin M. Johnson1, Patrick A. Turski1, Kai Niu1, YinSheng Li1, GuangHong Chen1, Chuck A. Mistretta1
1Medical Physics, University of Wisconsin, Madison, WI, United States; 2Radiology, University of Wisconsin, Madison, WI, United States

Computer 82 3795. Adaptive Dynamic MRI Reconstruction Exploiting 3-D Spatiotemporal Non-Local Low Rank and Block-Wise Correlation
Ziyi Wang1, Sheng Fang1, Hua Guo1
1Center for Biomedical Imaging Research, Department of Biomedical Engineering, School of Medicine, Tsinghua University, Beijing, China

Computer 83 3796. Increasing Spatial Resolution of Real-Time Cardiac Cine MRI Using Radial K-Space Undersampling with Golden Angle Ratio and Block-Wise Low Rank Contrast
Elwin Bassett1, 2, Ganesh Adluru1, Promporn Sukasaranjit1, Brent D. Wilson1, Edward VR DiBella1, Daniel Kim2
1Physics, University of Utah, Salt Lake City, UT, United States; 2UCAIR, Radiology, University of Utah, Salt Lake City, UT, United States; 1Cardiology, Internal Medicine, University of Utah, Salt Lake City, UT, United States

Computer 84 3797. Low Latency Reconstruction of Free-Breathing Real-Time Cardiac Cine with VISTA and SENSE
Samuel T. Ting1, Rizwan Ahmad1, Ning Jin1, Juliana Serafim da Silveira1, Orlando P. Simonetti1
1The Ohio State University, Columbus, OH, United States; 2Siemens Healthcare, Chicago, IL, United States

Computer 85 3798. Comparison of a Multiple Free-Breathing Prescans (MFP) Method of Coil Sensitivity Calibration Against TGRAPPA During Free-Breathing Myocardial First-Pass Perfusion
Mertin J. Fazi1, 2, Peter D. Gatehouse1, 2, Peter Drivas1, David N. Firmin1, 2
1NHRI, Imperial College London, London, United Kingdom; 2NIHR Cardiovascular BRU, Royal Brompton Hospital, London, United Kingdom

Computer 86 3799. Evaluation of the Errors in the Measured Dynamic Contrast Enhancement with TWIST View Sharing Using a Novel Simulation Strategy
Yuan Le1, Marcel Dominik Nickel1, Randall Kroeker1, Christian Geppert1, Bruce Spottswoode1, Chen Lin1
Our advocated approach builds on three-way tensors and leverages spatiotemporal correlations of the ground truth images ... under-sampled tensors `on-the-fly'. It means the images can be reconstructed while the data is still being acquired.

We proposed a compressed sensing reconstruction method that utilizes neighboring respiration phases as constrain to ... artifacts using highly under-sampled stack-of-stars acquisition. In vivo results show the promise of the approach.

Dynamic contrast-enhanced MR imaging is a promising technique for treating various hepatic diseases. Breath-hold 3D ... has shown to achieve high quality reconstructions with reduction factors up to 44, when the conventional PS method fails.

DCE-MRI has been widely used for diagnosis of liver diseases like hepatic cirrhosis, tumor, etc. Now the existing DCE ... with greatly reduced time cost. The scheme improves the clinical applicability of high spatiotemporal resolution DCE.

In this study, we show that there is an effective way to circumvent this problem in the original SPEN imaging scheme with ... to meet the overlapping artifacts was also discussed. The proposed method was demonstrated by theory and phantom imaging.

Dynamic contrast-enhanced magnetic resonance angiography (DCE-MRA) requires high spatiotemporal resolution, and ... background static tissue signals (low rank component), background motion-induced signals (sparse component I), and DCE...
Electronic Poster

Cancer: Preclinical Studies of Animal Models

Exhibition Hall Tuesday 16:00-17:00

Computer 1 3810. Radiation Induced Hypoxia in TRAMP Tumor Detected Using BOLD MRI
  Yu-Chun Lin1, Gigin Lin1, Chun-Chieh Wang2, Jian-Jie Wang3
  1Department of Diagnostic Radiology, Chang Gung Memorial Hospital, Linkou, Taiwan, Taiwan; 2Department of Radiation Oncology, Chang Gung Memorial Hospital, Linkou, Taiwan; 3Department of Medical Imaging and Radiological Sciences, Chang Gung University, Yaoyuan, Taiwan

Computer 2 3811. Biomarkers of Aggressive Breast Cancer Revealed by Combining Magnetic Resonance Spectroscopic Imaging and Mass Spectrometric Imaging
  Lu Jiang1, Kamila Changhia1, Tiffany Greenwood1, Zaver M. Bhujwalla1, Venu Raman1, Gert Eijkel2, Ron Heeren2, Kristine Glunde1
  1Department of Radiology, Johns Hopkins University School of Medicine, BALTIMORE, MD, United States; 2FOM-Institute AMOLF, Amsterdam, Netherlands

Computer 3 3812. In Vivo Lactate T1 and T2 Relaxation Times in Preclinical Cancer Models – Absolute Quantification of Tumor Lactate
  Ellen Ackerstaff1, H. Carl LeKaye1, Natalia Kruchevsky1, Kristen L. Zakian1, Nilantoto Ramamonjisoa1, Ekaterina Moroz1, Inna S. Serganov1, Ronald G. Blasberg1, Jason A. Koutcher1
  1Memorial Sloan Kettering Cancer Center, New York, NY, United States

Computer 4 3813. Comparison of APT- And NOE-CEST in Rat Glioma at 7 T– Potentials for Tumor Characterization and Detection of Tumor Cell Infiltration
  Mona Salehi Raves1, Monika Huhndorf1, Amir Moussavi1, Kristin Koez1, Judith Becker1, Kirsten Hattermann1, Susann Boretius1
  1Clinic of Radiology and Neuroradiology, Section Biomedical Imaging, Kiel, Schleswig-Holstein, Germany; 2Department of Radiology and Neuroradiology, Schleswig-Holstein, Germany; 3Christian-Albrechts-University of Kiel, Anatomical Institute, Schleswig-Holstein, Germany

Computer 5 3814. cPLA2IVA Inhibition in Basal-Like Breast Cancer: Reduced Tumor Growth with Metabolic, Vascular and Gene Expression Changes
  Hanna Maja Tunset1, Eugene Kim1, Jana Cebulla1, Muhammad Riyas Vettukattil1, Astrid Juhumstrøm Fewerhern1, Berit Johansen1, Tone Frost Bathen1, Siver Andreas Moestue1
  1MR Cancer Group, Department of Circulation and Medical Imaging, Norwegian University of Science and Technology, Trondheim, Norway; 2Avexxin AS, Department of Biology, Norwegian University of Science and Technology, Trondheim, Norway

  Richard Mair1, 2, Alan Wright1, Kieron Allinson1, Tiago Rodrigues1, Colin Watts2, Kevin Brindle1
  1CRUK Cambridge Institute, University of Cambridge, Cambridge, Cambridge, United Kingdom; 2Division of Neurosurgery, University of Cambridge, Cambridge, Cambridge, United Kingdom; 3Department of Pathology, Cambridge University Hospitals NHS Foundation Trust, Cambridge, United Kingdom

Computer 7 3816. Magnetization Transfer Imaging in a Mouse Model of Orthotopic Pancreatic Cancer
  Amir Moussavi1, Kristin Koez2, Sanjay Tiwari1, Susann Boretius1
  1Section Biomedical Imaging, Department of Radiology and Neuroradiology, Christian-Albrechts-University, Kiel, Germany

Computer 8 3817. In Vivo Monitoring of Enzyme Activity in a Transgenic Breast Cancer Model with Hyperpolarized C-13 Metabolic Activity Decomposition MRSI
  Zihan Zhu1, 2, Peter J. Shin1, 2, Christine Leon Swisher3, Peder E.Z. Larson1, 2, Hsin-Yu Chen1, 2, Hong Shang1, 2, Eugene Milshchey1, 2, Robert A. Bok1, Andrei Goga1, Daniel B. Vigneron1, 2

1Technion - Israel Institute of Technology, Haifa, Israel
Electronic Poster

1Department of Radiology and Biomedical Imaging, University of California, San Francisco, San Francisco, CA, United States; 2UC Berkeley-UCSF Graduate Program in Bioengineering, San Francisco, CA, United States; 3Massachusetts General Hospital and Harvard Medical School, MA, United States; 4Department of Cell and Tissue Biology, University of California, San Francisco, San Francisco, CA, United States

Computer 9 3818. Multi-Parametric MpMRI to Characterize Brain and Bone Metastases in Disseminated Breast Cancer
Natalie Julie Serkova1, Diana M. Cittelly1, Kendra M. Huber1, Carol A. Sartorius1
1University of Colorado Anschutz Medical Center, Aurora, CO, United States

Computer 10 3819. Source-Based Nosologic Imaging of Response to Therapy in Pre-Clinical Glioblastoma
Sandra Ortega-Martorell2, 3, Ivan Olier2, Teresa Delgado-Goñi2, Magdalena Ciezka2, 23, Ana Paula Candiota2, 5, Margarida Juliá-Sapé2, 5, Martí Pumarola2, 23, Paulo Lisboa2, 5, Carles Arús2, 23
1Liverpool John Moores University, Liverpool, Merseyside, United Kingdom; 2Networking Research Center on Bioengineering, Biomaterials and Nanomedicine, CIBER-BBN, Cerdanyola del Vallès, Spain; 3The University of Manchester, Manchester, United Kingdom; 4The Institute of Cancer Research, London, United Kingdom; 5Universitat Autònoma de Barcelonà, Cerdanyola del Vallès, Spain

Computer 11 3820. Evaluation of Metronomic Chemotherapy in a Mouse Model Using DCE-MRI and DWI
Melanie Freed1, 2, Kerryanne Winters1, 2, Jin Zhang2, 3, Sungheon G. Kim1, 2
1Center for Advanced Imaging Innovation and Research (CAI2R), Department of Radiology, NYU School of Medicine, New York, NY, United States; 2Bernard and Irene Schwartz Center for Biomedical Imaging, Dept. Radiology, NYU School of Medicine, New York, NY, United States

Computer 12 3821. Molecular MR Imaging of Micrometastasis of Breast Cancer
Zhuxian Zhou1, Mohammad Qutaish1, Zheng Han1, Rebecca Schur1, David Wilson1, Zheng-Rong Lu1
1Department of Biomedical Engineering, Case Western Reserve University, Cleveland, OH, United States

Electronic Poster

Cancer: Clinical & Preclinical Studies on New Contrast Mechanisms
Exhibition Hall Tuesday 16:00-17:00

Computer 13 3822. MRI-Based Measurement of Tissue O2
Scott C. Beeman1, Ying-Bo Shui2, John A. Engelbach1, Joseph J.H. Ackerman1, 3, Joel R. Garbow1
1Radiology, Washington University, Saint Louis, MO, United States; 2Ophthalmology, Washington University, Saint Louis, MO, United States; 3Chemistry, Washington University, Saint Louis, MO, United States

Computer 14 3823. In Vivo MRI-Based 3-D Printed Molds and Individualized Tissue Sectioning Apparatuses Improve MRI-Histopathologic Co-Registration in Brain Cancer Patients
Alexander E. Salmen1, Brian J. Pellatt, Nikolai J. Mickevicius2, Elizabeth J. Cochran3, Peter S. LaViolette4
1Neuroscience, Medical College of Wisconsin, Milwaukee, WI, United States; 2Biophysics, Medical College of Wisconsin, Milwaukee, WI, United States; 3Pathology, Medical College of Wisconsin, Milwaukee, WI, United States; 4Radiology, Medical College of Wisconsin, Milwaukee, WI, United States

Computer 15 3824. Gadolinium-Free Extracellular MR Contrast Agent for Tumor Imaging
Joris Tchouala Nofiele1, Inga E. Haedicke2, Yong Le Zhu2, Xiao-an Zhang2, Hai-Ling Margaret Cheng2, 13
1Hospital for Sick Children, Toronto, Ontario, Canada; 2Chemistry, University of Toronto, Toronto, Ontario, Canada; 3Institute of Biomaterials & Biomedical Engineering, University of Toronto, Toronto, Ontario, Canada

Electronic Poster
Breast Cancer: Technical
Exhibition Hall Tuesday 16:00-17:00

Computer 16 3825. Monitoring Gas-Induced Haemodynamic Changes in the Breast with BOLD Contrast
Tess Catherwood1, Andrew Patterson1, Martin Graves1, Reem Bedair1, Roie Manavaki1, Mary McLean2, John Griffiths2, Fiona Gilbert1
1Radiology, Cambridge University Hospitals NHS Foundation Trust, Cambridge, Cambridgeshire, United Kingdom; 2Cancer Research UK Cambridge Institute, Cambridge, Cambridgeshire, United Kingdom
Electronic Poster

Computer 17  3826.  Quantitative Assessment of Procedure Success in MR-Guided Breast Biopsy Exams
Xiaofeng Liu1, E Morris2, Robert Darrow3, Ileana Hancu1
1GE Global Research, Niskayuna, NY, United States; 2Memorial Sloan Kettering Cancer Center, NY, United States

Saeedeh Navaei Lavasani1, 2, Masoomeh Gity1, Mahnaz Nabil1, Anahita Fathi Kazeroon1, 2, Hamidreza Saligheh Rad1, 2
1Qualitative MR Imaging and Spectroscopy Group, Research Center for Molecular and Cellular Imaging, Tehran University of Medical Sciences, Tehran, Iran; 2Department of Medical Physics and Biomedical Engineering, School of Medicine, Tehran University of Medical Sciences, Tehran, Iran; 3Department of Radiology, School of Medicine, Tehran University of Medical Sciences, Tehran, Iran; 4Department of Statistics, Tarbiat Modares University, Tehran, Iran

Computer 19  3828.  Evaluation of Benign and High-Risk, Nonmalignant Breast Lesions, Assessed as False-Positive at Contrast-Enhanced (CE) MRI Using DW Imaging and CE MR Imaging Features
Suniti B. Thakur1, Jung Hun Oh2, Milans Soledad3, Harini Veeraraghavan3, Merlin M. Gnanasigamani2, Elizabeth J. Sutton4, Joseph O. Deasy5, Elizabeth A. Morris6
1Memorial Sloan Kettering Cancer Center, New York, NY, United States; 2Memorial Sloan Kettering Cancer Center, NY, United States

Computer 20  3829.  Accurate Segmentation of Breast Lesions Based on Wavelet Kinetics: Comparison with Semi-Quantitative Features
Saeedeh Navaei Lavasani1, 2, Masoomeh Gity1, Anahita Fathi Kazeroon1, 2, Hamidreza Saligheh Rad1, 2
1Qualitative MR Imaging and Spectroscopy Group, Research Center for Molecular and Cellular Imaging, Tehran University of Medical Sciences, Tehran, Iran; 2Department of Medical Physics and Biomedical Engineering, School of Medicine, Tehran University of Medical Sciences, Tehran, Iran; 3Department of Radiology, School of Medicine, Tehran University of Medical Sciences, Tehran, Iran

Computer 21  3830.  Fast Bilateral Breast Coverage with High Spectral and Spatial Resolution (HiSS) MRI at 3T
Milica Medved1, William A. Weiss1, Hiroyuki Abe1, Gillian M. Newstead1, Olufunmilayo I. Olopade2, Maryellen L. Giger1, Gregory S. Karczmar1
1Department of Radiology, University of Chicago, Chicago, IL, United States; 2Department of Medicine, University of Chicago, Chicago, IL, United States

Computer 22  3831.  Prediction of Neoadjuvant Therapy Response Using Multiparametric MRI at 3T
Lenka Minarikova1, Wolfgang Bogner1, Katja Pinker-Domenig1, Thomas Helbich2, Siegfried Trattnig1, Stephan Graber1
1MRCE, Department of Biomedical Imaging and Image-guided Therapy, Medical University of Vienna, Vienna, Austria; 2Division of Molecular and Gender Imaging, Department of Biomedical Imaging and Image-guided Therapy, Medical University of Vienna, Vienna, Austria

Computer 23  3832.  Fat Suppression Techniques for High Resolution Breast DCE MRI at 7 Tesla: A Qualitative and Quantitative Comparison
Tijl A. van der Velden1, Alexander M. Th. Schmitz1, Kenneth G.A. Gilhuijs1, Wouter B. Veldhuis1, Peter R. Luijten1, Vincent O. Boer1, Dennis W.J. Klomp1
1Radiology, University Medical Center Utrecht, Utrecht, Netherlands

Computer 24  3833.  Statistical Assessment of Diffusion Weighted Signal Decay in Breast Cancer Tumors at 3T: Mono-Exponential or Bi-Exponential?
Jing Yuan1, Gladys G. Lo2, Oi Lei Wong3, Helen H.L. Chan3, Abby Y. Ding1, Ting Ting Wong2, Polly S.Y. Cheung3
1Medical Physics and Research Department, Hong Kong Sanatorium & Hospital, Happy Valley, Hong Kong, China; 2Department of Diagnostic & Interventional Radiology, Hong Kong Sanatorium & Hospital, Happy Valley, Hong Kong, China; 3Breast Care Center, Hong Kong Sanatorium & Hospital, Happy Valley, Hong Kong, China
Impact of Temporal Resolution on Diagnostic Performance of Quantitative DCE-MRI of Prostate Cancer: Evaluation Using a Novel Golden-Angle Radial Compressed-Sensing Sequence and Single Contrast Injection

Naimesh Parikh1, Justin Ream2, Tobias Block3, Weisheng Xu4, Hersh Chandarana2, Li Feng3, Samir Taneja5, Andrew Rosenkrantz2

1Radiology, NYU School of Medicine, New York, NY, United States; 2Radiology, NYU School of Medicine, New York, NY, United States; 3Radiology, NYU School of Medicine, New York, NY, United States; 4Radiology, Center for Advanced Imaging Innovation and Research NYU School of Medicine, New York, NY, United States; 5Pathology, NYU School of Medicine, New York, NY, United States; 6Urologic Oncology, NYU School of Medicine, New York, NY, United States

Unsupervised Quality Control of Prostate MRSI Using Non Negative Matrix Factorization

Nassim Tayari1, Anca R. Cristor Sava2, Diana M. Sima2, Sabine Van Huffel2, Arend Heerschap1

1Department of Radiology and Nuclear Medicine, Radboud University Medical Center, Nijmegen, Netherlands; 2Department of Electrical Engineering, Katholieke Universiteit Leuven, Leuven, Belgium

Development of Quantitative Multi-Parametric MRI Models for Prostate Cancer Assessment Using Registered Correlative Pathology

Gregory J. Metzger1, Chaitanya Kalavagunta1, Stephen C. Schmechel2, Patrick J. Bolan1, Badrinath Konety3, Benjamin Sipitese1, Christopher A. Warlick1, Joseph S. Koopmeiners1

1Center for Magnetic Resonance Research, University of Minnesota, Minneapolis, MN, United States; 2Department of Pathology, University of Washington, WA, United States; 3Department of Urologic Surgery, University of Minnesota, Minneapolis, MN, United States; 4Department of Radiology, University of Minnesota, Minneapolis, MN, United States; 5Division of Biostatistics, University of Minnesota, Minneapolis, MN, United States

Aided Quantitative Analysis of T2-Weighted Prostate MR Images

Kai Zhao1, Chengyan Wang1, Juan Hu1, Xiaodong Zhang1, Jue Zhang2, Xiaoying Wang1

1Department of Radiology, Peking University First Hospital, Beijing, China; 2College of Engineering, Peking University, Beijing, China

Intraprostatic Lipid Spectroscopic Imaging of the Prostate Cancer

Xin Li1, Jackilen Shannon1, Mark G. Garzotto1,2, Chris Amling1, William J. Woodward1, George Thomas1, Elizabeth Dacey1,2, Xiaohua Wang2,3, Paige Farris3, Wesley Stoller3, Ann Martinez Acevedo4, Amy Pulma4, Manoj K. Sammi5, William D. Rooney1, Fergus V. Coakley1, Jonathan Q. Farnell1

1Oregon Health & Science University, Portland, OR, United States; 2College of Engineering, Peking University, Beijing, China; 3Department of Radiology, University of Minnesota, Minneapolis, MN, United States; 4Department of Pathology, NCI, NIH, Bethesda, MD, United States; 5Laboratory of Pathology, NCI, NIH, Bethesda, MD, United States; 6Tourville Imaging Centre, Paris, France

Zone Specific ADC + DCE-MRI Composite Maps to Aid in the Detection and Evaluation of Prostate Cancer

Naira Muradyan1, Osama Elbuluk2, Baris Turkbey2, Sandeep Sankineni1, Maria J. Merino1, Senthil Periaswamy1, Marcelino Bernardo2, Francois Cornud2, Peter L. Choyke3

1iCAD, Inc., Nashua, NH, United States; 2Molecular Imaging Program, NCI, NIH, Bethesda, MD, United States; 3Laboratory of Pathology, NCI, NIH, Bethesda, MD, United States; 4Tourville Imaging Centre, Paris, France

Performance of High B-Value DWI in Identifying High Risk Prostate Cancer Patients

Francesca Mertan1,2, Harsh K. Agarwal1,2, Daniel B. Vigneron1, Robert Bok1,2, Donna Peehl1, Kayvan Rahimi Keshari1, John Kurhanewicz1

1University of California, San Francisco, San Francisco, CA, United States; 2Stanford University, CA, United States; 3Memorial Sloan Kettering Cancer Center, New York, NY, United States

Hyperpolarized Lactate Production Correlates with Gleason Grade in Patient-Derived Tissues of Prostate Cancer

Renuka Sriram1, Mark Van Creikinge1, Justin DeLos Santos1, Daniel B. Vigneron1, Robert Bok1, Donna Peehl1, Kayvan Rahimi Keshari1, John Kurhanewicz1

1University of California, San Francisco, San Francisco, CA, United States; 2Stanford University, CA, United States; 3Memorial Sloan Kettering Cancer Center, New York, NY, United States
**Electronic Poster**

**Computer 33 3842. Development of a Screening MRI Protocol for the Detection of Prostate Cancer: Initial Experience**
Shivani Pahwa1, Robert Abouassaly2, Yun Jiang2, Karin Herrmann3,4, Raj Pasquali5, William Tabayoyong6, Soham Shah7, Brian Minnillo8, Gregory MacLennan9, Mark Griswold10, Lee Ponsky11, Vikas Gulani12
1Radiology, Case Western Reserve University, Cleveland, OH, United States; 2University Hospitals, OH, United States; 3Biomedical Engineering, Case Western Reserve University, Cleveland, OH, United States; 4Radiology, University Hospitals, OH, United States; 5CWRU School of Medicine, OH, United States; 6UH Case Medical Center, OH, United States; 7Biomedical Engineering, Case Western Reserve University, OH, United States; 8Urology, UH Case Medical Center, OH, United States; 9Department of Radiology, St. John’s Medical Center, Tulsa, OK, United States

**Computer 34 3843. Small Field-Of-View Single-Echo EPI-DWI of the Prostate: Evaluation of Spatially-Tailored Two-Dimensional Radiofrequency Excitation Pulses**
Daniel Haumann1, Nils Rathmann1, Metin Sertdemir2, Philipp Riffel2, Anja Weidner3, Stephan Kannengiesser1, John N. Morelli4, Stefan O. Schoenberger5, Ulrike I. Attenberger1
1Institute of Clinical Radiology and Nuclear Medicine, University Medical Center Mannheim, Medical Faculty Mannheim, University of Heidelberg, Germany, Mannheim, Baden-Württemberg, Germany; 2Department of Epidemiology and Biostatistics, Memorial Sloan Kettering Cancer Center, New York, United States; 3Urology, Memorial Sloan Kettering Cancer Center, New York, United States

**Computer 35 3844. The ADC Ratio of Tumour to Normal Prostate as a Robust Method for Quantifying Diffusion Weighted Imaging of the Prostate**
Tristan Barrett1, Andrew N. Priest, Edward M. Lawrence1, Debra Goldman2, Vincent J. Gnanapragasam3, Evis Sala4, Ferdia A. Gallagher5
1Radiology, Cambridge University Hospitals, Cambridge, Cambridgeshire, United Kingdom; 2Urology, University of California Los Angeles, Los Angeles, CA, United States; 3Pathology, University of California Los Angeles, Los Angeles, CA, United States; 4Pathology, University of California Los Angeles, Los Angeles, CA, United States; 5Department of Epidemiology and Biostatistics, Memorial Sloan Kettering Cancer Center, New York, United States; 6Urology, University of California San Diego, San Diego, CA, United States; 7Urology, University of California San Diego, San Diego, CA, United States

**Computer 36 3845. Investigation of Reduced FOV CEST in Probing Prostate Cancer**
Chunmei Li1, Bing Wu2, Min Chen3
1Beijing Hospital, Beijing, China; 2GE healthcare China, Beijing, Beijing, China

**Computer 37 3846. Prostate Diffusion Distortion Correction with Restriction Spectrum Imaging**
Rebecca Rakow-Penner4, Nathan White1, Daniel Margolis1, J. Kellogg Parsons1, Natalie Schenker-Ahmed1, Joshua Kuperman1, Hauke Bartsch1, Hyung Choi2, William Bradley3, Ahmed Shabaik3, Jiaozi Huang3, Michael Liss4, Leonard Marks5, Christopher Kane5, Robert Reiter6, Steven Raman7, David Karow8, Anders Dale9
1Radiology, University of California San Diego, San Diego, CA, United States; 2Radiology, University of California Los Angeles, Los Angeles, CA, United States; 3Radiology, University of California San Diego, San Diego, CA, United States; 4Pathology, University of California Los Angeles, Los Angeles, CA, United States; 5Pathology, University of California Los Angeles, Los Angeles, CA, United States; 6Urology, University of California Los Angeles, Los Angeles, CA, United States; 7Urology, University of Texas Health Science Center San Antonio, San Antonio, TX, United States; 8Urology, University of California Los Angeles, Los Angeles, CA, United States

**Computer 38 3847. Discriminating Low-Grade from High-Grade Peripheral Zone Prostate Cancer by Multiparametric MRI: A Multicenter Study**
Marnix C. Maas1, Geert J.S. Litjens1,2, Alan J. Wright3, Masoom A. Haider1, Katarzyna J. Macura4, Kirsten M. Selnazes5, Daniel J.A. Margolis1, Thomas Helbich6, Berthold Kiefer7, Jurgen J. Fütterer1, Tom W.J. Scheenen1
1Radiology and Nuclear Medicine, Radboud University Medical Center, Nijmegen, GLD, Netherlands; 2Pathology, Radboud University Medical Center, Nijmegen, GLD, Netherlands; 3Cancer Research UK Cambridge Institute, University of Cambridge, Cambridge, United Kingdom; 4Sunnybrook Health Sciences Center, University of Toronto, Toronto, ON, Canada; 5Russell H. Morgan Department of Radiology and Radiological Science, Johns Hopkins University, Baltimore, MD, United States; 6Department of Circulation and Medical Imaging, Norwegian University of Science and Technology, Trondheim, Norway; 7Radiology, UCLA David Geffen School of Medicine, Los Angeles, CA, United States; 8Biomedical Imaging and Image-guided Therapy, Medical University Vienna - General Hospital Vienna, Vienna, Austria; 9Siemens AG Healthcare, Erlangen, Germany

**Computer 39 3848. Quantitative Differentiation of Prostate Cancer from Normal Peripheral Zone Using Magnetic Resonance Fingerprinting (MRF) and Diffusion Mapping**
Chaitra Badve1, Alice Yu2, Shivani Pahwa1, Matthew Rogers2, Yun Jiang3, Yiyong Liu4, Mark Schluchter5, Lee Ponsky6,7, Mark Griswold3, Vikas Gulani3,4
1Radiology, University Hospitals, Cleveland, OH, United States; 2School of Medicine, Case Western Reserve University, Cleveland, OH, United States; 3Radiology, Case Western Reserve University, Cleveland, OH, United States; 4Biomedical Engineering, Case Western Reserve University, Cleveland, OH, United States; 5Biostatistics, Case Western Reserve University, Cleveland, OH, United States; 6Urology, University Hospitals, Cleveland, OH, United States; 7Radiology, Case Western Reserve University, Cleveland, OH, United States
Accurate evaluation of antivascular tumor therapies requires detailed analysis of vascular alterations. We have recently ... of 4-10 Ng/mL: A Prospective Cohort Study

Saouaf5, Hyung Kim3, Debiao Li1, 2

1Biomedical Imaging Research Institute, Cedars Sinai Medical Center, Los Angeles, CA, United States; 2Bioengineering, University of California Los Angeles, Los Angeles, CA, United States; 3Surgery / Urology, Cedars-Sinai Medical Center, Los Angeles, CA, United States; 4Siemens Healthcare, Los Angeles, CA, United States; 5Radiology, Cedars-Sinai Medical Center, Los Angeles, CA, United States

Computer 46 3855. Clinical Application of 3D High Resolution Multi-Shot Diffusion-Weighted MRI in Prostate Cancer Patients Undergoing Active Surveillance Protocol for Low-Risk Prostate Cancer

Christopher Nguyen1, 2, Ali-Reza Sharif-Afshar1, Zhaoyang Fan1, Sidney Wilson1, Xiaoming Bi4, Lucas Payor3, Rola Saouaf1, Hyung Kim3, Debiao Li1, 2

1Biomedical Imaging Research Institute, Cedars Sinai Medical Center, Los Angeles, CA, United States; 2Bioengineering, University of California Los Angeles, Los Angeles, CA, United States; 3Surgery / Urology, Cedars-Sinai Medical Center, Los Angeles, CA, United States; 4Siemens Healthcare, Los Angeles, CA, United States; 5Radiology, Cedars-Sinai Medical Center, Los Angeles, CA, United States

Electronic Poster

Tumor Therapy Responses: Preclinical & Clinical (except Brain Tumor)
Twenty patients with extremity soft-tissue sarcoma who underwent preoperative chemoradiotherapy consented to research participation. The pathological complete response (pCR) rate (percentage of the surgical specimen) was 11.5%. No significant relationship was observed between post-therapy RECIST and pCR.

**Computer 50**

**3857. Micro-Vascular Effects of Photodynamic Therapy in Tumors Evaluated with Dynamic Contrast-Enhanced MRI**

*Tom Schreurs, Stefanie Hectors, Igor Jacobs, Holger Grüll, Gustav Strijkers, Klaas Nicolay*

1Biomedical Engineering, Eindhoven University of Technology, Eindhoven, Netherlands; 2Biomedical Engineering and Physics, Academic Medical Center, Amsterdam, Netherlands; 3Oncology Solutions, Philips Research, Eindhoven, Netherlands

**Computer 51**

**3858. Multiparametric MRI Analysis for the Evaluation of MR-Guided High Intensity Focused Ultrasound Treatment**

*Stefanie Hectors, Igor Jacobs, Edwin Heijman, Jochen Keupp, Monique Berben, Gustav Strijkers, Holger Grüll, Klaas Nicolay*

1Biomedical NMR, Department of Biomedical Engineering, Eindhoven University of Technology, Eindhoven, Netherlands; 2Oncology Solutions, Philips Research Europe, Eindhoven, Netherlands; 3Biomedical Engineering and Physics, Academic Medical Center, University of Amsterdam, Amsterdam, Netherlands

**Computer 52**

**3859. Prediction of Treatment Response and Tumor Recurrence Using MR Elastography**

*Kay Pepin, Steven Ansell, Richard L. Ehman, Kiaran McGee*

1Graduate School, Mayo Clinic, Rochester, MN, United States; 2Hematology, Mayo Clinic, MN, United States; 3Radiology, Mayo Clinic, MN, United States

**Computer 53**

**3860. Metabolic Imaging of Early Tumor Therapy**

*Charles S. Springer, Xin Li, Mohan L. Jayatilake, Martin M. Pike, William D. Rooney, Rosalie C. Sears, Wei Huang*

1Advanced Imaging Research Center, Oregon Health & Science University, Portland, OR, United States; 2Knight Cancer Institute, Oregon Health & Science University, Portland, OR, United States; 3Advanced Imaging Research Center, Oregon Health & Science University, Portland, OR, United States; 4Radiography and Radiotherapy, University of Peradeniya, Peradeniya, Sri Lanka; 5Molecular and Medical Genetics, Oregon Health & Science University, Portland, OR, United States

**Computer 54**

**3861. Immunocytokine Facilitation of Natural Killer Cells Accumulation in Tumors**

*Naomi S. Sta Maria, Samuel R. Barnes, David Colcher, Andrew A. Raubitschek, Russell E. Jacobs*

1Biology and Biological Engineering, California Institute of Technology, Pasadena, CA, United States; 2Cancer Immunotherapeutics & Tumor Immunology, City of Hope, Duarte, CA, United States

**Computer 55**

**3862. Whole Body MDixon MRI in Multiple Myeloma: Quantitative Derived Parameters Changes Following Chemotherapy**

*Arash Latifoltojar, Margaret Hall-Craggs, Alan Bainbridge, Stuart Taylor, Kwee Yong, Neil Rabini, Matthew Benger, Liam Watson, Michelle Siu, Shonit Punwani*

1University College London, London, United Kingdom; 2University College London Hospital, London, United Kingdom

**Computer 56**

**3863. DCE-MRI Kinetic Model and Curve Pattern Analyses for Predicting Response and Survivals in Osteosarcoma Patients**

*Junyu Guo, Wilburn E. Reddick*

1Radiological Sciences, St Jude Children's Research Hospital, Memphis, TN, United States

**Computer 57**

**3864. Predicting Response to Sunitinib Second-Line Therapy in Gastrointestinal Stromal Tumors Using Non-Gaussian Diffusion MRI**

*Yi Su, Lei Tang, Kejia Cai, Shun-Yu Gao, Frederick C. Dames, Ying-Shi Sun, Xiaohong Joe Zhou*

1Bioengineering, University of Illinois at Chicago, Chicago, IL, United States; 2Center for MR Research, University of Illinois Hospital & Health Sciences System, Chicago, IL, United States; 3Radiology, Peking University Cancer Hospital & Institute, Beijing, China; 4Radiology, University of Illinois Hospital & Health Sciences System, Chicago, IL, United States; 5Departments of Radiology, Neurosurgery and Bioengineering, University of Illinois Hospital & Health Sciences System, Chicago, IL, United States

**Computer 58**

**3865. DCE-MRI Assessment of Soft-Tissue Sarcoma Response to Preoperative Therapy**

*Wei Huang, Megan L. Holtorf, Aneela Afzal, Yiyi Chen, Brooke R. Beckett, Christopher W. Ryan*

1Oregon Health & Science University, Portland, OR, United States
Computer 59  3866.  Feasibility of Performing Weekly Intravoxel Incoherent Motion DW-MRI and Monitoring Anatomical and Functional Changes in Nasopharynx Tumors During Chemoradiation Therapy
Yonggang Lu1, Nancy Lee1, Vaois Hatzoglou2, Nadeem Riaz2, Joseph O. Deasy1, Amita Shukla-Dave1
1Memorial Sloan-Kettering Cancer Center, NEW YORK, United States

Computer 60  3867.  The Diagnostic Performance of Hybrid FDG-PET/MR Compared to FDG-PET/CT in Adult Lymphoma Patients
Alexander R. Guimaraes1, 2, Wendy Atkinson3, Ephraim Hochberg4, Jeremy Abramson5, Onofrio Catalano2, Bruce R. Rosen2, Ciprian Catana2
1Radiology, Oregon Health Sciences University, Portland, OR, United States; 2Radiology, Martinsos Center for Biomedical imaging, Charlestown, MA, United States; 3Radiology, Martinos Center for Biomedical imaging, Charlestown, MA, United States; 4Medicine, Massachusetts General Hospital, Boston, MA, United States; 5Medicine, Massachusetts General Hospital, MA, United States

Computer 61  3868.  Spontaneous R2* Fluctuations for Non-Invasive Detection of Cyclic Hypoxia in Head and Neck Squamous Cell Carcinoma Xenografts
Rafal Panek1, Lauren C.J. Baker, Liam Welsh1, Carol Box, Suzanne A. Eccles, Kate L. Newbold1, Kevin J. Harrington1, Maria A. Schmidt1, Martin O. Leach1, Simon P. Robinson1
1Royal Marsden NHS FT and Institute of Cancer Research, Sutton, Surrey, United Kingdom

Computer 62  3869.  Effects of Acquisition Time Variation on DCE-MRI Prediction of Breast Cancer Therapy Response
Andy J. Kauempf1, Yiyi Chen1, Alina Tudorica1, Stephen Y-C Chui1, Arpana Naik2, Karen Y. Oh1, Nicole Roy1, Megan L. Troxell1, Aneela Afzal1, Megan L. Holtorf1, Mohan Jayatilake1, Wei Huang1
1Oregon Health & Science University, Portland, OR, United States

Computer 63  3870.  Effects of AIF Variations on DCE-MRI Prediction of Breast Cancer Therapy Response
Aneela Afzal1, Alina Tudorica1, Yiyi Chen1, Stephen Y-C Chui1, Arpana Naik2, Megan L. Troxell1, Kathleen A. Kemmer1, Karen Y. Oh1, Nicole Roy1, Megan L. Holtorf1, Xin Li1, Wei Huang1
1Oregon Health & Science University, Portland, OR, United States

Electronic Poster
Cancer: Other, Original Research
Exhibition Hall  Tuesday 16:00-17:00

Computer 64  3871.  Using UTE Images for Bone/air Segmentation: Applications for Radiation Therapy
Weili Zheng1, Joshua P. Kim1, Indrin J. Chetty1, Carri K. Glide-Hurst1
1Radiation Oncology, Henry Ford Health System, Detroit, MI, United States

Electronic Poster
Tumor Perfusion & Permeability Applications
Exhibition Hall  Tuesday 16:00-17:00

Computer 65  3872.  Evaluating Sources of Uncertainty on DCE-MRI Parameter Estimates When Using Different AIFs
Mihaela Rata1, Matthew R. Orton1, Christina Messiou1, Helen Young2, Nandita de Souza1, David J. Collins1, Martin O. Leach1
1Radiotherapy and Imaging Department, CR-UK and EPSRC Cancer Imaging Centre, Institute of Cancer Research and Royal Marsden Hospital, Sutton, Surrey, United Kingdom; 2Early Clinical Development,, AstraZeneca,, Macclesfield, Cheshire, United Kingdom

Computer 66  3873.  Classical and Knowledge-Based Pharmacokinetic Model Selection Techniques in Analysis of Dynamic Contrast Enhanced MRI Studies: Performance and Bias Comparison
Hassan Bagher-Ebadian1, 2, Mohamadreza Mohammadian-Behbahani1, 4, Azimeh Noorizadeh Vahed Dehkordi1, 5, James R. Ewing, 26, Alireza Kamali-Ast1, Siamak P. Nejad-Davarani1, Hamed Moradi1, Stephen Brown, 29, Brent Griffith10, Ali S.ARBab11, Tom Mikkelson12, Lisa Scarpace12, Hamid Soltanian-Zadeh1, 13
1Radiology and Research Administration, Henry Ford Hospital, Detroit, MI, United States; 2Physics, Oakland University, Rochester, MI, United States; 3Nuclear Engineering, Shahid Beheshti University, Tehran, Iran; 4Nuclear Engineering, Amir-Kabir University of Technology, Tehran, Iran; 5Nuclear Engineering, Najaf Abad Branch, Islamic Azad University, Isfahan, Iran; 6Neurology, Henry Ford Hospital, Detroit, MI, United States; 7Pathology, Henry Ford Hospital, MI, Iran; 8Nuclear Engineering, Shiraz University, Shiraz, Fars, Iran; 9Radiation Oncology, Henry Ford Hospital, Detroit, MI, United States; 10Radiology, Henry Ford Hospital, Detroit, MI,

Hyunki Kim1, Sharon Samuel1, Marie Warren1, Guihua Zhai1, William Grizzle1, Denise Oelschlager1, Pedro Lopez-Casan1, Manuel Hidalgo1, Joy Kovar1, Kurt Zinn1, Donald Backlund1

1University of Alabama at Birmingham, Birmingham, AL, United States; 2Siemens Medical Solutions, NC, United States; 3SIEMENS Healthcare, Erlangen, Bavaria, Germany

Computer 68  3875. Dynamic Contrast Enhanced MRI Detection of a Central Defect in Clear Cell Renal Cell Carcinoma Correlates with a Tumor Scar and Lower Tumor Proliferation Rate

Yue Zhang1, Payal Kapur2, Qing Yuan3, Ananth Madhuranthakam1, Ingrid Carvo4, Sabina Signoretti5, Ivan Dimitrov6, Yin Xi7, Katherine Wicks7, Jeffrey Cadeddu7, Vitaly Margulis8, James Brugarolas9, Ivan Pedrosa1

1Radiology, University of Texas Southwestern Medical Center, Dallas, TX, United States; 2Pathology, University of Texas Southwestern Medical Center, Dallas, TX, United States; 3University of Texas Southwestern Medical Center, Dallas, TX, United States; 4Pathology, Brigham and Women’s Hospital, Boston, MA, United States; 5Philips Medical Systems, Cleveland, OH, United States; 6Radiodiagnosis, King George's Medical University, Lucknow, U.P., India; 7Pathology, All India Institute of Medical Sciences, New Delhi, Delhi, India; 8NMR & MRI Facility, All India Institute of Medical Sciences, New Delhi, Delhi, India; 9Radiotherapy, All India Institute of Medical Sciences, New Delhi, Delhi, India

Computer 69  3876. Measurements of Spontaneous R2* Fluctuations for Acute Hypoxia Detection in Head and Neck Cancer

Rafal Pance1, Liam Welsh1, Maria A. Schmidt1, Kate L. Newsbold1, Kee Wong1, Angela M. Riddell1, Dow-Mu Koh1, Alex Dunlop1, Daulat Mcquaid1, Shreerang A. Bhude1, Kevin J. Harrington2, Christopher M. Nutting3, Georgina Hopkinson1, Cheryl Richardson1, Simon P. Robinson, Martin O. Leach1

1Royal Marsden NHS FT and Institute of Cancer Research, Sutton, Surrey, United Kingdom; 2Royal Marsden NHS FT and Institute of Cancer Research, London, United Kingdom; 3Royal Marsden NHS FT, London, United Kingdom

Electronic Poster
Cancer: Other Cancers
Exhibition Hall  Tuesday 16:00-17:00

Computer 70  3877. Evaluation of Renal Masses Using Multiparametric MRI: Correlation with Histopathology

Durgesh Kumar Dwivedi1, Girdhar Singh Bora1, Rajeer Kumar1, Sanjay Sharma1, Sanjay Thukar1, Siddhartha Datta Gupta1, Naramanagalam Raghu Nathan Jagannathan1

1Proton Imaging, King George's Medical University, Lucknow, U.P., India; 2MRI & MRT Facility, All India Institute of Medical Sciences, New Delhi, Delhi, India; 3Pathology, All India Institute of Medical Sciences, New Delhi, Delhi, India

Computer 71  3878. Multi-Parametric Whole Body MRI in Paediatric Lymphoma; a Comparison with Reference Standard PET-CT

Arash Latifoltojar1, Paul Humphries1, Stuart Taylor1, Ananth Shankar1, Stephen Daw1, Shonit Thakur1

1University College London, London, United Kingdom; 2University College London Hospital, London, United Kingdom

Electronic Poster
Breast Cancer Clinical
Exhibition Hall  Tuesday 16:00-17:00

Computer 73  3879. Clinical Evaluation of TWIST DIXON Sequence with Flexible View Sharing for Breast DCE MRI: Can Initial Uptake Phase Provide Accurate Diagnosis

Yuan Le1, Hal D. Kipfer1, Shadie S. Majidi1, Brian Dale2, Marcel Dominik Nickel3, Randall Kroeker2, Elisabeth Weiland1, Chen Lin3

1Radiology and Imaging Science, Indiana University School of Medicine, Indianapolis, IN, United States; 2Siemens Medical Solutions, NC, United States; 3Siemens Healthcare, Erlangen, Bavaria, Germany

Computer 74  3880. Assessment of the Correlation Between ADC Values and Oncotype DX Score in Estrogen-Receptor Positive, Lymph Node Negative, Breast Cancers

Sunitha B. Thakur1, Manuela Durando2, Milans Soledad3, Elizabeth J. Sutton2, Dilip Giri2, Elizabeth A. Morris2

1University of Alabama at Birmingham, Birmingham, AL, United States; 2Siemens Medical Solutions, NC, United States; 3Siemens Healthcare, Erlangen, Bavaria, Germany
Multi-Parametric Longitudinal Study for the Evaluation of Tumor Heterogeneity in Breast Cancer Patients Using Simultaneous MRSI & DWI Techniques

Naranamangalam R. Jagannathan¹, Khushbu Agarwal¹, Uma Sharma¹, Smriti Hari², Vurthalaure Seenu³, Rajinder Parshad⁴

¹Department of NMR & MRI Facility, All India Institute of Medical Sciences, New Delhi, Delhi, India; ²Department of Radiodiagnosis, All India Institute of Medical Sciences, New Delhi, Delhi, India; ³Department of Surgical Disciplines, All India Institute of Medical Sciences, New Delhi, Delhi, India

Implementation of Multiparametric Magnetic Resonance Imaging with High-Resolution Dynamic Contrast-Enhanced and Diffusion-Weighted Magnetic Resonance Imaging at 7T Improves the Assessment of Breast Tumors: A Feasibility Study

Katja Pinker¹, Pascal Balizer¹, Wolfgang Bogner², Doris Leithner³, Siegfried Trattning², Olgica Zaric², Peter Dubsky¹, Rupert Bartsch⁴, Zsuzsanna Bagor-Horvath⁴, Stephan Gruber⁴, Michael Weber⁴, Thomas H. Helbich⁴

¹Dept. of Biomedical Imaging and Image-guided Therapy, Division of Molecular and Gender Imaging, Medical University of Vienna, Vienna, Austria; ²Dept. of Biomedical Imaging and Image-guided Therapy, MR Centre of Excellence, Medical University of Vienna, Vienna, Austria; ³Dept. of Surgery, Medical University of Vienna, Vienna, Austria; ⁴Dept. of Internal Medicine, Division of Oncology, Medical University of Vienna, Vienna, Austria

Registration of Multiparametric Breast MRI

Lawrence Kenning¹, Martin Pickles², Lindsay Turnbull¹

¹Centre for MR Investigations, Hull York Medical School at University of Hull, Hull, United Kingdom

Multi-Parametric MRI in Evaluating Pre-And Post-Menopausal ER Positive Breast Cancer

Elizabeth O'Flynn¹, David Collins¹, James D'Arcy¹, Maria Schmidt¹, Nandita deSouza¹

¹CRUK Cancer Imaging Centre, The Institute of Cancer Research, Sutton, Surrey, United Kingdom

Assessment of Pathologic Complete Response of Breast Cancer with Different Molecular Subtypes After Neoadjuvant Chemotherapy with Dynamic Contrast-Enhanced MR Imaging

Yuan Jiang¹, Naishan Qin¹, Xiaoying Wang¹, Li Guo¹

¹Radiology Department, Peking University First Hospital, Beijing, China

Optimization of Quantitative MRI Background Parenchymal Enhancement Metrics to Predict Breast Cancer Risk

Cheng-Liang Liu¹, Savannah C. Partridge¹, Diana L. Lam¹, Constance D. Lehman¹, Habib Rahbar¹

¹Department of Radiology, University of Washington, Seattle, WA, United States

Clinical Utility of Sequential DWI in Studying Tumor Margins as an Aid to Breast Conservation Surgery

Naranamangalam R. Jagannathan¹, Khushbu Agarwal¹, Rani G. Sah¹, Uma Sharma¹, Smriti Hari², Vurthalaure Seenu³, Rajinder Parshad⁴

¹Department of NMR & MRI Facility, All India Institute of Medical Sciences, New Delhi, Delhi, India; ²Department of Radiodiagnosis, All India Institute of Medical Sciences, New Delhi, Delhi, India; ³Department of Surgical Disciplines, All India Institute of Medical Sciences, New Delhi, Delhi, India

Evaluation of the Efficiency of DTI Anisotropy Indices to Detect Breast Cancer

Edna Furman-Haran¹, Dov Grobgedl², Noam Nissan², Myra Feinberg-Shapiro³, Tania Zehavi¹, Zvi Kaufman¹, Hadassa Degani²

¹Department of Biological Services, The Weizmann Institute of Science, Rehovot, Israel; ²Department of Biological Regulation, The Weizmann Institute of Science, Rehovot, Israel; ³Meir Medical Center, Kfar Saba, Israel

A Preliminary Study of Diffusion Kurtosis Imaging for Assessment of Breast Lesions

Shiteng Suo¹, Fang Cheng¹, He Wang¹, Jia Hua¹, Jianrong Xu¹

¹Department of Radiology, Ren Ji Hospital, School of Medicine, Shanghai Jiao Tong University, Shanghai, China, China; ²Philips Research China, Shanghai, China, China
Electronic Poster

Computer 84 3890. **Improved Diagnostic Performance of 3T Breast MRI Using Perfusion-Adjusted ADC Values**  
Niloufar Fozouni¹, Cheng-Liang Liu¹, Habib Rahbar¹, Constance D. Lehman¹, Savannah C. Partridge¹  
¹Department of Radiology, University of Washington, Seattle, WA, United States

Computer 85 3891. **Intravoxel Incoherent Motion MRI May Reveal Microvascular Variation of Fibroglandular Tissues in Breast Cancer**  
Jing Yuan¹, Gladys G. Lo², Qi Lei Wong³, Helen H.L. Chan³, Abby Y. Ding³, Ting Ting Wong³, Polly S.Y. Cheung¹  
¹Medical Physics and Research Department, Hong Kong Sanatorium & Hospital, Happy Valley, Hong Kong, China; ²Department of Diagnostic & Interventional Radiology, Hong Kong Sanatorium & Hospital, Happy Valley, Hong Kong, China; ³Breast Care Center, Hong Kong Sanatorium & Hospital, Happy Valley, Hong Kong, China

Computer 86 3892. **Intralesional Characteristics of Correlated 18-Fluorodeoxyglucose PET and Intravoxel Incoherent Motion Parameters in Locally Advanced Breast Cancer**  
Jason Ostenson¹, Linda Moy¹, Sangheon G. Kim¹, Amy Melsaether¹, Komal Jhaveri², Christian Geppert³, David Faul³, Francisco Esteva³, Sylvia Adams³, Freya Schnabel³, Kimberly Jackson³, Joon Lee³, Christopher Gleiemi³, Gene Young Cho³,³, Thorsten Feiweier³, Eric E. Sigmund³  
¹Department of Radiology, NYU Langone Medical Center, New York, NY, United States; ²Perlmutter Cancer Center, NYU Langone Medical Center, New York, NY, United States; ³Siemens Medical Solutions, New York, NY, United States; 4Department of Surgery, NYU Langone Medical Center, New York, NY, United States; 5Sackler Institute of Graduate Biomedical Sciences, NYU School of Medicine, New York, NY, United States; ⁶Siemens AG, Erlangen, Germany

Computer 87 3893. **Initial Results of the Application of a Modified TWIST Sequence with Flexible View Sharing in Breast DCE-MRI**  
Yuan Le¹, Hal D. Kipfer¹, Marcel Dominik Nickel¹, Randall Kroeker¹, Stephanie P. Holz¹, Elisabeth Weiland², Chen Lin¹  
¹Radiology and Imaging Science, Indiana University School of Medicine, Indianapolis, IN, United States; ²Siemens Healthcare, Erlangen, Bavaria, Germany; ³Siemens Medical Solutions, NC, United States

### Electronic Poster

**Cancer: Others**

Exhibition Hall Tuesday 16:00-17:00

Computer 88 3894. **2HG Metabolic Profiling Analysis Based on 13C-NMR Spectroscopy with Stable13C-Labeled Isotope**  
Hyeon-Man Baek¹,², Youngjae Jeon¹, Jooyun Kim¹, Mirim Bang¹  
¹Center for MR Research, Korea Basic Science Institute, Ochang, Chungbuk, Korea; ²Department of Bio-Analytical Science, University of Science & Technology, Daejeon, Chungnam, Korea

Computer 89 3895. **Evaluation of PET/MR and DWI in Malignant Lymphoma: Initial Results in 17 Patients**  
Chiara Giraudo¹, Michael Weber¹, Markus Raderer², Georgios Karanikas², Marius Erik Mayerhoefeer²  
¹Departments of Biomedical Imaging and Image-guided Therapy, Medical University of Vienna, Vienna, Austria; ²Internal Medicine I, Medical University of Vienna, Vienna, Austria

Computer 90 3896. **Automated Planning of Scan Geometry in Follow-Up Prostate MRI Examinations**  
Peter Mazurkewizt, Daniel Bystrov¹, Peter Koken¹, Torbjorn Vik¹, Julien Sénégas¹  
¹Philips Research Laboratories, Hamburg, Germany

Computer 91 3897. **DCE-MRI of Prostate Cancer: Perfusion Quantification with Tofts Model Vs. Shutter-Speed Model. Initial Experience.**  
Cecilia Besa¹, Guido Jajamovich¹, Adnan Ali², Wei Huang³, Kenneth Haines³, Ash Tewari³, Bachir Taouli³  
¹Radiology, Icahn School of Medicine at Mount Sinai, New York, NY, United States; ²icahn School of Medicine at Mount Sinai, NY, United States; ³Urology, Icahn School of Medicine at Mount Sinai, NY, United States; ⁴Radiology, Oregon Health & Science University, Portland, OR, United States; ⁵Pathology, Icahn School of Medicine at Mount Sinai, NY, United States

522
Auditory Cortex Modulates the Midbrain Response Selectivity to Behaviorally Relevant Sounds

Jevin W. Zhang1, 2, Patrick P. Gao1, 2, Shu-Juan Fan1, 2, Dan H. Sanes3, Ed X. Wu1, 2
1Laboratory of Biomedical Imaging and Signal Processing, The University of Hong Kong, Hong Kong, Hong Kong SAR, China; 2Department of Electrical and Electronic Engineering, The University of Hong Kong, Hong Kong, Hong Kong SAR, China; 3Center for Neural Science, New York University, New York, NY, United States

Deep Brain Stimulation of the Rodent Nucleus Accumbens Recruits Subcortical Limbic Networks

Daniel Albaugh1, 2, Garret Stuber3, Yen-Yu Ian Shih4
1Curriculum in Neurobiology, University of North Carolina at Chapel Hill, Chapel Hill, NC, United States; 2Biomedical Imaging Research Center, University of North Carolina at Chapel Hill, Chapel Hill, NC, United States; 3Department of Psychiatry, University of North Carolina at Chapel Hill, Chapel Hill, NC, United States; 4iK9 LLC, Auburn, AL, United States
of North Carolina at Chapel Hill, Chapel Hill, NC, United States; 4BRIC, Department of Neurology, University of North Carolina at Chapel Hill, Chapel Hill, NC, United States

Computer 9 3907. Auditory and Visual Cortices Differentially Modulate Auditory Responses in the Midbrain
Patrick P. Gao1, 2, Jevin W. Zhang1, 2, Shu-Juan Fan1, 2, Dan H. Sanes2, Ed X. Wu2, 2
1Laboratory of Biomedical Imaging and Signal Processing, The University of Hong Kong, Hong Kong, HKSAR, China; 2Department of Electrical and Electronic Engineering, The University of Hong Kong, Hong Kong, HKSAR, China; 3Center for Neural Science, New York University, New York, NY, United States

Computer 10 3908. High Pulse Rate Acoustic Stimulation Reduces fMRI Responses in the Auditory Thalamus and Cortex of Chronic Noise Exposed Rats
Condon Lau1, Jevin W. Zhang2, Ed X. Wu2
1Department of Physics and Materials Science, City University of Hong Kong, Kowloon, Hong Kong SAR, Hong Kong; 2Department of Electrical and Electronic Engineering, The University of Hong Kong, Hong Kong SAR, Hong Kong

Computer 11 3909. Dose-Dependent Effects of Sevoflurane on Temporal Distribution of BOLD Responses to Somatosensory Stimulation in Rats
Tomokazu Tsurugizawa1, 2, Yukari Takahashi1, Akihiko Kitamura, 1, Fusao Kato1
1Jikei University School of Medicine, Tokyo, Japan; 2NeuroSpin/CEA, Gif-sur-Yvette, Essonne, France; 3Ajinomoto Co. Inc., Kawasaki, Japan

Computer 12 3910. 500 Ms Temporal and 750 µm Spatial Inplane Resolution for Whole-Brain fMRI Applications in the Macaque at 7T
Dávid Z. Balla1, Rolf Pohmann1, Shajian G1, Philipp Ehles2, Arno Naumer2, Thomas Steudel1, Yusuke Murayama1, Axel Gelbermann1, Matthias H. Munk1, Hellmut Merkle1, Michael Beyerlein1, Henry C. Evrard1, Nikos K. Logothetis1, Klaus Scheffler1
1Max Planck Institute for Biological Cybernetics, Tübingen, Germany; 2Bruker Biospin GmbH, Ettlingen, Germany

Electronic Poster

fMRI Methods
Exhibition Hall  Tuesday 17:00-18:00

Computer 13 3911. Accelerated Neonatal fMRI Using Multiband EPI
Anthony N. Price1, 2, Lucilio Cordero-Grande1, 2, Shaihan J. Malik1, 2, Maryam Abaei1, Tomoki Arichi1, Emer J. Hughes1, Daniel Rueckert1, A. David Edwards1, Joseph V. Hajnal1, 2
1Centre for the Developing Brain, King's College London, London, United Kingdom; 2Division of Imaging Sciences & Biomedical Engineering, King's College London, London, United Kingdom; 3Biomedical Image Analysis Group, Imperial College London, London, United Kingdom

Computer 14 3912. Comparison of Multi-Band Multi-Echo and Multi-Echo at 3T
Vincent Jansen1, Rasim Boyacioglu1, Jenni Schulz1, David G. Norris1, 2
1Radboud University, Donders Institute for Brain, Cognition and Behaviour, Nijmegen, Netherlands; 2University Duisburg-Essen, Erwin L. Hahn Institute for Magnetic Resonance Imaging, Essen, Germany

Computer 15 3913. Local EPI Distortion Induced by Blue Light Delivery in the Naïve Brain: Implications for Optogenetic fMRI Studies
Russell W. Chan1, 2, Alex T.L. Leong, 12, Joe S. Cheng1, 2, Victor B. Xie1, 2, Partick P. Gao1, 2, Aaron Mok2, Kevin K. Tsia2, Ed X. Wu1, 2
1Laboratory of Biomedical Imaging and Signal Processing, The University of Hong Kong, Hong Kong, China; 2Department of Electrical and Electronic Engineering, The University of Hong Kong, Hong Kong, China

Computer 16 3914. Combined Echo Volumar Imaging (EVI) and Localized Excitation for Motion Insensitive Fetal fMRI
Rita G. Nunes1, 2, Giulio Ferrazzi1, Anthony Price1, Matthew Fox1, Christina Malamateniou1, Mary Rutherford1, Joseph Hajnal1, 3
1Centre for the Developing Brain, King's College London, London, United Kingdom; 2Instituto de Biofisica e Engenharia Biomédica, Universidade de Lisboa, Lisbon, Portugal; 3Division of Imaging and Sciences and Biomedical Engineerin, King's College London, London, United Kingdom
Whole Brain BOLD Functional MRI in the Presence of Metallic Orthodontic Braces

Yuanku Wu, David Woods, Moshe T. Stern, Nicholas J.S. Blair, Raag D. Airan, James J. Pekar, Peter C. M. van Zijl, Jun Hua

Neurosection, Div. of MRI Research, Dept. of Radiology, Johns Hopkins University School of Medicine, Baltimore, MD, United States; Department of Medical Imaging, Nanfang Hospital, Southern Medical University, Guangzhou, Guangdong, China; Department of Orthodontics and Pediatric Dentistry, University of Maryland School of Dentistry, Baltimore, MD, United States; Department of Orthodontics and Pediatric Dentistry, University of Maryland, Baltimore, MD, United States; Department of Biomedical Engineering, Johns Hopkins University, Baltimore, MD, United States; Div. of Neuroradiology, Dept. of Radiology, Johns Hopkins University School of Medicine, Baltimore, MD, United States; F.M. Kirby Research Center for Functional Brain Imaging, Kennedy Krieger Institute, Baltimore, MD, United States

Acceleration of Task-Based fMRI Using K-T FASTER

Mark Chiew, Nadine N. Graedel, Stephen M. Smith, Karla L. Miller

FMRIB Centre, University of Oxford, Oxford, Oxfordshire, United Kingdom

Demonstration of Recovery of Signal Loss at 7T in Gradient Echo EPI Using Tailored-RF Pulses

Catarina Rua, Stephen James Wascling, Mauro Costaglì, Laura Biagi, Mark Roger Symms, Alberto del Guerra, Mirco Cosottini, Michel Tosetti, Gareth John Barker

University of Pisa, Pisa, Italy; Neuroimaging, King's College London, London, United Kingdom; IRCCS Stella Maris, Pisa, Italy; GE Healthcare, Pisa, Italy

MR Inverse Imaging at 7T Has Higher Spatial Resolution Than at 3T

Ying-Hua Chu, Alexandre Vignaud, Ruo-Ning Sun, Christophe Pallier, Wen-Jui Kuo, Denis Le Bihan, Fa-Hsuan Lin

Institute of Biomedical Engineering, National Taiwan University, Taipei, Taiwan; CEA/DSV/I2BM/Neurospin/UNIRS, Gif sur Yvette, France; CEA/DSV/I2BM/Neurospin/UNICOG, Gif sur Yvette, France; Institute of Neuroscience, National Yang Ming University, Taipei, Taiwan

Fast Functional MRI Using Inverse Imaging with Dynamic Off-Resonance Artifacts Correction

Ruo-Ning Sun, Yi-Cheng Hsu, Ying-Hua Chu, Shang-Yueh Tsai, Wen-Jui Kuo, Fa-Hsuan Lin

Institute of Biomedical Engineering, National Taiwan University, Taipei, Taiwan; Institute of Applied Physic, National Chengchi University, Taipei, Taiwan; Institute of Neuroscience, National Yang Ming University, Taipei, Taiwan

PEAK-EPI: Feasibility and Benefits of K-T-Undersampled EPI Acquisition and PEAK-GRAPPA Reconstruction in fMRI

Rebecca Ramb, Pierre Levan, Jürgen Hennig

Department of Radiology, Medical Physics, University Medical Center, Freiburg, Germany

A Quantitative Analysis of fMRI Induced Phase Changes Using Averaged-BOSS (A-BOSS)

Mahdi Khajehim, Abbas Nasiraei Moghaddam, Golam-Ali Hossein-Zadeh, Thomas Martin, Danny JJ Wang

BME, Amirkabir University of Technology (Tehran Polytechnic), Tehran, Iran; School of Cognitive Sciences, Institute for Research in Fundamental Sciences (IPM), Tehran, Iran; ECE, University of Tehran, Tehran, Iran; Neurology, UCLA, Los Angeles, CA, United States

Method for Epileptogenic Focus Localization Using BOLD Signal Complexity Analysis

Vânia Tavares, André Santos Ribeiro, Carlos Capela, Luis Cerqueira, Hugo Alexandre Ferreira

Institute of Biophysics and Biomedical Engineering, Faculty of Sciences of the University of Lisbon, Lisbon, Portugal; Centre for Neuropsychopharmacology, Division of Brain Sciences, Department of Medicine, Imperial College London, London, United Kingdom; Department of Neurology, Centro Hospitalar Lisboa Central, Lisbon, Portugal; Department of Neuroradiology, Centro Hospitalar Lisboa Central, Lisbon, Portugal

Fuzzy General Linear Model for Functional Magnetic Resonance Imaging

Alejandro Veloz, Luis Hernandez-Garcia, Hector Allende, Claudio Moraga, Rodrigo Salas, Steren Chabert

Biomedical Engineering School, Universidad de Valparaiso, Valparaiso, Chile; Department of Informatics, Universidad Tecnica Federico Santa Maria, Valparaiso, Chile; Functional Magnetic Resonance Imaging Laboratory, University of Michigan, Ann Arbor, MI, United States; European Centre for Soft-Computing, Mieres, Spain
ICA has been widely used in task-based fMRI in order to separate independent signal components, without supplying a-priori assumptions about the signal. This method promises for an accurate localization of neuronal activation and a better understanding of the underlying mechanisms.

This study compared BOLD- and QSM-based neuronal activation patterns and changes of venous magnetic susceptibility under visual stimulation. 3D-GRE-fQSM might have a potential for studies with a focus on the venous vessel tree.

Modern neuroimaging techniques, especially fMRI, have advanced our understanding of the neuroanatomical basis of task of single-digit multiplication and contribute collectively to the activations in prefrontal and parietal cortices.

In this study, we establish a sham MRI session that replicates the primary conditions of a genuine MRI scan, but without the presence of the scanner. This is a cost-effective and academically sound approach to measure, understand and then reduce unwanted sources of variation.

Susceptibility field gradients (SFG) cause undesired through-plane dephasing and associated signal loss near the sinus venous system. By using multiband acquisition to extend slice coverage, we investigate body somatotopy in SI and SII with high spatial resolution at 7T.

Since the introduction of fMRI, accurate delineation of brain activity is a relevant topic. This is a difficult task, often involving complex signal processing algorithms. One approach is to use the fuzzy GLM, which has been shown to be able to obtain a broader activated region than the classical GLM.

We investigate digit representation and tactile attention in SI and SII with high spatial resolution at 7T. fMRI was performed using a 16-channel coil and a gradient-echo echo-planar imaging sequence. The results show that tactile attention modulates neural activity in overlapping regions with other cortical areas, such as SMA and pre-SMA.

The present study aims to assess the age-related neural changes particularly concerning the role memory plays during emotional sentences. Among the enhanced regions for recognizing positive emotional sentences, the insula is known to be involved in emotional awareness. Our results suggest that the insula might reflect the elderlies’ greater awareness to positive emotional sentences.
3933. Impaired Cerebrovascular in Obese Children with Obstructive Sleep Apnea Compared to Healthy Controls

Junseok Kim1, 2, Jackie Leung1, Indra Narang1, Paula Louise Croal1, Andrea Kassner,1 2
1University of Toronto, Toronto, ON, Canada; 2Hospital for Sick Children, Toronto, ON, Canada

3934. Stability of Tissue Model Parameters: Using the Full Analytical Solution or the Asymptotic Approximation?

Sebastian Domsch1, Sebastian Weingärtner1, Jascha Zapp1, Lothar R. Schad1
1Computer Assisted Clinical Medicine, Heidelberg University, Mannheim, Baden-Württemberg, Germany

3935. Separating the Magnitude and Temporal Responses in a BOLD-Based CO2 Hypercapnia Leads to Improved Inter-Session Reliability as Well as Characterization of Hemodynamic Impairment: A Clinical Multi-Cohort Study

David E. Crane1, Anoop Ganda1, David J. Mikulis2, Sandra E. Black1, Bradley J. MacIntosh1
1Sunnybrook Research Institute, Toronto, ON, Canada; 2Toronto Western Hospital, Toronto, ON, Canada

3936. Regional and State-Dependent Properties of M for High-Field Calibrated fMRI in Rat Brain

Christina Y. Shu1, Daniel Coman2, Basavaraju G. Sanganahalli1, Helen Wang2, Christoph Juchem2, Peter Herman1, Fahmeed Hyder1, 2
1Biomedical Engineering, Yale University, New Haven, CT, United States; 2Diagnostic Radiology, Yale University, CT, United States

3937. Quantitative β Mapping for High-Field Calibrated fMRI in Rat Brain

Christina Y. Shu1, Douglas Rothman1, 2, Basavaraju G. Sanganahalli1, Daniel Coman1, Peter Herman1, Fahmeed Hyder1, 2
1Biomedical Engineering, Yale University, New Haven, CT, United States; 2Diagnostic Radiology, Yale University, New Haven, CT, United States

3938. Imaging Cerebrovascular Reserve Using Combined ASL Blood Flow and BOLD: A Study Using Acetazolamide Challenge in Patients with Chronic Stenosis of Major Arteries

Deqiang Qiu1, Junjie Wu1, Fadi Nahab2, Seena Dekhkarhgan1
1Radiology and Imaging Sciences, Emory University, Atlanta, GA, United States; 2Neurology, Emory University, GA, United States

3939. Oxygen Saturation Changes During Hyperoxic and Hypercapnic Stimuli Measured by Near Infrared Spectroscopy (NIRS) Cerebral Oximetry

Hannah Hare1, Daniel Bulte1
1FMRIB, University of Oxford, Oxford, Oxfordshire, United Kingdom

3940. High Resolution Cerebral Metabolic Rate of Oxygen (CMRO2) Using Quantitative Susceptibility Mapping (QSM) and an Oxygen Extraction Fraction (OEF) Constraint

Jingwei Zhang1, 2, Thanh D. Nguyen1, Pascal Spincemaille2, Tian Liu1, Dong Zhou2, Yi Wang1, 2
1Biomedical Engineering, Cornell University, New York, United States; 2Radiology, Weill Cornell Medical College, New York, United States

3941. Towards High-Quality Simultaneous EEG-fMRI Acquisitions at 7 Tesla: Detection and Reduction of EEG Artifacts Due to Head Motion in B0

João Jorge1, 2, Frédéric Grouiller1, Wietske van der Zwaag2, Rolf Gruetter1, Patrícia Figueiredo2
1Laboratory for Functional and Metabolic Imaging, École Polytechnique Fédérale de Lausanne, Lausanne, Switzerland; 2Department of Bioengineering, Instituto Superior Técnico, Lisbon, Portugal

3942. Resting-State Alterations in EEG-fMRI Coupling in Adults with Attention-Deficit/Hyperactivity Disorder

Lars Michels1, 2, Steffen Bollmann2, Diego Manuel Bau2, Anthony Schläpfer1, Maya Schneebehl1, Carmen Ghisleni1, Peter Klahn3, 4, Daniel Brandeis2, 4, Ruth O’Gorman2
1Institute of Neuroradiology, University Hospital Zurich, Zurich, Switzerland; 2Center for MR-Research, University Children’s Hospital, Zurich, Switzerland; 3Department of Child and Adolescent Psychiatry University of Zürich, University of Zurich, Zurich, Switzerland; 4Institute of Psychology, University of Zurich, Zurich, Switzerland; 5Department of Child and Adolescent Psychiatry and Psychotherapy, Central Institute of Mental Health Ma, Medical Faculty Mannheim / Heidelberg University, Mannheim, Germany
The brain functional architecture grows fast during prenatal period. This study aims to investigate the development of the brain networks since the very early age, although frontal areas are characterized by late myelination and expected late connectivity.

We present results from a clinical trial of pharmaco-MRI (phMRI) employing cerebral blood volume (CBV) imaging using buprenorphine at lower doses of buprenorphine, which has practical implications for similar phMRI studies with centrally acting drugs.

The human brain can be viewed as a collection of networks. Those highly specialized networks can be referred to as a set of functional connectivity in a fully 3D fashion, which can be coupled with our existing real-time fiber tracking module.

Ballistocardiogram artefact (BCG) seriously compromises EEG data quality when simultaneously acquired with fMRI. Here, we present results from a novel ICA-based method that outperformed both previous ICA-based methods as well as the Optimal Basis Sets (OBS) approach, in all conditions.

Previous studies have showed that the envelope of EEG gamma band power is correlated with slow fMRI fluctuations in resting state networks. Our results suggest high frequency electrical correlates for visual resting state networks that are not compromised. This indicates that these networks have true high frequency electrical correlates of neural dynamics.

EEG data recorded during fMRI are compromised by large gradient artefact (GA) voltages. The GA is usually corrected using excessive re-wiring, allowing recording at higher EEG bandwidths or increased achievable image resolution without saturation.

Attention-deficit/hyperactivity disorder (ADHD) has a high prevalence but the neurobiological mechanisms underlying ADHD are not well understood. We conclude that sensory- and cognitive processing is compromised in adults with ADHD.

Electronic Poster

Functional Connectivity Materials & Applications

Exhibition Hall Tuesday 16:00-17:00

Aberrant Brain Resting-State Functional Connectivity in Patients with Obstructive Sleep Apnea

Bumhee Park1, Jose A. Palomares1, Mary A. Woo1, Daniel W. Kang1, Paul M. Macey2, Daniel W. Kang3, Paul M. Macey2, Ronald M. Harper1, Rajesh Kumar1,6

1Anesthesiology, University of California at Los Angeles, Los Angeles, CA, United States; 2School of Nursing, University of California at Los Angeles, Los Angeles, CA, United States; 3Medicine, University of California at Los Angeles, Los Angeles, CA, United States; 4Neurology, University of California at Los Angeles, Los Angeles, CA, United States; 5Neurobiology, University of California at Los Angeles, Los Angeles, CA, United States; 6Radiological Sciences, University of California at Los Angeles, Los Angeles, CA, United States; 7Institute of Molecular Bioimaging and Physiology, CNR, Segrate, Italy; 8Vita-Salute San Raffaele University, Milan, Italy; 9Division of Neonatology, Pediatrics Dept, San Raffaele Hospital, Milan, Italy; 10Department of Psychology, Auburn University, Auburn, AL, United States; 11Department of Electrical & Computer Engineering, Auburn University, Auburn, AL, United States; 12Merck and Co, Rahway, NJ, United States; 13Merck and Co, PA, United States; 14Merck and Co, Belgium; 15Ghent University, Belgium; 16AU MRI Research Center, Department of Electrical & Computer Engineering, Auburn University, Auburn, AL, United States; 17Department of Psychology, Auburn University, Auburn, AL, United States; 18Department of Psychology, Auburn University, Auburn, AL, United States; 19Department of Psychology, Auburn University, Auburn, AL, United States; 20Department of Psychology, Auburn University, Auburn, AL, United States; 21Department of Psychology, Auburn University, Auburn, AL, United States.
Electronic Poster

Giussy Olivito1, 2, Maria Leggio1, 2, Fiorenzo Laghi3, Roberto Baiocco1, Anna Maria Tedesco1, Silvia Clausi1, Chiara Mastropasqua1, Marco Molinari1, Mara Cercignani4, Marco Bozzali1
1Ataxia Research Laboratory, IRCCS Santa Lucia Foundation, Rome, Italy; 2Department of Psychology, Faculty of Medicine and Psychology, University of Rome “Sapienza”, Rome, Italy, Italy; 3Department of Developmental and Social Psychology, Faculty of Medicine and Psychology, University of Rome “Sapienza”, Rome, Italy, Italy; 4Neuroimaging Laboratory, IRCCS Santa Lucia Foundation, Rome, Italy, Italy; 5Neurological and Spinal Cord Injury Rehabilitation, Department A, IRCCS Santa Lucia Foundation, Rome, Italy, Italy; 6Clinical Imaging Science Center (CISC), Brighton and Sussex Medical School, Brighton, Sussex, United Kingdom

Mario Torso1, Chiara Mastropasqua1, Giovanni Giudetti1, Laura Serra1, Giussy Olivito1, 2, Elisa Tuzzi1, Barbara Spano1, Carlo Caltagirone4, 1, Mara Cercignani4, Marco Bozzali1
1Neuroimaging Laboratory, Santa Lucia Foundation, IRCCS, Rome, Italy; 2Ataxia research Laboratory, Santa Lucia Foundation, IRCCS, Rome, Italy; 3Department of psychology, University of Rome Sapienza, Rome, Italy; 4Department of Clinical and Behavioural Neurology, Santa Lucia Foundation, IRCCS, Rome, Italy; 5Department of Neuroscience, University of Rome ‘Tor Vergata’, Rome, Italy; 6CISC, Brighton & Sussex Medical School, Brighton, Sussex, United Kingdom

Computer 46 3952. Observing the Activity Change of the Baseline Brain in Benign Essential Blepharospasm with Fractional Amplitude of Low-Frequency Fluctuation
Mingjie Ni1, Weiwei Wang1, Zhiheng Zhang1, Qingwei Song1, Ailian Liu1, Yanwei Miao1
1Radiology Department, the First Affiliated Hospital of Dalian Medical University, Dalian, Liaoning, China; 2GE Healthcare China, Beijing, China

Computer 47 3953. Altered Resting State Functional Connectivity in Hypothyroidism
Subash Khushu1, Sadhana Singh1, Mukes Kumar1, Shipji Mod1, Prabhjot Kaur1, L Ravi Shankar2
1NMR Research Centre, INMAS, DRDO, Delhi, India; 2Thyroid Research Centre, INMAS, DRDO, Delhi, India

Computer 48 3954. Functional Connectivity MRI Can Distinguish Experimental Pain from the Resting State with Seed ROI in the Posterior Insula, But Not the Anterior Insula
Keith M. Vogt1, James W. Ibinson2
1Anesthesiology, University of Pittsburgh Medical Center, Pittsburgh, PA, United States; 2Center for Pain Research, Dept of Anesthesiology, University of Pittsburgh, Pittsburgh, PA, United States

Computer 49 3955. Resting-State Functional Network Abnormalities in Major Depressive Disorder with Self-Harm: A Connectome Analysis
Zhen-Hui Li1, 2, Vincent Chin-Hung Chen3, Ming-Chou Ho4, Jun-Cheng Weng1, 2
1Department of Biomedical Sciences, Chung Shan Medical University Hospital, Taichung, Taiwan; 2School of Medical Imaging and Radiological Sciences, Chung Shan Medical University, Taichung, Taiwan; 3Department of Psychiatry, Chung Shan Medical University Hospital, Taichung, Taiwan; 4Department of Psychology, Chung Shan Medical University Hospital, Taichung, Taiwan

Computer 50 3956. Relationship Between Visual Functional Connectivity and Duration of Blindness Depends on Onset of Visual Deprivation
Matthew C. Murphy1, Amy C. Nau1, Christopher Fisher1, Seong-Gi Kim2, 3, Joel S. Schuman4, 5, Kevin C. Chan1, 4
1Department of Ophthalmology, University of Pittsburgh, Pittsburgh, PA, United States; 2Departments of Biomedical Sciences and Global Biomedical Engineering, Sungkyunkwan University, Suwon, Korea; 3Department of Radiology, University of Pittsburgh, Pittsburgh, PA, United States; 4Department of Bioengineering, University of Pittsburgh, Pittsburgh, PA, United States

Computer 51 3957. Dynamic Changes in Whole-Brain Functional Connectivity During Story Listening
Gloria Castellazzi1, 2, Fulvia Palesti3, 21, Ahmed T. Toosy1, Stefania Bruno2, Egidio D'Angelo26, Claudia A.M. Wheeler-Kingshott1
1Department of Electrical, Computer and Biomedical Engineering, University of Pavia, Pavia, PV, Italy; 2Brain Connectivity Center, C. Mondino National Neurological Institute, Pavia, PV, Italy; 3Department of Physics, University of Pavia, Pavia, PV, Italy; 4Department of Brain Repair and Rehabilitation, Queen Square MS Centre, UCL Institute of Neurology, London, England, United Kingdom; 5Overdale Hospital, Jersey, England, United Kingdom; 6Department of Brain and Behavioral Sciences, University of Pavia, Pavia, PV, Italy; 7NMR Research Unit, Department of Neuroinflammation, Queen Square MS Centre, UCL Institute of Neurology, London, England, United Kingdom
In this work, the k-t FASTER method for accelerating resting state FMRI data acquisition is demonstrated using a 3D Hybrid Radial-Cartesian Sampling (SMS) Resting-State fMRI.

We present a method of characterizing the state of functional connectivity of every vertex over the entire cerebral cortex. The relation is demonstrated by a large scale computation of 120 resting fmri scans.

There is growing interest in fMRI of neonates. However, T2* is longer in immature brains, suggesting that optimal fMRI of motor activation and that signal recovery combined with increased efficiency can be achieved with echo-shifting.

This preliminary study used regional homogeneity (ReHo), a novel resting-state fMRI parameter to investigate local brain activity changes in restless legs syndrome using regional homogeneity: a preliminary study.

The prevalence rate of Chronic prostatitis/Chronic pelvic pain syndrome (CP/CPPS) is approximately 9-16% in the general population. The exact cause and underlying mechanisms have been largely unknown so far. Our findings may be helpful for further study on the central mechanism of CP/CPPS.

The Default Mode Network (DMN) is associated with anti-correlation with task positive networks. In this study, we propose a method to analyze the DMN activity during spontaneous movement events. This analysis can be further extended to explore the DMN's behavior for spontaneous events in other networks.

We used wavelet analysis to demonstrate dynamic coherence maps with respect to different brain regions. A frequency component was observed, where individual parts of the network become less synchronized as signal frequency increases.
Lung/Mediastinum/Hyperpolarized Gas Imaging

Dynamic oxygen-enhanced MRI (dOEMRI) provides imaging biomarkers of regional lung ventilation and perfusion. However, due to the short relaxation times of hyperpolarized gases, it requires fast imaging. This study presents an improved protocol that uses a stronger gradient for the two diffusion-weighted (diffusion-b) images, resulting in a more robust measurement of ΔP/O₂. The protocol shows reproducible T1 measurements and allows characterisation of dynamic ΔP/O₂.

Computer 1 3967. Characterization of Whole-Brain Dynamic Connectivity Patterns Using Simultaneous MultiSlice (SMS) Resting-State fMRI

Afonso Dias¹, Marta Bianciardi², Sandro Nunes¹, Rodolfo Abreu¹, Juliana Rodrigues¹, L. Miguel Silveira³, Lawrence L. Wald², Patricia Figueiredo¹

¹Institute for Systems and Engineering, Instituto Superior Técnico, Universidade de Lisboa, Lisbon, Portugal; ²Department of Radiology, A.A. Martins Center for Biomedical Imaging, MGH and Harvard Medical School, Boston, MA, United States; ³Centre for Cognitive and Neurobiological Imaging, Instituto Superior Técnico, Universidade de Lisboa, Lisbon, Portugal

Computer 2 3968. Hierarchical Parcellation Using Discrete Morse Theory of Whole-Brain High-Resolution Resting-State 7T fMRI Data

Afonso Dias¹, Marta Bianciardi², Sandro Nunes¹, Rodolfo Abreu¹, Juliana Rodrigues¹, L. Miguel Silveira³, Lawrence L. Wald², Patricia Figueiredo¹

¹Institute for Systems and Engineering, Instituto Superior Técnico, Universidade de Lisboa, Lisbon, Portugal; ²Department of Radiology, A.A. Martins Center for Biomedical Imaging, MGH and Harvard Medical School, Boston, MA, United States; ³Centre for Cognitive and Neurobiological Imaging, Instituto Superior Técnico, Universidade de Lisboa, Lisbon, Portugal


Yoshiharu Ohnol¹, ², Masao Yu¹, Cheng Ouyang¹, Mitsue Miyazaki¹, Hisanobu Koyama¹, Shinichiro Seki¹, Katsusuke Koyan¹, Yoskiko Ueno¹, Takeshi Yoshikawa¹, ², Sumiaki Matsumoto¹, ², Kazuro Sagimura¹

¹Advanced Biomedical Imaging Research, Kobe University Graduate School of Medicine, Kobe, Hyogo, Japan; ²Division of Functional and Diagnostic Imaging Research, Kobe University Graduate School of Medicine, Kobe, Hyogo, Japan; ³Toshiba Medical Systems Corporation, Tochigi, Japan; ⁴Toshiba Medical Research Institute USA, IL, United States; ⁵Division of Radiology, Department of Radiology, Kobe University Graduate School of Medicine, Kobe, Hyogo, Japan; ⁶Center for Radiology and Radiation Oncology, Kobe University Hospital, KObe, Hyogo, Japan

Computer 4 3970. Automated Registration-Segmentation Pipeline to Generate Lobar Ventilation Measurements in Diffuse and Localized Bronchiectasis

Sarah Svenningsen¹, ², Fumin Guo¹, ³, Roya Etemad-Reza³, David G. McCormack¹, Grace Parraga¹, ²

¹Imaging Research Laboratories, Robarts Research Institute, London, Ontario, Canada; ²Department of Medical Biophysics, The University of Western Ontario, London, Ontario, Canada; ³Graduate Program in Biomedical Engineering, The University of Western Ontario, London, Ontario, Canada; ⁴Department of Medical Imaging, The University of Western Ontario, London, Ontario, Canada; ⁵Division of Radiology, Department of Medicine, The University of Western Ontario, London, Ontario, Canada

Computer 5 3971. Investigation of the Dependence of Measured Lung T1 on TE Using UTE

Simon MF Triphan¹, ², Bertram J. Jobst¹, Felix A. Breuer², Mark O. Wielpuetz¹, Claus Peter Heusser⁵, Hans-Ulrich Kauczor¹, Juergen Biederer¹, ⁴, Peter M. Jakob, ²³

¹Diagnostic and Interventional Radiology, University Hospital Heidelberg, Heidelberg, Germany; ²Research Centre Magnetic Resonance Bavaria e.V., Wuerzburg, Germany; ³Dept. of Radiology, Thoraxklinik Heidelberg, Heidelberg, Germany; ⁴Radiologie Darmstadt, Darmstadt, Germany; ⁵Experimental Physics 5, University of Wuerzburg, Wuerzburg, Germany

Computer 6 3972. Intratracheal Manganese-Enhanced MRI (MEMRI) at Very Low Dose: an Effective Approach for Lung Tumor Detection

Andrea Bianchi¹, Oliviero G. Gobbo², Sandrine Dufort³, Lucie Sancejy³, François Lux³, Olivier Tillement⁴, Jean-Luc Coll⁴, Yannick Crémillieux⁴

¹Centre de Résonance Magnétique des Systèmes Biologiques, University of Bordeaux, Bordeaux, France; ²Trinity College Dublin, School of Biochemistry and Immunology, Dublin, Ireland; ³IAB-INSERM, UJF U 823, Grenoble, France; ⁴ILM UMR 5306, University Lyon 1, Lyon, France

Computer 7 3973. Evaluation of a Novel Whole Lung 3D Dynamic OE-MRI Protocol in Healthy Subjects

Jose L. Ullol¹, ², Alexandra R. Morgan¹, ², Geoff JM Parker¹, ²

¹Bioxydyn Ltd, Manchester, United Kingdom; ²Centre for Imaging Sciences, University of Manchester, Manchester, United Kingdom
Electronic Poster

Computer 6 3974. **High-Resolution ZTE MR Imaging of Emphysematous Lungs in Rats**

Andrea Bianchi¹, Marta Tibiletti², David Kind³, Andrea Vögtle⁴, Michael Neumaier⁴, Thomas Kaulisch⁴, Volker Rasche⁴, Detlef Stiller⁴

¹Targeting Discovery Research, In vivo imaging laboratory, Boehringer Ingelheim Pharma GmbH & Co. KG, Biberach an der Riss, Baden-Württemberg, Germany; ²Core Facility Small Animal MRI, Ulm University, Baden-Württemberg, Germany

Computer 7 3975. **On the Estimation of the Alveolar Size in the Human Lung Using Proton MRI**

Flavio Carinci¹,², Felix A. Breuer¹,², Peter M. Jakob¹,²

¹Research Center Magnetic Resonance Bavaria (MRB), Würzburg, Bayern, Germany; ²Department of Experimental Physics 5, University of Würzburg, Würzburg, Bayern, Germany

Computer 8 3976. **Oxygen-Enhanced Ventilation Mapping of Whole Lungs Using 3D UTE at 3T**

Crystal E. Harrison¹, Masaya Takahashi¹, Robert E. Lenkinski³, Ananth J. Madhuranthakam¹

¹Radiology and Advanced Imaging Research Center, UT Southwestern Medical Center, Dallas, TX, United States

Computer 9 3977. **Optimized Ultra-Short Echo Time Breathhold 3D Lung Imaging**

Neville D. Gai¹, Robert Evers¹, Harsh Agarwal², Ashkan Malayeri¹, David Bluemke²

¹Radiology & Imaging Sciences, NIH, Bethesda, MD, United States; ²Philips Research N.A., Briarcliff Manor, NY, United States


Orso Pusterla¹, Grzegorz Bauman¹, Gregor Sommer², Christoph Jud³, Philippe C. Cattin¹, Oliver Bieri³

¹Radiological Physics, Department of Radiology, University of Basel Hospital, Basel, Switzerland; ²Clinic of Radiology and Nuclear Medicine, Department of Radiology, University of Basel Hospital, Basel, Switzerland; ³Medical Image Analysis Center (MIAC), University of Basel Hospital, Basel, Switzerland

Computer 11 3979. **Breath-Held 3D Radial MRI for Simultaneous Assessment of Lung Structure and Function for Detection of Pulmonary Embolism**

Laura C. Bell¹, Peter Bannas², Kevin M. Johnson³, Grzegorz Bauman³, Sean B. Fain¹,², Thomas M. Grist¹,², Scott K. Nagle¹

¹Department of Medical Physics, University of Wisconsin - Madison, Madison, WI, United States; ²Department of Radiology, University of Wisconsin - Madison, Madison, WI, United States; ³Department of Radiology, University of Basel Hospital, Basel, Switzerland

Computer 12 3980. **Quantitative Gd-DOTA-Based Aerosol Deposition in Asthmatic and Emphysematous Rats Using UTE-MRI**

Hongchen Wang¹, Catherine Sebrié¹, Sébastien Judê, Anne Maurin¹, Stéphanie Rétif¹, Marylène Le Mée¹, Rose-Marie Dubuisson¹, Georges Willoquet¹, Khaoula Bouazizi-Verdier¹, Luc Darrasse¹, Geneviève Guillot¹, Xavier Maitre¹, Ludovic de Rochefort¹

¹Imagerie par Résonance Magnétique Médicale et Multi-Modalités (UMR8081) IR4M, CNRS, Univ. Paris-Sud, Orsay, France; ²Centre de Recherches Biologiques CERB, Baugy, France; ³Centre d'Imagerie du Petit Animal CIPA, CNRS-TAAM UPS44, Orléans, France

Computer 13 3981. **What Can Multiple B-Value ³He MRI Tell Us About Lung Micro-Structure in Healthy Elderly Never-Smokers?**

Gregory Paulin¹,², Alexei Ouriadov¹,², Khadija Sheikh¹,², David G. McCormack³, Grace Parraga³,²

¹Imaging Research Laboratories, Robarts Research Institute, London, Ontario, Canada; ²Department of Medical Biophysics, The University of Western Ontario, London, Ontario, Canada; ³Division of Respirology, Department of Medicine, The University of Western Ontario, London, Ontario, Canada

Computer 14 3982. **Dual-Nuclei ¹⁹F-¹H MRI for Studying Administration and Clearance of Perfluoroctane in Rat Lungs**

Maya Khalife¹, Hongchen Wang¹, Lizheng Qiu¹, Catherine Sebrié¹, Ludovic De Rochefort¹

¹IR4M (Imagerie par Résonance Magnétique Médicale et Multi-Modalités), Université Paris-Sud, CNRS, UMR8081, Orsay, France

Computer 15 3983. **Second-Order Texture Analysis of Hyperpolarized ³He MRI - Beyond the Ventilation Defect**

Damien Pike¹,², Dante Capaldi¹,², Sarah Ashley Mattonen³, Fumin Guo⁴,³, Aaron Ward³, David McCormack³, Grace Parraga³,²

¹Research Center Magnetic Resonance Bavaria (MRB), Würzburg, Bayern, Germany; ²Core Facility Small Animal MRI, Ulm University, Baden-Württemberg, Germany
Parallel Imaging for Short Breath Hold Times in Perfluorinated Gas Imaging of the Lung

Hal Cecil Charles¹, Randall W. Jones², Ahmed F. Halaweish³, Maureen D. Ainslie¹
¹Radiology, Duke Image Analysis Laboratory, Duke University Medical School, Durham, NC, United States; ²ScanMed, Omaha, NE, United States; ³Currently at Siemens Healthcare, MN, United States

Numerical Simulations of Xenon Diffusive Exchange in Human Lung Tissue and Capillaries Using Geometrical Models Based on Histology Sections

Neil James Stewart¹, Juan Parra-Robles¹, Jim Michael Wild¹
¹Academic Unit of Radiology, University of Sheffield, Sheffield, South Yorkshire, United Kingdom

MRI Measurements of Regional Ventilation Heterogeneity: Ventilation Defect Clusters

Dante Capaldi¹,², Khadija Sheikh¹,², Sarah Svenningsen¹,², Damien Pike¹,², David G. McCormack², Grace Parraga¹,²
¹Imaging Research Laboratories, Robarts Research Institute, London, Ontario, Canada; ²Department of Medical Biophysics, The University of Western Ontario, London, Ontario, Canada; ³Division of Respirology, Department of Medicine, The University of Western Ontario, London, Ontario, Canada

Imaging Ventilator-Induced Alveolar Overdistension with Hyperpolarized Xenon Diffusion MRI

Yi Xin¹, Hooman Hamedani¹, Maurizio Cereda², Sarmad Siddiqui³, Mehrdad Pourfahimi¹, Harrilla Profka¹, Stephen Kadlecek¹, Justin Clapp¹, Masaru Ishii³,², Rahim R. Rizi¹
¹Radiology, University of Pennsylvania, Philadelphia, PA, United States; ²Anesthesiology and Critical Care, University of Pennsylvania, Philadelphia, PA, United States; ³Ótolaryngology, Johns Hopkins University, MD, United States

Single Breath-Hold, Whole Lung Morphometry with Hyperpolarized ³He Using Parallel Imaging

Yulin V. Chang¹, James D. Quirk¹, Mario Castro³, Dmitriy A. Yablonskiy¹
¹Radiology, Washington University in St. Louis, St. Louis, MO, United States; ²Medicine, Washington University in St. Louis, St. Louis, MO, United States

Functional MRI Ventilation Discriminates Well-Controlled Asthmatic and Healthy Subjects: Sensitivity, Specificity and Comparison with FEV₁

Sarah Svenningsen¹,², Bastiaan Driehuys³, David G. McCormack⁴, Grace Parraga¹,²
¹Imaging Research Laboratories, Robarts Research Institute, London, Ontario, Canada; ²Department of Medical Biophysics, The University of Western Ontario, London, Ontario, Canada; ³Division of Respirology, Department of Medicine, The University of Western Ontario, London, Ontario, Canada; ⁴Department of Radiology, Duke University, Durham, NC, United States

Pulmonary Time Constant of Oxygen Consumption Evaluated by Hyperpolarized ¹²⁹Xe MR

Haidong Li¹, Zhiying Zhang¹, Xiuchao Zhao¹, Xianping Sun¹, Chaohui Ye¹, Xin Zhou¹
¹National Center for Magnetic Resonance in Wuhan, Wuhan Institute of Physics and Mathematics, Chinese Academy of Sciences, Wuhan, Hubei, China

Measurement of P⁸⁰₂ with Hyperpolarized ¹²⁹Xe: Correction for Signal Decay Due to Gas Exchange.

Iga Muradyan¹, Samuel Patz¹, Mikayel Dabaghyan², Mirko Hrovat³, James P. Butler¹
¹Department of Radiology, Brigham and Women's Hospital, Harvard Medical School, Boston, MA, United States; ²Mirtech, Inc., Brockton, MA, United States

Bronchodilatation Effect on Alveolar Oxygen Partial Pressure and Gas Exchange Rate of Asthma Patients: First Results of Clinical Study

Maxim Terekhov¹, Ursula Wolf², Klaus K Gast², Christian Hoffmann², Sergei Karpuk³, Christian Mrozek³, Christoph Dueber², Laura Maria Schreiber³
¹Department of Radiology, University of Western Ontario, London, Ontario, Canada; ²Department of Medical Biophysics, The University of Western Ontario, London, Ontario, Canada; ³Division of Respirology, Department of Medicine, The University of Western Ontario, London, Ontario, Canada
**Electronic Poster**

**Body DWI, Technical Development & Contrast**

**Exhibition Hall**

**Wednesday 10:00-11:00**

<table>
<thead>
<tr>
<th>Computer 25</th>
<th>3993. Improved Lesion Detection in Regions with Strong Susceptibility Using ISShim-WBDWI as Compared to 3D-Shimming WBDWI</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Haibo Zhang1, Huadan Xue1, Hui Liu2, Steembermuto3, Kannengiesser Stepham1, Kiefer Berthold4, Zhengyu Jin1</td>
</tr>
<tr>
<td></td>
<td>1Radiology, Peking Union Medical College Hospital, Beijing, China; 2NEA MR Collaboration, Siemens Ltd., China, Shanghai, China; 3Healthcare, Siemens AG, Erlangen, Germany; 4Radiology, Siemens, Erlangen, China</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Computer 26</th>
<th>3994. Accelerated, Segmented Diffusion-Weighted Imaging in the Prostate Achieves High Resolution, Speed and Geometric Fidelity</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Pelin Aksit Ciris1, Jr-yuan George Chiu1, 2, Andriy Fedorov1, 2, Clare M. Tempany-Afshai1, 2, Bruno Madore1, 2, Stephan E. Maier1, 2</td>
</tr>
<tr>
<td></td>
<td>1Brigham and Women's Hospital, Boston, MA, United States; 2Harvard Medical School, Boston, MA, United States</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Computer 27</th>
<th>3995. Diffusion Imaging of Mouse Kidney with Oscillating Gradients: Feasibility Study</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Hua Li1, Feng Wang1, Xiaoyu Jiang1, Junzhong Xu1, John C. Gore1</td>
</tr>
<tr>
<td></td>
<td>1Institute of Imaging Science, Vanderbilt University, Nashville, TN, United States</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Computer 28</th>
<th>3996. Comparison Between Whole-Body Coronal and Axial DWI Performed During PET-MR</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Piste Obara1, Valentina Taviani1, Andreas Loening1, Andrei Iagaru1, Brian Hargreaves1, Shreyas Vasanawala1</td>
</tr>
<tr>
<td></td>
<td>1Radiology, Stanford Hospital, Stanford, CA, United States</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Computer 29</th>
<th>3997. Concurrent Chemoradiotherapy-Induced Pelvic Bone Marrow Changes Based on Intravoxel Incoherent Motion MR Imaging in Patients with Cervical Cancer: Initial Findings</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Jian He1, Bin Zhu1</td>
</tr>
<tr>
<td></td>
<td>1Department of Radiology, Nanjing Drum Tower Hospital, Nanjing, Jiangsu, China</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Computer 30</th>
<th>3998. Evaluation of Pseudo-Hepatic Anisotropy Artifact in Liver Intravoxel Incoherent Motion (IVIM) Based on Clustering Technique</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Ot Lei Wong1, 2, Gladys Goh Lo1, Jing Yuan1, Wai Kit Chung1, Max W. K. Law1, Benny W. H. Ho1, Michael D. Noseworthy1, 2</td>
</tr>
<tr>
<td></td>
<td>1Department of Medical Physics and Applied Radiation Science, McMaster University, Hamilton, Ontario, Canada; 2Imaging Research Center, St. Joseph's Healthcare, Hamilton, Ontario, Canada; 3Department of Diagnostic &amp; Interventional Radiology, Hong Kong Sanatorium &amp; Hospital, Hong Kong, China; 4Medical Physics and Research Department, Hong Kong Sanatorium &amp; Hospital, Hong Kong, China; 5Department of Electrical and Computer Engineering, McMaster University, Hamilton, Ontario, Canada</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Computer 31</th>
<th>3999. Time-SLIP Non-Contrast MR Hepatic Arteriography: Comparison with Contrast-Enhanced CT Arteriography</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Takeshi Yoshihara1, Yoshifuru Ohno1, Katsusuke Kyojiri1, Saori Sato1, Yoshimori Kassai1, Hisanobu Koyama1, Keitaro Sofue1, Kazuo Sugimura1</td>
</tr>
<tr>
<td></td>
<td>1Advanced Biomedical Imaging Research Center, Kobe University Graduate School of Medicine, Kobe, Hyogo, Japan; 2Center for Radiology and Radiation Oncology, Kobe University Hospital, Kobe, Hyogo, Japan; 3Toshiba Medical Systems Corporation, Otawara, Tochigi, Japan; 4Radiology, Kobe University Graduate School of Medicine, Kobe, Hyogo, Japan</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Computer 32</th>
<th>4000. Non-Contrast-Enhanced MR Arteriography with Balanced Steady-State Free-Precession Sequence and Time-Spatial Labeling Inversion Pulses: Visualization of the Left Gastric Vein with Information of Flow Direction to Predict Developing Esophageal Varices</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Akihiro Furuta1, Hiroyoshi Ido1, Tsuyoshi Ohno1, Rikiya Yamashita1, Shigeki Arizono1, Aki Kido1, Koji Fujimoto1, Naotaka Sakashita1, Kaori Togashi1</td>
</tr>
<tr>
<td></td>
<td>1Kyoto University Graduate School of Medicine, Kyoto, Japan; 2Toshiba Medical Systems Corporation, Otawara, Tochigi, Japan</td>
</tr>
</tbody>
</table>
**Computer 33  4001. Evaluation of B-Value Distributions for Monoexponential Model of Prostate Cancer Diffusion-Weighted Imaging Using B Values Up to 2000 S/mm²: A Repeatability Study on Region of Interest Level**

Harri Merisaari¹, Jussi Toivonen², Marko Pesold¹, Pekka Taimen³, Peter J. Boström⁴, Tapio Puikkala⁵, Hannu J. Aronen⁵, Ivan Jambor⁵

¹Turku PET Centre, University of Turku, Turku, Finland; ²Department of Information Technology, University of Turku, Turku, Finland; ³Department of Diagnostic Radiology, University of Turku, Turku, Finland; ⁴Department of Pathology, Turku University Hospital, Turku, Finland; ⁵Department of Urology, Turku University Hospital, Turku, Finland

**Computer 34  4002. Evaluation of Liver Fibrosis with Intravoxel Incoherent Motion MR Imaging: An Experimental Study in Rat Model**

Caiyuan Zhang¹, Yanfen Cui², Yong Zhang², Dengbin Wang²

¹Department of Radiology, Xinhua Hospital, Shanghai Jiao Tong University School of Medicine, Shanghai, China; ²Department of Radiology, Xinhua Hospital, Shanghai Jiao Tong University School of Medicine, Shanghai, China; ³MR Research, GE healthcare, Shanghai, China

**Computer 35  4003. Isotropic 3D MR Cholangiopancreatography (MRCP) Imaging in Breath-Hold Using SPARSE-SENSE Acceleration**

Hersh Chandarana¹, ², Annie Wang¹, Akio Yoshimoto¹, Alampady Shanbhogue¹, Mary Bruno¹, Tiejun Zhao¹, Esther Raithel¹, Ricardo Otazo²

¹Radiology, Center for Biomedical Imaging, NYU School of Medicine, New York, NY, United States; ²Radiology, Center for Advanced Imaging Innovation and Research (CAI2R), NYU School of Medicine, New York, NY, United States; ³Siemens Medical Solutions, New York, NY, United States; ⁴Siemens AG, Healthcare, Erlangen, Germany

**Computer 36  4004. Quantitative BOLD Imaging at 3T: Temporal Changes Within Hepatocellular Carcinoma Following Oxygen Challenge**

Andrew J. Patterson¹, Andrew N. Priest¹, David J. Bowden¹, Martin J. Graves¹, David J. Lomas¹

¹Department of Radiology, Addenbrooke's Hospital & University of Cambridge, Cambridge, England, United Kingdom

**Computer 37  4005. In Vitro Imaging of Kidney Stones in Pig Kidneys with Ultra-Short Echo-Time MRI**

El-Sayed H. Ibrahim¹, ², Robert Pooley², Joseph Cernigliaro², Mellena Bridges², Jamie Giesbrand², James Williams³, William Haley³

¹University of Michigan, Ann Arbor, MI, United States; ²Mayo Clinic, Jacksonville, FL, United States; ³Indiana University, IN, United States

**Computer 38  4006. Modeling of the Spatio-Temporal Distribution of Pulmonary Ventilation Via Perfluoropropane Gas Enhanced MRI**

Brian J. Soher¹, Ahmed F. Halaweish², H. Cecil Charles¹

¹Duke University Medical Center, Durham, NC, United States; ²Siemens Healthcare, MN, United States

**Computer 39  4007. The Value of Gd-EOB-DTPA Enhanced MR Imaging in Characterizing Cirrhotic Nodules with Atypical Enhancement in Gd-DTPA Enhanced MRI Imaging**

Yi-Chun Wang¹, ², Wen-Pei Wu³, ⁴, Cheng-In Hoi¹, Chen-Te Chou, ²³, Ran-Chou Chen, ²⁴

¹Radiology, taoyuan general hospital ministry of health and welfare, Taiwan, Taoyuan, Taiwan; ²Biomedical Imaging and Radiological Science, National Yang-Ming Medical University, Taipei, Taiwan; ³Radiology, Chang-Hua Christian Hospital, Taiwan; ⁴Radiology, Taipei city Hospital, Taiwan, Taipei, Taiwan

**Computer 40  4008. Diffusion Tensor Imaging and Multiparametric Mapping of Experimental Acute and Chronic Kidney Disease at 7T**

Jutta Janke¹, Gunnar Schley², Michael Uder¹, Kai-Uwe Eckardt², Carsten Willam², Tobias Bäuerle¹

¹Institute of Radiology, University Hospital Erlangen, Erlangen, Germany; ²Nephrology and Hypertensiology, University Hospital Erlangen, Erlangen, Germany

**Computer 41  4009. Measurement of Body Fat Composition in Chick Embryos Using a 7T MRI**

Qun Zhao¹, ², Houchuang H. Hu², Qingying Meng¹, Forrest Goodfellow, ²⁴, Steve Stice, ²⁴

¹Bioimaging Research Center, University of Georgia, Athens, GA., United States; ²Regenerative Bioscience Center, University of Georgia, Athens, GA., United States; ³Dept. of Radiology, Phoenix Children's Hospital, Phoenix, AZ, United States; ⁴Department of Animal & Dairy Science, University of Georgia, GA., United States
Electronic Poster

Computer 42 4010. **Non-Invasive Assessment of Fibrosis and Inflammation in Rat Kidney Models with Diffusion-Weighted MRI**
Lindsey Alexandra Crowe1, Iris Friedli2, Christian Vesin2, Lena Berchtold1, Pierre-Yves Martin3, Sophie de Seigneur4, Jean-Paul Vallée1
1Division of Radiology / Faculty of Medicine, Geneva University Hospital, Geneva, Switzerland; 2Division of Cell Physiology and Metabolism, Geneva University Hospital, Geneva, Switzerland; 3Division of General Internal Medicine, Geneva University Hospital, Geneva, Switzerland; 4Division of Nephrology, Geneva University Hospital, Geneva, Switzerland

Computer 43 4011. **DW-MRI Evaluation of the Serial Changes of Diffusion and Microperfusion in Adriamycin Induced Renal Injury Rat**
Haoran Sun1, Huanhuan Wu2, Ziheng Zhang3
1Radiology, Tianjin Medical University Hospital, Tianjin, China; 2Tianjin Medical University Hospital, China; 3MR Research China, GE Healthcare, Shanghai, China

Computer 44 4012. **Quantification of Intrapancreatic Fat (IPF) Using 1H-MR Spectroscopy and Multi-Echo Dixon: A Feasibility Study**
Anmelise M. Silva1, 2, Anshuman Panda1, Raul Pannala1, Vijay P. Singh4, Krutiika Patel1, Vishnu T. Kommineni4, Teresa Wu1, Yinlin Fu1, Alvin C. Silva1
1Research, Mayo Clinic, Phoenix, AZ, United States; 2Arizona State University, Tempe, AZ, United States; 3Radiology, Mayo Clinic, Phoenix, AZ, United States; 4Gastroenterology, Mayo Clinic, Phoenix, AZ, United States; 5School of Computing, Informatics, and Decision Systems Engineering, Arizona State University, Tempe, AZ, United States

Computer 45 4013. **Examining Intrauterine Growth Restriction Due to Placental Insufficiency in Fetal Guinea Pigs in Utero Using MRI**
Kevin J. Sinclair1, Lanette J. Friesen-Waldner1, Colin M. McCurdy1, Curtis N. Wiens2, Trevor P. Wade1, 3, Barbra de Vijer4, Timothy RH Regnault1, 3, Charles A. McKenzie1, 3
1Medical Biophysics, University of Western Ontario, London, Ontario, Canada; 2Radiology, Mayo Clinic, Madison, WI, United States; 3Robarts Research Institute, University of Western Ontario, London, Ontario, Canada; 4Obstetrics and Gynaecology, University of Western Ontario, London, Ontario, Canada; 5Physiology and Pharmacology, University of Western Ontario, London, Ontario, Canada

Computer 46 4014. **Assessing Renal Ischemia/reperfusion Injury in Mice Using Time-Dependent BOLD and DTI at 9.4T**
Dong-Cheol Woo1, Do-Wan Lee1, Nayoung Kim1, Chul-Woong Woo1, Sang-Tae Kim1, Jeong-Kon Kim1, Kyungwon Kim1, Yongol Song1, Hyun-Kwon Ha1, Jin Seong Lee1
1Asan Institute for Life Sciences, Asan Medical Center, Seoul, Korea

Computer 47 4015. **High-Resolution Abdominal Diffusion-Weighted Imaging Based on Multi-Shot and Multiplexed Sensitivity Encoded Echo-Planar Imaging**
Hing-Chiu Chang1, Arnaud Guidon2, Dan Xu3, Lloyd Estkowski4, Ersin Bayram1, Mei-Lan Chu1, 4, Mustafa R. Bashir1, Allen W. Song1, Nan-Kuei Chen1
1Duke University Medical Center, Durham, NC, United States; 2Global MR Applications and Workflow, GE Healthcare, Boston, MA, United States; 3Global MR Applications and WorkFlow, GE Healthcare, Waukesha, WI, United States; 4Global MR Applications and Workflow, GE Healthcare, Menlo Park, CA, United States; 5Global MR Applications and Workflow, GE Healthcare, Houston, TX, United States; 6National Taiwan University, Taipei, Taiwan, Taiwan

Computer 48 4016. **Simultaneous Multislice Accelerated Free-Breathing Diffusion-Weighted Imaging of the Liver at 3T**
Chika C. Obele1, Christopher Glielmi1, Justin Ream1, Ankur Doshi2, Naomi Campbell1, 3, Cheung Hoi Zhang1, James Babb1, Himanshu Bhat2, Hersh Chandarana1
1Radiology, NYU School of Medicine and NYU Langone Medical Center, New York, NY, United States; 2Siemens Healthcare, New York, NY, United States; 3Radiology, Memorial Sloan Kettering, NY, United States; 4Siemens Healthcare, Charlestown, MA, United States
**Electronic Poster**

**Renal, Adrenal & Male Pelvis**

Exhibition Hall  Wednesday 10:00-11:00

---

**Computer 49  4017.** Assessment of Diabetic Nephropathy in Mouse Models: GlucoCEST  
Feng Wang¹, ², David Kopylov³, Zhongliang Zu¹, ², Keiko Takahashi¹, ³, John C. Gore¹, ², Raymond C. Harris¹, ⁵, Takamune Takahashi¹, ³, C. Chad Quarles⁵, ²  
¹Radiology and Radiological Sciences, Vanderbilt University, Nashville, TN, United States; ²Institute of Imaging Sciences, Vanderbilt University, TN, United States; ³Drexel University, PA, United States; ⁴Vanderbilt O'Brien Mouse Kidney Physiology and Disease Center, Vanderbilt University, TN, United States; ⁵Division of Nephrology and Hypertension, Vanderbilt University, TN, United States

**Computer 50  4018.** Sodium Quantification of Transplanted Kidney Using Dual-Tuned Proton/sodium MRI  
Chan Hong Moon¹, Alessandro Furlan², Jung-Hwan Kim³, Tiejun Zhao⁴, Ron Shapiro⁵, Kyongtae Ty Bae²  
¹University of Pittsburgh, Pittsburgh, PA, United States; ²University of Pittsburgh, PA, United States; ³Siemens Medical Solutions, PA, United States; ⁴Thomas E. Starzl Transplantation Institute, PA, United States

**Computer 51  4019.** Diffusion Kurtosis Imaging of Transplanted Kidneys: Preliminary Results  
Yanjun Li¹, Yuan Xie¹, Yong Zhang², Dandan Zheng³, Guangming Lu¹  
¹Medical Imaging, Jingling Hospital, School of Medicine, Nanjing University, Nanjing, Jiangsu, China; ²GE healthcare China, Shanghai, China; ³GE healthcare China, Beijing, China

**Computer 52  4020.** Optimizing Dose and Imaging Parameters in MR Renography for Quantitative Measurement of Renal Function  
Jeff L. Zhang¹, Christopher C. Conlin¹, Kristi Carlson¹, Daniel Kim¹, Glen Morrell¹, Kathryn Morton¹, Vivian S. Lee¹  
¹Radiology, University of Utah, Salt Lake City, UT, United States

**Computer 53  4021.** Optimization for Non-Contrast Enhanced MRA of Renal Artery at 3T: Evaluation of BBTI with Consideration of Renal Blood Velocity  
Yasuhisa Kurata¹, Aki Kido¹, Koji Fujimoto¹, Kayo Kiguchi¹, Kyoko Takakura¹, Kaori Togashi¹  
¹Department of Diagnostic Imaging and Nuclear Medicine, Kyoto University Graduate School of Medicine, Kyoto, Japan

**Computer 54  4022.** Modification of EGFR Formulas Using Estimates of Fat-Infiltration from MRI: A Preliminary Study in Cirrhosis Patients  
Christopher C. Conlin¹, Jeff L. Zhang¹, Glen Morrell¹,², Kristi Carlson¹, Tom Greene³, Kathryn A. Morton², Vivian S. Lee¹,²  
¹Utah Center for Advanced Imaging Research, University of Utah, Salt Lake City, UT, United States; ²Department of Radiology, University of Utah School of Medicine, Salt Lake City, UT, United States; ³Internal Medicine, University of Utah School of Medicine, Salt Lake City, UT, United States

**Computer 55  4023.** MRI–R2* Relaxometry for Assessment of Kidney Iron Accumulation as a Cause of Renal Dysfunction in Patients with Sickle Cell Disease (SCD)  
Sarah Keller¹, Bjoern Schoennagel², Zhiyue Jerry Wang², Regine Grosse¹, Peter Nielsen¹, Gerhard Adam¹, Roland Fischer¹, Jin Yamamura¹  
¹Diagnostic and Interventional Radiology, University Medicine Hamburg Eppendorf, Hamburg, Germany; ²Radiology, Children's Medical Center Dallas, Dallas, TX, United States; ³Pediatric Hematology and Oncology, University Medicine Hamburg Eppendorf, Hamburg, Germany; ⁴Institute of Biochemistry and Molecular Biology, Center of Experimental Medicine, Hamburg, Germany

**Computer 56  4024.** An Apparatus for In Vivo Simultaneous Oxygen Probe Measurements During Renal BOLD MRI in a Porcine Model  
Joshua Kaggie¹, Vivian S. Lee¹, Robb Merrill¹, Glen Morrell²  
¹Utah Center for Advanced Imaging Research, Radiology, University of Utah, Salt Lake City, UT, United States

**Computer 57  4025.** Preliminary Study of BOLD-MRI in Early Detection of the Renal Hypoxia in Diabetes  
Junjie Ren¹, Shengzhang Ji¹, Chunxia Li¹, Weidong Su¹, Chaqing Song¹, Lijun Qiu¹, Donghong Xu¹, Hao Wang¹, Queenie Chan¹, Yu Zhang¹  
¹The 4th center hospital of TianJin, Tianjin, China; ²Philips Healthcare, Hongkong, China; ³Philips Healthcare, Beijing, China
Electronic Poster

Computer 58 4026. Early Changes in Renal Hypoxia Following Iodinated Contrast: Need for Real-Time Monitoring
Lu-Ping Li1, 2, Jing Lu, 23, Tammy Franklin1, Ying Zhou1, Richard Solomon5, Poortmanthi V. Prasad, 2
1Department of Radiology / Center for Advanced Imaging, Northshore University Healthsystem, Evanston, IL, United States; 2Pediatric Radiology, Case Western Reserve University, Cleveland, OH, United States; 3Pediatrics, Case Western Reserve University, Cleveland, OH, United States; 4Department of Radiology / Center for Advanced Imaging, Northshore University Healthsystem, Evanston, IL, United States; 5Department of Radiology, Case Western Reserve University, Cleveland, OH, United States

Computer 59 4027. The Influence of Vibration Frequency and Imaging Plane on Stiffness Measurements in Renal Magnetic Resonance Elastography
Gavin Low1, 2, Nicola Eve Owen3, Ilse Joubert1, Andrew J. Patterson1, Martin J. Graves1, Graeme J.M. Alexander3, David J. Lomas1
1Radiology, Addenbrooke's Hospital, Cambridge, England, United Kingdom; 2University of Alberta, Edmonton, Alberta, Canada; 3Radiology, Case Western Reserve University, Cleveland, OH, United States

Computer 60 4028. Preclinical Magnetic Resonance Fingerprinting: Taking Advantage of Inherent Resistance to Motion Artifacts
Ying Gao1, Yong Chen2, Dan Ma1, Yun Jiang3, Katherine M. Dell4, Mitchell L. Drumm1, 5, Mark A. Griswold1, 2, Chris A. Flask, 12, Lan Lu, 3
1Biomedical Engineering, Case Western Reserve University, Cleveland, OH, United States; 2Radiology, Case Western Reserve University, Cleveland, OH, United States; 3Pediatrics, Case Western Reserve University, Cleveland, OH, United States; 4Urology, Case Western Reserve University, Cleveland, OH, United States

Computer 61 4029. Texture Analysis in the Characterisation of Ovarian Lesions: Use of Synthetic Minority Oversampling
Peter Gibbs1, Martine Dujardin1, Lindsay Turnbull1
1Centre for MR Investigations, University of Hull, Hull, East Yorkshire, United Kingdom

Computer 62 4030. Preoperative Sentinel Lymph Node Diagnosis with Interstitial MR Lymphography in Cervical Cancer: A Pilot Study
Jintang Ye1, 2, Jing Liu1, Juan Wei2, Bilgin Keserci3, Jianhua Zhang4, Xuedong Yang1, Rong Rong1, Ying Zhu1, Queenie Mahnaz Nabil1, 2, Anahita Fathi Kazerooni1, 3, Hamidreza Haghighatkhah4, Sanam Assili1, Hamidreza Saligheh Rad1, 3
1Quantitative MR Imaging and Spectroscopy Group, Research Center for Molecular and Cellular Imaging, Tehran University of Medical Sciences, Tehran, Iran; 2Department of Statistics, Tarbiat Modares University, Tehran, Iran; 3Department of Medical Physics and Biomedical Engineering, School of Medicine, Tehran University of Medical Sciences, Tehran, Iran; 4Department of Radiology, School of Medicine, Shahid Beheshti University of Medical Sciences, Tehran, Iran

Computer 63 4031. Feasibility of T2*-Weighted Image(T2*W) in the Assessment of Non-Perfused Volume (NPV) Inside Uterine Fibroids Response to MR-Guided High Intensity Focused Ultrasound (HIFU) Ablation
Jintang Ye1, 2, Jing Liu1, Juan Wei2, Bilgin Keserci3, Jianhua Zhang4, Xuedong Yang1, Rong Rong1, Ying Zhu1, Queenie Chan1, Xiaoying Wang3
1Department of Radiology, Peking University First Hospital, Beijing, China; 2Philips Research China, Shanghai, China; 3MR Therapy Clinical Science, Philips Healthcare, Seoul, Korea; 4Philips (China) Investment Co., Ltd, Beijing, China; 5MR Clinical Science, Philips Healthcare, Hong Kong, China

Computer 64 4032. Gradient Echo Signal Decays in Gynecological Cancers Require a Gaussian Augmentation of the Mono-Exponential (GAME) Model: Preliminary Evaluation Post External Beam Radiation Therapy at 3T
Pelin Aksit Ciris1, 2, Robert V. Mulckern, 2, Mukund Balasubramanian, 23, Antonio L. Damato, 22, Ravi T. Seethamraju3, Janice Fairhurst1, Ferenc A. Jolesz2, 2, Clare M. Tempany-Afzal4, 3, Ehud Schmidt2, 2, Akila N. Viswanathan, 24
1Brigham and Women's Hospital, Boston, MA, United States; 2Philips Research China, Shanghai, China; 3MR Therapy Clinical Science, Philips Healthcare, Seoul, Korea; 4Dana-Farber Cancer Institute, Boston, MA, United States; 5Siemens Healthcare, MA, United States

Computer 65 4033. A Simple and Clinically Applicable Decision Tree for Accurate Classification of Complex Adnexal Masses Based on Quantitative DCE-MRI
Mahnaz Nabil1, 2, Anahita Fathi Kazerooni1, 3, Hamidreza Haghighatkhah4, Sanam Assili1, Hamidreza Saligheh Rad1, 3
1Quantitative MR Imaging and Spectroscopy Group, Research Center for Molecular and Cellular Imaging, Tehran University of Medical Sciences, Tehran, Iran; 2Department of Statistics, Tarbiat Modares University, Tehran, Iran; 3Department of Medical Physics and Biomedical Engineering, School of Medicine, Tehran University of Medical Sciences, Tehran, Iran; 4Department of Radiology, School of Medicine, Shahid Beheshti University of Medical Sciences, Tehran, Iran
**Computer 66 4034. Reproducibility of Diffusional Kurtosis Imaging Measurement in Uterine Cervix In Vivo**

Xiang Zheng1, Xiisheng Cao1, Youping Xiao1, Yunbin Chen2, WeiBo Chen2

1Radiology Department, Fujian Provincial Cancer Hospital, Fuzhou, Fujian, China; 2Philips Healthcare, Shanghai, China

**Computer 67 4035. Faster MR Imaging of Cervical and Endometrial Carcinoma Through a Limited Sequence Protocol Based on High-Resolution, Free-Breathing, Post-Contrast 3D SPGR Imaging with Comparison to Standard Care**

Stephanie T. Chang1, Andreas M. Loening1, Marcus T. Alley1, Shreyas S. Vasanawala2

1Dept. of Radiology, Stanford University, Stanford, CA, United States

**Computer 68 4036. Advanced Cervical Cancer: Quantitative Assessment of Early Response with Intravoxel Incoherent Motion Diffusion-Weighted Magnetic Resonance Imaging After Neoadjuvant Chemotherapy**

Yanchun Wang1, Daoyu Hu1

1Tongji Hospital Tongji Medical College, Wuhan, Hubei, China

**Computer 69 4037. A Comparison Study of Intravoxel Incoherent Motion (IVIM) Based DWI and Pharmacokinetics Analysis Based Dynamic Contrast Enhanced MRI in Case of Cervical Cancer**

Yan Zhou1, Jianyu Liu1, Wei He1, Yang Shen2, Weidan Lu3, Huici Zhu1, Lizhi Xie2, Zhenyu Zhou3

1Peking University Third Hospital, Beijing, China; 2GE Healthcare, Beijing, China

**Computer 70 4038. Modelling Diffusion-Weighted MRI Data from Primary and Metastatic Ovarian Tumours**

Jessica M. Winfield1, Nandita M. de Souza1, 2, Andrew N. Priest3, Jennifer C. Wakefield2, Charlotte Hodgkin3, Susan Freeman1, Matthew R. Orton1, David J. Collins1, 2

1MRI, Royal Marsden Hospital, Sutton, Surrey, United Kingdom; 2CRUK Cancer Imaging Centre, Institute of Cancer Research, Sutton, Surrey, United Kingdom; 3Department of Radiology, Addenbrooke's Hospital, Cambridge, United Kingdom

**Computer 71 4039. Non-Invasive Assessment of Fibrosis and Inflammation in the Whole Kidney of CKD Patients by Diffusion-Weighted Imaging with Readout-Segmented EPI**

Iris Friedl1, Lindsey Alexandra Crowe1, Lena Berchfeld1, Solange Mott1, Karine Hadaya4, Thomas De Perrot1, Pierre-Yves Martin4, Sophie De Seigneux4, Jean-Paul Vallée1

1Division of Radiology, Faculty of Medicine, Geneva University Hospital, University of Geneva, Geneva, Switzerland; 2Division of Internal Medicine, Faculty of Medicine, Geneva University Hospital, University of Geneva, Geneva, Switzerland; 3Division of Pathology, Faculty of Medicine, Geneva University Hospital, University of Geneva, Geneva, Switzerland; 4Division of Nephrology, Faculty of Medicine, Geneva University Hospital, University of Geneva, Geneva, Switzerland

**Computer 72 4040. Introvoxel Incoherent Motion (IVIM) with Multi-B Values DWI in the Diagnosis and Grading of Cervical Cancer**

Yan Zhou1, Jianyu Liu1, Wei He1, Yang Shen1, Weidan Lu1, Huici Zhu1, Dandan Zheng2, Ziheng Zhang2

1Peking University Third Hospital, Beijing, China; 2GE Healthcare, Beijing, China

**Electronic Poster**

**Thermometry & Thermotherapy**

**Exhibition Hall** Wednesday 10:00-11:00

**Computer 73 4041. MR-ARFI for the Quantification of Tissue Elastic Properties**

Tetiana Dadakova1, Ali Çağlar Özen1, Axel Joachim Krafft1, Jürgen Füttner2, Martijn Hoogenboom1, Jürgen Walter Jenne3, Erik Dumont2, Christakis Damianou3, Jan Gerrit Kortvink3, Michael Bock1

1Department of Radiology - Medical Physics, University Medical Center Freiburg, Freiburg, Germany; 2Department of Radiology and Nuclear medicine, Radboud University Medical Center, Nijmegen, Netherlands; 3Fraunhofer MEVIS, Bremen, Germany; 4Image Guided Therapy, Fessac, France; 5Department of Electrical Engineering, Computer Engineering and Informatics, Cyprus University of Technology, Limassol, Cyprus; 6Department of Microsystems Engineering (IMTEK), University of Freiburg, Freiburg, Germany

**Computer 74 4042. Acoustic Radiation Force Imaging (ARFI) Based on Fast Spin Echo**

Yuval Zur1

1GE Healthcare, Tira Carmel, Israel
This swine study aimed to demonstrate the perfusion deficits, as an early indicator, of successful thermal MRg-HIFU. The energy used during the procedure is dependent on the energy used. Thus, the used energy must be optimized in the kidney for future translation to clinic.

MRI-guided HIFU (MR-HIFU) allows non-invasive ablation of deep tissues. MR-HIFU could be used to treat obesity and other conditions. A study on rats showed that a clear therapeutic effect was observed ten days after MR-HIFU, with rats losing 7.5 ± 1.2% body weight.

Multiple b-values DWI scan was performed on all 23 patients before and 6 months after HIFU ablation of fibroids using 3.0 T MRI. This was to investigate the changes of diffusion and perfusion status by using all b-values and/or low b-values no larger than 100 s/mm².

We propose to use Magnetic resonance image (MRI) guided high intensity focused ultrasound (MRgHIFU) as an adjuvant therapy for prostate hyperthermia with a commercial HIFU system. The system presents the first results of using this method in a clinic context with patients with primary cancer in the neck area.

We implemented and evaluated an MR Thermometry feedback control system for hyperthermia therapy using a commercially available prostate ablation system. This work describes an MRgFUS system for conducting ultrasound procedures on large animals on a Siemens 3T MRI scanner. The system can be easily adapted to other animals and anatomy.

Magnetic resonance acoustic radiation force imaging (MR-ARFI) has been used to either localize the focal spot during MRgFUS and guide imaging and biopsies. This work tests a 3D method for characterizing the dynamic response of tissue due to acoustic radiation force. This 3D MR-ARFI could assist with phase correction algorithms for beam focusing through aberrating tissue environments such as breast and skull.

MR guided Focused Ultrasound treats many brain disorders. The skull bone in the brain induces significant artifacts. This work presents an artifact-free method for imaging using an EPI-ARFI sequence with zero phase sensitivity to b0 field inhomogeneity and phase sensitivity to shear wave propagation.

Guided High Intensity Focused Ultrasound (MRgHIFU) Therapy in Bone Applications

A 3D method for characterizing the dynamic response of tissue due to acoustic radiation force is tested. This 3D MR-ARFI could assist with phase correction algorithms for beam focusing through aberrating tissue environments such as breast and skull.

MR guided Focused Ultrasound of Visceral Fat in Overweight Rats

The Changes of Uterine Fibroids' Diffusion and Perfusion Status After MR-Guided HIFU Ablation Evaluated from IVIM MR Imaging with Different B-Values Combination

MRI Guided High Intensity Focused Ultrasound (HIFU) of Visceral Fat in Overweight Rats

MR-Guided High Intensity Focused Ultrasound for Ablated Kidney: MR Perfusion Assessment and Microscopic Characterization

Localized Hyperthermia in Rodent Models Using a MRI-Compatible High-Intensity Focused Ultrasound System
Computer 85 4053. **MR Thermometry in In-Vitro Flows**  
Waltraud B. Buchenberg1, Florian Wassermann2, Sven Grundmann2, Bernd Jung3, Robin Simpson3  
1Dept. of Radiology, Medical Physics, University Medical Center Freiburg, Freiburg, Germany; 2Center of Smart Interfaces, Technische Universität Darmstadt, Darmstadt, Germany; 3Institute of Diagnostic, Interventional and Pediatric Radiology, University Hospital, Bern, Switzerland

Computer 86 4054. **A New Time Shifted Fast Spin Echo Thermometry Sequence**  
Yuval Zur2  
1GE Healthcare, Tirat Carmel, Israel

Computer 87 4055. **Proton Resonance Shift Based Temperature Mapping with Field Monitoring**  
David O. Brunner1, Simon Gross1, Lars Kasper3, Bertram J. Wilm1,2, Christoph Barmel1,2, Klaas P. Pruessmann1  
1Institute for Biomedical Engineering, University and ETH Zurich, Zurich, Switzerland; 2Skope Magnetic Resonance Technologies LLC, Zurich, Switzerland

Computer 88 4056. **T1-Based MR Thermometry Close to Metal**  
Hans Weber1, Daehyun Yoon1, Valentina Taviani2, Kim Butts Pauly1,2, Brian A. Hargreaves1  
1Radiology, Stanford University, Stanford, CA, United States; 2Bioengineering, Stanford University, Stanford, CA, United States

Computer 89 4057. **Feasibility of Temperature Imaging of Knee Joint Cartilage Under Thermal Therapy Using Water Proton Resonance Frequency Shift**  
Atsushi Shinta1, Kenji Takahashi1, Jiro Nakano1, Kagayaki Kurosaid  
1Graduate School of Engineering, Tokai University, Kanagawa, Japan; 2Department of Orthopaedic Surgery, Nippon Medical School, Bunkyo, Tokyo, Japan; 3School of Information Science and Technology, Tokai University, Kanagawa, Japan

Computer 90 4058. **Direct Virtual Coil (DVC) for Bone Tumor Temperature Mapping**  
Yuxin Hu1, Shuo Chen1, Bingyao Chen1, Jiafei Yang1, Xing Wei1, Shi Wang2, Kui Ying2  
1Tsinghua University, Beijing, China; 2Engineering Physics, Tsinghua University, Beijing, China; 3Department of Orthopedics, First Affiliated Hospital of PLA General Hospital, Beijing, China

Computer 91 4059. **Real-Time Online Reconstruction of 3D MR Thermometry Data for MRgFUS Applications**  
Henrik Odén1,2, John Roberts1, Joshua de Bever1,3, Dennis L. Parker4  
1Utah Center for Advanced Imaging Research, Department of Radiology, University of Utah, Salt Lake City, UT, United States; 2Department of Physics and Astronomy, University of Utah, Salt Lake City, UT, United States; 3School of Computing, University of Utah, Salt Lake City, UT, United States; 4Eindhoven University of Technology, Eindhoven, Netherlands

Computer 92 4060. **Improving the Referenceless MR Thermometry Using Adaptive ROI**  
Changjun Tiel, Chao Zoul, Xin Liu1  
1Shenzhen Institutes of Advanced Technology, Chinese Academy of Sciences, Shenzhen, Guangdong, China

Computer 93 4061. **Simultaneous T2 Mapping in Near-Field Subcutaneous Fat Layer and PRFS Temperature Mapping in the Target Region Using Fast Interleaved Sequences to Monitor MR-HIFU Sonication**  
Jochen Keupp1, Steffen Weiss1, Jaakko Tolo2, Holger Grue11, Edwin Heijman5  
1Philips Research, Hamburg, Germany; 2Philips Healthcare, Helsinki, Finland; 3Philips Research, Eindhoven, Netherlands; 4Eindhoven University of Technology, Eindhoven, Netherlands

Candace C. Fleischer1,2, Deiqiang Qiu1, Xiaodong Zhong1, Hui Mao1, John N. Oshinks1, Xiaoping Hu1,2, Seena Dehkhargani3
Feasibility and Functionality of Quantitative Real-Time Monitoring During MRI-Guided Percutaneous Cryoablation
Jonathan Scalera1, Gary P. Zientara2, Kumal Tuncali1
1Brigham and Women's Hospital, Boston, MA, United States; 2US Army Research Institute of Environmental Medicine, Natick, MA, United States

MRI Temperature Mapping of NIR Absorbing Gold Nanoparticles Mediated Photothermal Therapy
Dong-Hyun Kim1, 2, Ken Zhao1, Daniele Procissi1, Andrew Gordon1, Weiguo Li1, Andrew C. Larson1, 2
1Department of Radiology, Northwestern University Feinberg School of Medicine, Chicago, IL, United States; 2R.H. Lurie Cancer Center, Chicago, IL, United States

Quantitative Magnetic Resonance Elastography of Solid Pancreatic Masses
Yu Shi1, He An1, Qiyong Guo1, Richard L. Ehman2, Kevin J. Glaser3
1Department of Radiology, Shengjing hospital of china medical university, Shenyang, Liaoning, China; 2Department of Radiology, Mayo Clinic, Rochester, MN, United States; 3Radiology, Taoyuan general hospital ministry of health and welfare, Taiwan, Taiwan; 4Department of Radiology, Taipei City Hospital, Taiwan, Taiwan

Cheng-In Hoi1, 2, Wen-Pei Wu2, 3, Yi-Chun Wang1, 3, Chen-Te Chou1, 2, Ran-Chou Chen1, 4
1Department of Biomedical Imaging and Radiological Sciences, National Yang-Ming University, Taipei, Taiwan, Taiwan; 2Department of Radiology, Chang-Hua Christian Hospital, Shenyang, Liaoning, China; 3Department of Radiology, Taoyuan general hospital ministry of health and welfare, Taiwan, Taiwan; 4Department of Radiology, Taipei City Hospital, Taipei, Taiwan

MR Elastography of the Liver: Qualitative and Quantitative Comparison of GRE and EPI Sequences
Temel Kaya Yasar1, Cecilia Besa1, Jad Bou Ayache1, Octavia Bane1, Maggie Fung2, Bachir Taouli1
1Icahn School of Medicine at Mount Sinai, New York, NY, United States; 2GE Healthcare, New York, NY, United States

Prospective Comparison of MR Elastography and US Acoustic Radiation Force Impulse for Evaluation of Hepatic Fibrosis
Chen-Te Chou1, 2, Wen-Pei Wu2, Yi-Jun Wang2, Ran-Chou Chen1, 2, 3
1Radiology, Chang-Hua Christian Hospital, Shenyang, Liaoning, China; 2Biomedical Imaging and Radiological Sciences, National Yang-Ming University, Taipei, Taiwan, Taiwan; 3Radiology, Taipei City Hospital, Taipei, Taiwan

Multi-Model Direct Inversion Algorithms at 3.0T MR Elastography of the Liver: Comparison with Conventional Multi-Scale Algorithm
Kengo Yoshimitsu1, Atsushi Nekzaki1, Richard L. Ehman1
1Radiology, Fukuoka University, Fukuoka, Japan; 2GE Healthcare, Tokyo, Japan; 3Mayo Clinic, Rochester, MN, United States

Detection of Cytoplasmic Lipid Within Neuroendocrine Tumors of the Pancreas on Chemical Shift MRI
YOSHIHIKO FUKUKURA1, Koji Takumi1, Toshikazu Shindo1, Tomokazu Umanodan1, Aya Umanodan1, Junichi Ideue1, Hiroto Hakamada1, Kiyohisa Kamimura1, Masanori Nakajo1, Takashi Yoshii1
1Department of radiology, Fukuoka University, Fukuoka, Japan; 2GE Healthcare, Tokyo, Japan; 3Mayo Clinic, Fukuoka, Japan

Repeatability of Measurement of Liver T1, T2 and PDFF by Multi-TR, Multi-TE Single Breath-Hold 1H MR Spectroscopy
Gavin Hamilton1, Michael S. Middleton1, William M. Haufe1, Jonathan C. Hooker1, Yesenia Covarrubias1, Rohit Loomba1, Claude B. Sirlin1
1Biomedical Imaging Technology Center, Emory University, Atlanta, GA, United States; 2Biomedical Engineering, Emory University, Atlanta, GA, United States; 3Radiology and Imaging Sciences, Emory University Hospital, Atlanta, GA, United States; 4MR R&D Collaborations, Siemens Healthcare, Atlanta, GA, United States
Since existing methods for determining Liver Iron Content (LIC) are based on Signal Intensity Ratio (SIR), we studied ... However, calculated LIC values were in good agreement between scanners, especially when working with RF spoiling.

The aim of our work was to verify hepatic iron stores in uremic patients on dialysis as measured by liver R2* value from multi-echo IDEAL magnetic resonance imaging. Using an oil-water phantom with varying concentration of iron oxide designed to span the range encountered from normal human samples, we showed that the method works well in the presence of fat and muscle. We also developed a method to improve the estimate by correcting for T1 relaxation.

Repeatability of MRI-based liver fat and iron quantification using a multistep adaptive fitting algorithm.

Optimization of the Fat Fraction and T2* Measurements in Mice at 4.7T with the IDEAL Algorithm

MRI-R2* Relaxometry for Cardiac, Pancreatic and Hepatic Iron Assessment in Patients with Hereditary Hemochromatosis

Repeatability of MRI-Based Liver Fat and Iron Quantification Using a Multistep Adaptive Fitting Algorithm

Correcting the Influence of Iron on Steatosis Measurements

Liver R2* Value from Multi-Echo IDEAL at 3.0 T: A Potential Biomarker for Adjusting IV Iron Dose and Anemia Management Practices on Maintenance Hemodialysis Patients

Liver Iron Content Determination Using GRE and Signal Intensity Ratio Analysis in MR Systems from Different Vendors
In this study, we intended to image rat pancreas in situ by using the state-of-the-art clinical MRI and CT scanners with ... anatomy in situ, attempts were made for imaging of native pancreatic landmarks in vivo without any contrast enhancement.

Knowledge of fat content in liver is not only useful for hepatic disease diagnosis but also valuable in monitoring ... sequence may be an iron overloading immune method for fat fraction assessment in patients diagnosed with hematopathy.

Magnetic resonance spectroscopy (MRS) can provide clinically valuable metabolic information for diagnosing and treating ... (CSI) methods are easier to acquire but give lower quality spectra. Our long-term goal is to use a technique known as

This study compared intrasubject changes in lipid unsaturation in yellow and red bone marrow and correlated these ... correlated with the BAECKE sport index. Furthermore the fat content of the red bone marrow correlated with age.

Glycogen metabolism plays a major role in glucose homeostasis in healthy (HEAL) and type 1 diabetes mellitus (T1DM) ... important implications on e.g. the design of interventional trials assessing exercise-related fuel metabolism in T1DM.

This study aims to determine the pancreatic iron and fat content in patients with iron overload. Highest iron and fat ... risk factor for the development of diabetes and might also explain the early onset of diabetes in these patients.

Electronic Poster

Computer 16 4080. Pancreatic Iron: A Future Major Organ in Iron Overload Diseases - The Role of R2*-Relaxometry
Jin Yamamura1, Sarah Keller2, Björn Schönnagel2, Regine Grosse2, Zhiyue Jerry Wang2, Peter Nielsen2, Gerhard Adam2, Roland Fischer2, 3
1Diagnostic and Interventional Radiology, University Medical Center Hamburg-Eppendorf, Hamburg, Germany; 2Pediatric Hematology and Oncology, University Medical Center Hamburg-Eppendorf, Hamburg, Germany; 3Department of Radiology, University of Texas Southwestern Medical Center, Dallas, TX, United States; 4Biochemistry, University Medical Center Hamburg-Eppendorf, Hamburg, Germany; 5Department of Radiology, Children’s Hospital & Research Center Oakland, Oakland, CA, United States

Computer 17 4081. Fast 1H-MRS Measurement of Pancreatic Fat Content in a Single Breath-Hold
Ronald Ouwerkerk1, Ahmed M. Gharib5
1The Biomedical and Metabolic Imaging Branch, NIDDK/NIH, Bethesda, MD, United States

Computer 18 4082. Quantification of Hepatic and Myocellular Glycogen After Two Days of Diet and Activity Standardization: A 13C MRS Reproducibility Study in Individuals with Type 1 Diabetes and Matched Healthy Controls
Tania Buehler3, Lia Bally2, Ayse Sila Dokumaci1, Christoph Stettler2, Chris Boesch2
1Depts. Radiology and Clinical Research, University Bern, Bern, Switzerland; 2Division of Endocrinology, Diabetes and Clinical Nutrition, Inselspital Bern, Bern, Switzerland

Computer 19 4083. Extramedullary Hematopoiesis Is Associated with a Thalassaemia Intermedia-Like Pattern of Myocardial and Liver Iron Loading in Regularly Polytransfused Thalassaemia Patients
Antonella Meloni1, Paolo Ricchi2, Paolo Preziosi2, Vincenzo Postiano2, Maria Chiara Resta1, Gennaro Restaino1, Antonio Vallone6, Maria Giovanna Neri1, Grazziella Filati1, Anna Pietrapertosa1, Petra Keilberg1, Alessia Pepe1
1CMR Unit, Fondazione G. Monasterio CNR-Regione Toscana, Pisa, Italy; 2UOSD Centro per le Microcitemie, AORN Cardarelli, Napoli, Italy; 3U.O.C. Diagnostica per Immagini e Interventistica, Policlinico “Casilino”, Roma, Italy; 4Struttura Complessa di Radiologia, OSP. SS. Annunziata ASL Taranto, Taranto, Italy; 5Istituto di Radiologia, Università Cattolica del Sacro Cuore, Campobasso, Italy; 6Istituto di Radiologia, Az. Osp. “Garibaldi” Presidio Ospedaliero Nesima, Catania, Italy; 7Pediatria, Ospedale “G. Da Saliceto”, Piacenza, Italy; 8Policlinico di Bari, Servizio Regionale Talassemie, Bari, Italy

Computer 20 4084. Measuring the Unsaturation Index in Red and Yellow Bone Marrow Using 1H MR Spectroscopy
Alessandra Bierwagen1, 2, Bettina Nowotny1, 2, Julia Szendroedi1, 2, Karsten Müssig1, 2, Michael Roden1, 3, Jesper Lundbom1, 3
1Institute for Clinical Diabetology, German Diabetes Center, Leibniz Institute for Diabetes Research, Düsseldorf, Germany; 2German Center for Diabetes Research (DZD e.V.), Partner Düsseldorf, Duesseldorf, Germany; 3Department of Endocrinology and Diabetology, University Hospital Duesseldorf, Germany

Computer 21 4085. Magnetic Resonance Spectroscopy of Breast Cancer Using the SLIM Technique – Initial Results
Patrick J. Bolan1, 2, Steen Moeller3, Gregory J. Metzger1, 2, Michael Garwood1, 2, Douglas Yee2, 3, Michael T. Nelson1, 2
1Radiology, University of Minnesota, Minneapolis, MN, United States; 2Masonic Cancer Center, University of Minnesota, Minneapolis, MN, United States; 3Medicine, University of Minnesota, Minneapolis, MN, United States

Computer 22 4086. Investigation of 3D Lava-Flex in Fat Fraction Estimation for Patients with Hepatic Iron-Overloading
Tianyong Xu1, Qian Jiang1, Bing Wu1, Kai Xu2, Zhenyu Zhou1
1GE Healthcare China, Beijing, China; 2The Affiliated Hospital of Xuzhou Medical College, Xuzhou, Jiangsu, China

Computer 23 4087. Visualization of Pancreas in Rats Using Clinical MRI and CT: From in Situ to In Vivo
Ting Yin1, Walter Coudyzer2, Ronald Peeters3, Yewei Liu1, Marlein M. Cona1, Yuanbo Feng1, Jie Yu1, Steven Dymarkowski1, Raymond Oyen1, Yicheng Ni1, 2
1Theragnostic Laboratory, KULeuven, Leuven, Flemish Brabant, Belgium; 2Department of Radiology, KULeuven, Leuven, Flemish Brabant, Belgium

Computer 24 4088. Pitfalls of the Piggyback
Marina-Portia Anthony1, Stuart Bentley-Hibber1, Anuradha S. Shenoy-Bhangle1, Elizabeth Hecht1, Benjamin Samstein1, Martin R. Prince1
1Abdominal Division, Department of Radiology, Columbia University Medical Center, New York, NY, United States; 2Department of Surgery, Columbia University Medical Center, New York, NY, United States

544
### Electronic Poster

#### Hepatobiliary II

**Exhibition Hall II**  
Wednesday 11:00-12:00

| Computer 25 | **4089.** Non-Gated Single Breath-Hold MR Cholangiopancreatography (MRCP) with 3D BSSFP: Comparison with Respiratory Gated 3D FSE  
Akiyoshi Yamamoto¹, Hiroki Matoba¹, Yuji Uchiyama¹, Seigo Yoshida¹, Katsumi Nakamura,¹,², Mitsue Miyazaki¹  
¹Radiology, Tobata Kyoritsu Hospital, Kitakyushu, Fukuoka, Japan; ²Radiology, Hikari Central Hospital, Hikari, Yamaguchi, Japan; ³Toshiba Medical Research Institute USA, Vernon Hills, IL, United States |
| Computer 26 | **4090.** Intravoxel Incoherent Motion MR Imaging in Evaluation of Focal Malignant Liver Masses: Compare with Apparent Diffusion Coefficient  
Jinrong QU¹, Xiang Li¹, Lifeng wang¹, Junpeng Luo¹, Cuicui Liu¹, Hailiang Li¹  
¹Radiology, the Affiliated Cancer Hospital of Zhengzhou University, Henan Cancer Hospital, Zhengzhou, HENAN, China |
| Computer 27 | **4091.** Postprandial Changes of Secretory Flow of Pancreatic Juice in the Main Pancreatic Duct: Evaluation with Cine Dynamic MRCP and a Spatially Selective Inversion Recovery (IR) Pulse  
Kazuya Yasokawa¹, Akira Yamamoto¹, Tsutomu Tamada¹, Akihiko Kanki¹, Atsushi Higaki¹, Yasufumi Noda¹, Katsuyoshi Ito¹  
¹Radiology, Kawasaki Medical School, Kurashiki, Okayama, Japan |
| Computer 28 | **4092.** Primary Study of MR Diffusion Tensor Imaging in Hepatocellular Carcinomas  
Xinghui Li¹, Xiaoming Zhang¹, Jiani Hu¹  
¹Department of Radiology, Affiliated Hospital of North Sichuan Medical College, nanchong, sichuan, China; ²Department of Radiology, Affiliated Hospital of North Sichuan Medical College, sichuan, China; ³Department of Radiology, Wayne State University,, MI, United States |
| Computer 29 | **4093.** Differentiation of Malignant Thrombus from Bland Thrombus of the Portal Vein in Patients with Cirrhosis: Application of Intravoxel Incoherent Motion Diffusion-Weighted MR Imaging  
Eun-Suk Cho¹, Dahye Lee¹, Jeong-Sik Yu¹  
¹Radiology, Yonsei University College of Medicine, Gangnam Severance Hospital, Seoul, Korea |
| Computer 30 | **4094.** Diffusion Tensor Imaging (DTI) in Liver Fibrosis with Minimal Confounding Effect of Hepatic Steatosis  
Yunjing Lee¹, Hyeonjin Kim¹  
¹Radiology, Seoul National University Hospital, Seoul, Korea; ²Biomedical Sciences, Seoul National University, Seoul, Korea |
| Computer 31 | **4095.** Characterize Hepatocellular Carcinoma with IVIM-DWI and DCE-MRI in Combination: Preliminary Experience  
Lifen Xie¹,², Changhong Liang¹, Zaiyi Liu¹, Queenie Chan¹, Yingjie Mei¹  
¹Department of Radiology, Guangdong Academy of Medical Sciences/Guangdong General Hospital, Guangzhou, Guangdong, China; ²Southern Medical University, Guangzhou, Guangdong, China; ³Philips Healthcare, HK, China; ⁴Philips Healthcare, Guangzhou, Guangdong, China |
| Computer 32 | **4096.** Diffusion-Weighted Imaging in Autoimmune Pancreatitis: Which Variable Is Most Useful for Differentiation from Pancreatic Cancer?  
Yasunari Fujinaga¹, Masaaki Takahashi¹, Akira Fujita¹, Sachie Fujita¹, Shin Yanagisawa¹, Hideaki Hamano², Shigeyuki Kawa³, Masumi Kadoya¹  
¹Department of Radiology, Shinshu University, School of Medicine, Matsumoto, Nagano, Japan; ²Department of Gastroenterology, Shinshu University Hospital, Matsumoto, Nagano, Japan; ³Center for Health, Safety, and Environmental Management, Shinshu University, Matsumoto, Nagano, Japan |
| Computer 33 | **4097.** Correlation of Diffusion Weighted Imaging and Apparent Diffusion Coefficient Values of Pancreatic Ductal Adenocarcinoma (PDAC) with Clinicopathological Features and Overall Survival.  
John J. Hermans¹, Denticie Riviere¹, Marnix Maas¹, Monica Van Zanten¹, Tanya Bisseling¹, Martin Gotthardt¹, Kees Van Laarhoven²  
¹Department of Radiology, Affiliated Hospital of North Sichuan Medical College, sichuan, China; ²Department of Imaging, University of Groningen, The Netherlands |
Electronic Poster

Computer 34 4098. Reproducibility of ADC in Colorectal Liver Metastases at 3T: A Cross-Vendor Evaluation
Sabrina Doblas1, Philippe Garteiser1, Vincent Barrau1, 2, Magaly Zappa1, 2, Valérie Vilgrain1, 2, Bernard E. Van Beers1, 2
1U1149 - CRI, INSERM, Paris, France; 2Radiology, Beaujon Hospital, Clichy, France

Computer 35 4099. Histogram Analysis of Apparent Diffusion Coefficient in Differentiating Pancreatic Adenocarcinoma and Neuroendocrine Tumor
YOSHIHIKO FUKUKURA1, Toshikazu Shindo1, Tomokazu Umanodan1, Tomoyuki Okuaki1, Koji Takumi1, Aya Umanodan1, Junichi Ideue1, Hiroto Hakamada1, Kiyohtisa Kamimura1, Masanori Nakajo1, Takashi Yoshiura1
1Kagoshima University Graduate School of Medical and Dental Sciences, Kagoshima, Japan; 2Philips Healthcare, Tokyo, Japan

Computer 36 4100. Qualitative and Quantitative Assessment of Intrahepatic Cholangiocarcinoma Using Diffusion Weighted Imaging with Histopathologic Correlation: Preliminary Results from a Bi-Center Series.
Sara C. Lewis1, Shingo Kihira1, Cecilia Besa2, Hongfa Zhu3, Swan Thung1, Kartik Jhaveri4, Bachir Taouli5
1Radiology, Mount Sinai Medical Center, New York, NY, United States; 2Radiology, Translational and Molecular Imaging Institute, Mount Sinai Medical Center, New York, NY, United States; 3Pathology, Mount Sinai Medical Center, New York, NY, United States; 4Radiology, University Health Network Mt. Sinai and Womens' College Hospital, Toronto, Ontario, Canada; 5Radiology, Translational and Molecular Imaging Institute, Mount Sinai Medical Center, New York, NY, United States

Computer 37 4101. Intra-Session and Inter-Session Repeatability of Diffusion Tensor Measurement in Normal Human Liver
Ot Lei Wong1, Gladys Goh Lo1, Wing Wa Li2, Jing Yuan3, Raymond Lee4, Michael D. Noseworthy5
1Department of Medical Physics and Applied Radiation Science, McMaster University, Hamilton, Ontario, Canada; 2Department of Diagnostic & Interventional Radiology, Hong Kong Sanatorium & Hospital, Hong Kong, China; 3Medical Physics and Research Department, Hong Kong Sanatorium & Hospital, Hong Kong, China; 4Department of Electrical and Computer Engineering, McMaster University, Hamilton, Ontario, Canada

Computer 38 4102. Pilot Study of Liver Metastases Imaging with Administration of Ferumoxytol
Young Kon Kim1, 2, Peng Hu1, Daniel Margolis1, Steven Raman1, David Lu1, J. Paul Finn1, Kyunghyun Sung1
1Radiological Sciences, University of California, Los Angeles, Los Angeles, CA, United States; 2Radiology, Samsung Medical Center, Seoul, Korea

Matthew DF McInnes1, 2, Rebecca M. Hibbert1, Joao Inacio1, Nicola Schieda1
1Radiology, University of Ottawa, Ottawa, Ontario, Canada; 2Ottawa Hospital Research Institute, Ottawa, Ontario, Canada

Computer 40 4104. Feasibility of 10-Minute Delayed Hepatocyte Phase Imaging with 30° Flip Angle in Gd-EOB-DTPA-Enhanced MRI for Detection of Hepatocellular Carcinoma, Compared to 20-Minute Delayed Hepatocyte Phase Imaging
Inhwan Jeon1, Dahye Lee1, Eun-Suk Cho1, Jeong-Sik Yu1
1Radiology and Nuclear Medicine, Radboud University Medical Center, Nijmegen, Gelderland, Netherlands; 2Pathology, Radboud University Medical Center, Nijmegen, Gelderland, Netherlands; 3Gastroenterology and Hepatology, Radboud University Medical Center, Nijmegen, Gelderland, Netherlands; 4Surgery, Radboud University Medical Center, Nijmegen, Gelderland, Netherlands

Computer 41 4105. Multiple Flip Angle Measurement to Quantify Hepatic Uptake of Gadoxetic Acid in MRI
Alexander Ciritsis1, Daniel Truhn1, Nils Krämer1, Christiane K. Kuhl1
1Department of Diagnostic and Interventional Radiology, RWTH University Hospital Aachen, Aachen, NRW, Germany

Computer 42 4106. Intra-Individual Crossover Comparison of Dose of Gadoxetic Acid for Liver MRI: Parameter Optimization and Quantitative Relaxometry in Normal Volunteers
Utaroh Motosugi1, 2, Peter Bannas2, 3, Diego Hernando1, Mahdi Salmani Rahimi4, 5, James H. Holmes6, Scott B. Reeder7
1Radiology, University of Wisconsin, Madison, WI, United States; 2Radiology, University of Yamanashi, Chuo-shi, Yamanashi, Japan; 3Radiology, University Hospital Hamburg-Eppendorf, Hamburg, Germany; 4Biomedical Engineering, University of Wisconsin,
Diabetic nephropathy (DN) is the leading cause of renal failure. Murine models of DN are routinely used to evaluate the development and progression of fibrosis and lipid and glucose deposition in accelerated diabetic kidney disease.

In our previous study, we proposed a method for automated navigator tracker (ANAV) positioning to improve operator feedback and guiding the patient through the examination. This method allows for adaptive re-acquisition of successive phase images. Forty patients were tested, producing satisfactory results and helping to identify a limitation.

The purpose of this investigation was to implement a radial 3D GRE using a golden angle acquisition scheme and KWIC weighting. This approach allows for making this acquisition strategy an effective alternative to cartesian 3D GRE for free-breathing dynamic liver imaging.

This work applies the novel XD-GRASP technique for continuous free-breathing motion-sorted golden-angle radial MRI to the study of the pancreatobiliary regions. XD-GRASP has the potential to improve imaging in patients undergoing Gd-EOB-DTPA enhanced MRI.

The purpose was to evaluate the feasibility of dynamic Gd-contrast study using fast 3D imaging sequence, DISCO under free-breathing conditions. This approach may reduce the time required for liver contrast examinations and may improve information acquired from single MR study with contrast medium.

This is a retrospective study evaluating the interreader variability between radiologists by using the major features of the LI-RADS lexicon. The study was performed for Advanced Imaging Innovation and Research (CAI2R), NYU School of Medicine, New York, NY, United States; 3Radiology, Center for Advanced Imaging Innovation and Research (CAI2R), NYU School of Medicine, New York, NY, United States; 4Division of Nephrology and Hypertension, Vanderbilt University, TN, United States; 5Division of Nephrology, Cleveland Clinic, Cleveland, OH, United States.
Fat deposition in the body can be regulated by silencing the fat storage-inducing transmembrane (FIT) proteins. In our study, we found that down-regulation or silencing of these proteins might be of potential for drug discovery for obesity and type 2 diabetes.

Saturated fatty acids promote increased energy partitioning towards fat storage, and reduced fat oxidation, which is further enhanced by a high saturated fat diet, using 1H magnetic resonance spectroscopy and Liquid Chromatography-Mass Spectrometry (LC-MS).

The purpose of this study was 1) to optimize the MRS protocol for estimating ectopic renal lipids, 2) to determine in a pilot study the feasibility of MRS for ectopic lipids determination. The finding of low ectopic lipid content in few obese diabetic patients requires confirmation.

Chemical shift encoded techniques enable rapid fat and iron quantification over the entire liver, by mapping proton chemical shifts of fat, water, and iron. We show that the ratio of R2* to proton density fat fraction correlates well with liver iron concentration in patients without iron overload. Future work is needed to fully characterize the source of this correlation.

Bone marrow is a fat depot that has recently attracted a considerable research interest due to its unique connections to the liver. We showed that bone marrow fat behaves differently from abdominal fat, liver fat and serum lipids after a four-week calorie restriction in obese women.

Relationship Between Liver Proton Density Fat Fraction and R2* in the Absence of Iron Overload

Optimization of Ectopic Lipids Determination in Kidneys by MRS and Preliminary Results in Obese Diabetic Patients.

Modulation of Ectopic Fat and SCD Activity During Weight Loss Interventions in High Saturated Fat Diet Induced Obese Rats by In-Vivo MRS and LC-MS

Modulation of the Abdominal and Hepatic Fat by Adipose-Specific Fat-Storage Inducing Transmembrane (FIT2) Protein
Electronic Poster

Computer 58 4122. Metabolic Adaptations Induced by Medium Chain Triglycerides in a Rat Model of Diabetes Measured by In Vivo Magnetic Resonance Spectroscopy
Lihong Jiang1, Zejian Liu2, Bei Wang3, Greame Mason4,5, Douglas Rothman1, Raimund Herzog2
1Diagnostic Radiology, Yale University School of Medicine, New Haven, CT, United States; 2Internal Medicine, Yale University School of Medicine, New Haven, CT, United States; 3Psychiatry, Yale University School of Medicine, New Haven, CT, United States

Computer 59 4123. Intranasal Insulin Improves Energy Metabolism in Humans
Alessandra Bierwagen1,2, Sofiya Gancheva1,2, Chrysi Koliaki1,2, Martin Heni3,4, Andreas Fritsche1,4, Hans-Ulrich Häring1,4, Julia Szendroedi1,2, Michael Roden1,5
1Targeting Discovery Research, In vivo imaging laboratory, Boehringer Ingelheim Pharma GmbH & Co. KG, Biberach an der Riss, Baden-Württemberg, Germany; 2German Center for Diabetes Research (DZD e.V.), Partner Düsseldorf, Duesseldorf, Germany; 3Department of Internal Medicine, Division of Endocrinology, Diabetology, Angiology, Nephrology and, Eberhard Karls University, Tübingen, Germany; 4Institute for Diabetes Research and Metabolic Diseases of the Helmholtz Center Munich at the Univer, Germany; 5Department of Endocrinology, Diabetology, University Hospital, Duesseldorf, Germany

Computer 60 4124. Non-Invasive Longitudinal Study of an MRI Biomarker for the Quantification of Colon Inflammation in a Mouse Model of Colitis
Andrea Bianchi1, Teresa Bluhmki1, Tanja Schoenberger1, Andrea Vögtle1, Eric Kaaru1, Michael Neumaier1, Birgit Stierstorfer2, Thomas Kaulisch1, Detlef Stiller1
1Diagnostic Imaging, The Hospital for Sick Children, Toronto, Ontario, Canada; 2Medical Imaging, University of Toronto, Toronto, Computer 61 4125. Diffusion-Weighted Magnetic Resonance Imaging for the Prediction of Response to Neoadjuvant Chemoradiotherapy in Esophageal Cancer.
Peter S.N. van Rossum1,2, Astrid L.H.M.W. van Lier1, Marco van Vulpen1, Onne Reerink1, Steven H. Lin1, Richard van Hillegersberg2, Jelle P. Ruurda2, Gert J. Meijer1, Irene M. Lips1
1Radiology, Radboud University Medical Center, Nijmegen, Netherlands; 2Department of Surgery, University Medical Center Utrecht, Utrecht, Netherlands; 3Department of Surgery, University Medical Center Utrecht, Utrecht, Netherlands; 4Department of Radiation Oncology, The University of Texas MD Anderson Cancer Center, Houston, TX, United States

Computer 62 4126. Metastatic Hepatic Neuroendocrine Tumors: Correlation of Quantitative Diffusion and Dynamic Contrast Enhanced MRI with Tumor Grade
Cecilia Besa1, Stephen Ward2, Yong Cui1, Guido Jajamovich, Michelle Kim1, Bachir Taouli1
1Radiology, Icahn School of Medicine at Mount Sinai, New York, NY, United States; 2Pathology, Icahn School of Medicine at Mount Sinai, NY, United States; 3Radiology, Peking University Cancer Hospital & Beijing Cancer Hospital, Beijing, China; 4Surgery, Icahn School of Medicine at Mount Sinai, NY, United States

Computer 63 4127. Reproducibility of Intravoxel Incoherent Motion Diffusion-Weighted Imaging in Small Bowel Crohn’s disease
Lianhua Huang1, Yihao Guo2, Yingjie Mei1, Lizi Zhou1, Zeyu Zheng1, Yanqiu Feng1, Xinying Wang1, Jie Feng1, Chenggong Yan1, Yikai Xu1
1Department of Medical Imaging Center, Nanfang Hospital, Southern Medical University, Guangzhou, Guangdong, China; 2School of Biomedical Engineering, Southern Medical University, Guangzhou, Guangdong, China; 3School of Biomedical Engineering, Southern Medical University, Guangzhou, Guangdong, China; 4School of Biostatistics, School of Public Health and Tropical Medicine, Southern Medical University, Guangzhou, Guangdong, China; 5School of Biomedical Engineering, Southern Medical University, Guangzhou, Guangdong, China; 6Department of Gastroenterology, Nanfang Hospital, Southern Medical University, Guangzhou, Guangdong, China

Computer 64 4128. Perianal Imaging in Pediatric IBD - 1.5T Versus 3T
Mary-Louise C. Greer1,2, Zehour Alsabban1, Ryan Lo1, Rahim Moineddin4, Peter Church5, Thomas D. Walters35, Jacob C. Langer36, Anne Griffiths35
1Diagnostic Imaging, The Hospital for Sick Children, Toronto, Ontario, Canada; 2Medical Imaging, University of Toronto, Toronto, Ontario, Canada; 3University of Toronto, Ontario, Canada; 4Department of Family and Community Medicine, Dalla Lana School of Public Health, University of Toronto, Toronto, Canada; 5Gastroenterology, Hepatology and Nutrition, The Hospital for Sick Children, Ontario, Canada; 6Division of General Surgery, The Hospital for Sick Children, Ontario, Canada
The staging of hepatic fibrosis is critical to monitoring chronic liver disease progression. The current gold standard is...
Electronic Poster

MR-Guided Interventions

Exhibition Hall  Wednesday 11:00-12:00

Computer 73  4137. Benefits, Limitations, and Improving the Future of MRI-Guided Endovascular Catheter Tracking
Nicholas Whiting1, Jingzhe Hu2, Pratip Bhattacharya1
1Cancer Systems Imaging, The University of Texas MD Anderson Cancer Center, Houston, TX, United States; 2Department of Biomedical Engineering, Rice University, Houston, TX, United States

Computer 74  4138. Interventional MRI-Guided Local Delivery of Agents Into Swine Bile Duct Walls Using MR Compatible Needle-Incorporated Catheter System
Feng Zhang1, Zhibin Bai1, Yaoping Shi1, Jianfeng Wang1, Longhua Qiu1, Yonggang Li1, Xiaoming Yang1
1Radiology, University of Washington, SEATTLE, WA, United States

Computer 75  4139. MR-Guided Treatment of Low-Flow Vascular Malformations
Clifford R. Weiss1, Daniel M. O'Mara2, Paul A. DiCamillo1, Di Xu1, Wesley D. Gilson1, Daniel A. Herzka3, Jonathan S. Lewin1
1Vascular and Interventional Radiology, The Johns Hopkins University School of Medicine, Baltimore, MD, United States; 2Department of Radiology, The Johns Hopkins University School of Medicine, Baltimore, MD, United States; 3Department of Biomedical Engineering, The Johns Hopkins University School of Medicine, Baltimore, MD, United States; 4Siemens Healthcare USA, Baltimore, MD, United States

Computer 76  4140. MRI Compatible-3D Localization System for Real-Time Catheter Navigation
Olivier Garandeau1, Maxime Bories1, Fabrice Marquet1, Remi Dubois2, Pierre Jais2, Bruno Quesson1
1IHU Liryc/CRCTB Inserm U1045, University of Bordeaux, Pessac, Aquitaine, France; 2IHU Liryc/CRCTB Inserm U1045, ESPCI Paris Tech, Pessac, Aquitaine, France; 3CHU bordeaux, Pessac, Aquitaine, France

Computer 77  4141. In Vivo Assessment of Renal Artery Embolization Using a Magnetically Assisted Remote Controlled (MARC) Catheter
Prasheel Lilaney1, Aaron D. Losey1, Alastair J. Martin1, Bradford RH Thorne1, Leland B. Evans1, Vincent Malba1, Maythem Saeed2, Ronald Arenson1, Steven W. Hetts1
1Radiology and Biomedical Imaging, University of California San Francisco, San Francisco, CA, United States

Computer 78  4142. Imaging Assessment and Feasibility of a Hydrostatically Actuated Robotic System for Real-Time MRI-Guided Interventions
Samantha Mikael1, Rashid Yasin1, Samuel Ross4, M. Wasil Wahi-Anwar1, James Simonelli1, David Lu2, Kyung Sung,1,2 Tsu-Chin Tsao1, Holden H. Wu,1,2
1Biomedical Physics, University of California Los Angeles, Los Angeles, CA, United States; 2Radiological Sciences, University of California Los Angeles, Los Angeles, CA, United States; 3Mechanical and Aerospace Engineering, University of California, Los Angeles, CA, United States; 4Santa Monica College, Santa Monica, CA, United States

Computer 79  4143. Dynamic Scan Plane Control for Effective MRI-Guided Robotic Intervention
Mahamadou Diakite1, Steve Roys1, Yeongin Kim1, Taehoon Shin1, Mark J. Simard1, Jaydev P. Desai2, Rao P. Gullapalli1
1Center for Metabolic Imaging and Therapeutics, Dept. of Diagnostic Radiology and Nuclear Medicine, University of Maryland, School of Medicine, Baltimore, MD, United States; 2Mechanical Engineering, University of Maryland, College Park, MD, United States; 3Neurosurgery, University of Maryland, School of Medicine, Baltimore, MD, United States

Computer 80  4144. Tactics: An Open-Source Platform for Planning Stereotactic Surgery
D. Adair1, K. S. Gomes2, Y. P. Starreveld3, Z. H.T. Kiss3, D. G. Gobbi4
1Calgary Image Processing and Analysis Centre, Calgary, Alberta, Canada; 2Biomedical Engineering, University of Calgary, Calgary, Alberta, Canada; 3Clinical Neuroscience and Hotchkiss Brain Institute, University of Calgary, Calgary, Alberta, Canada; 4Atamai Inc., Calgary, Alberta, Canada

Computer 81  4145. MR Guided CED of a Novel Therapeutic for Parkinson’s Disease: The Importance of Imaging Feedback
Alastair J. Martin1, Krystof Bankiewicz1, John Bringas2, Chad Christine1, Martin Thompson1, Janine Beyer1, Paul Larson2
Many factors can contribute to an inaccurate MR-guided breast biopsy. The lack of real-time visualization of tool movement affects the accuracy of the procedure. By using a new technique that allows for real-time visualization, the accuracy of breast biopsies can be significantly improved, thus reducing the time needed for the procedure. This technique involves the use of a controllable device with susceptibility effects that can be turned on and off. The feasibility of locating such a device has been demonstrated in vitro, showing promising results.

Gold seeds or fiducials implanted in the prostate prior to radiation treatment are frequently used to enable the rigid control of the target location. The proposed approach detects fiducials with an accuracy of 95% when compared to the manual detection. This method can significantly improve the precision of radiation treatments, leading to better patient outcomes.

Image guidance is of great importance in high-dose-rate (HDR) prostate brachytherapy. A robotic MR-guided HDR system has been developed to improve the localization of the HDR source. The system has been tested in vivo, demonstrating its potential to enhance the accuracy and efficiency of HDR treatments.

Diffuse optical imaging is advantageous in enhancing tumor diagnosis by providing functional information but suffers from limited spatial resolution. By using multiple wavelengths, it is possible to reconstruct MR resolution tomography of different chromophore concentrations. This technique has the potential to improve the accuracy of tumor diagnosis and guide intraoperative decisions.

Inducing magnetic torque inside an MRI scanner using pulsed magnetic gradients is a novel approach for controlling endoscopic capsules for gastrointestinal (GI) procedures. This technique has the potential to open the way for the development of MR actuated endoscopic capsules for improved patient care.

MR guidance is used to monitor convection enhanced delivery of a novel gene therapy agent (AAV2-hAADC) in patients with Parkinson's disease. The feasibility of this approach has been demonstrated, with B0 effects permitted adjustments to infusion strategy, including changing cannula depth and aborting ineffective infusions.
**Computer 92 4156.** Carbon Fiber Needle for MRI-Guided Radiofrequency Ablation  
Jijun Han¹, Shuai Song¹, Bensheng Qiu¹  
¹University of Science and Technology of China, Hefei, Anhui, China

**Computer 93 4157.** Reducing Needle Induced Image Artifacts in Interventional MRI While Maintaining Soft Tissue Contrast  
Thomas Boyd Martin¹, ², Holden Wu¹, Danny J.J. Wang¹, Kyung Sung²  
¹Biomedical Physics Interdepartmental Program, University of California Los Angeles, Los Angeles, CA, United States; ²Radiological Sciences, University of California Los Angeles, Los Angeles, CA, United States"; ³Neurology, University of California Los Angeles, Los Angeles, CA, United States

**Computer 94 4158.** Susceptibility-Based Positive-Contrast MRI for Interventional Devices  
Ying Dong¹, Guoxi Xie², Jim Xiuquan Ji³  
¹Department of Electrical and Computer Engineering, Texas A&M University, College Station, TX, United States; ²Paul C. Lauterbur Research Center for Biomedical Imaging, Chinese Academy of Sciences, Shenzhen, Guangdong, China

**Computer 95 4159.** Modulation of Magnetic Susceptibility Markers with Laser-Induced Demagnetization of Nickel Nanoparticles  
Hirad Karimi¹, ², William Dominguez-Viqueira², Charles H. Cunningham³  
¹Medical Biophysics, University of Toronto, Toronto, Ontario, Canada; ²Imaging Research, Sunnybrook Health Sciences Centre, Toronto, Ontario, Canada

**Computer 96 4160.** To Spoil or to Balance? a Comparison of the White Marker Phenomenon in Gradient Echo Pulse Sequences  
Simon Reiß¹, Axel Joachim Krafft¹, ², Klaus Düring¹, Constantin von zur Mühlen³, Michael Bock¹  
¹Radiology - Medical Physics, University Medical Center Freiburg, Freiburg, Germany; ²German Cancer Consortium (DKTK), Heidelberg, Germany; ³MaRVis Medical GmbH, Hannover, Germany; ⁴Department of Cardiology and Angiology I, University Heart Center Freiburg, Germany

**Electronic Poster**  
**Cartilage Imaging - Technical Developments**

**Exhibition Hall Wednesday 13:30-14:30**

**Computer 1 4161.** Time Efficient and Quantitative Sodium Imaging at 7T Using Compressed Sensing Accelerated FID Spectroscopic Imaging  
Jetse van Gorp¹, Paul de Bruin², Peter Seevinck³  
¹Image Sciences Institute, University Medical Center Utrecht, Utrecht, Netherlands; ²Department of Radiology, Leiden University Medical Center, Leiden, Zuid-Holland, Netherlands

**Computer 2 4162.** Four-Fold Reduction in Scan Time for Skeletal Age Examination Enabled by Adaptive Compressed Sensing MRI  
Yasuhiko Terada¹, Keiichiro Ishi¹, Daiki Tamada¹, Katsumi Kose¹, Taiki Nozaki², Yasuhiro Kaneko², Ryo Miyagi², Hiroshi Yoshioka³  
¹Institute of Applied Physics, University of Tsukuba, Tsukuba, Ibaraki, Japan; ²Department of Radiological Sciences, University of California Irvine, Irvine, CA, United States

**Computer 3 4163.** 10 Minute Isotropic MRI of the Knee Using Accelerated 3D SPACE with Incoherent Undersampling and Iterative Reconstruction: Comparison with Standard 2D TSE MRI  
Jan Fritz¹, Gaurav Thawat¹, Shivani Aghawat¹, Shadpour Demehri¹, Heiko Meyer², Wesley Gilson³, Esther Raithel²  
¹Russell H. Morgan Department of Radiology and Radiological Science, Johns Hopkins University School of Medicine, Baltimore, MD, United States; ²Healthcare Sector, Siemens AG, Erlangen, Bavaria, Germany; ³Siemens Healthcare USA, Baltimore, MD, United States

**Computer 4 4164.** Improving Slice Resolution of Knee Imaging Using Multiband Slice Accelerated TSE  
Dingxin Wang¹, ², Chen Lin¹, Abraham Padvaa¹, Bruce Spottiswoode¹, Jutta Ellermann², Edward Auerbach², Kamil Ugurbi³, Kenneth Buckwalter³, Vibhas Deshpande⁴  
¹Department of Electrical and Computer Engineering, Texas A&M University, College Station, TX, United States; ²Paul C. Lauterbur Research Center for Biomedical Imaging, Chinese Academy of Sciences, Shenzhen, Guangdong, China; ³MaRVis Medical GmbH, Hannover, Germany; ⁴Department of Cardiology and Angiology I, University Heart Center Freiburg, Germany

**Electronic Poster**

**Cartilage Imaging - Technical Developments**

**Exhibition Hall Wednesday 13:30-14:30**

**Computer 1 4161.** Time Efficient and Quantitative Sodium Imaging at 7T Using Compressed Sensing Accelerated FID Spectroscopic Imaging  
Jetse van Gorp¹, Paul de Bruin², Peter Seevinck³  
¹Image Sciences Institute, University Medical Center Utrecht, Utrecht, Netherlands; ²Department of Radiology, Leiden University Medical Center, Leiden, Zuid-Holland, Netherlands

**Computer 2 4162.** Four-Fold Reduction in Scan Time for Skeletal Age Examination Enabled by Adaptive Compressed Sensing MRI  
Yasuhiko Terada¹, Keiichiro Ishi¹, Daiki Tamada¹, Katsumi Kose¹, Taiki Nozaki², Yasuhiro Kaneko², Ryo Miyagi², Hiroshi Yoshioka³  
¹Institute of Applied Physics, University of Tsukuba, Tsukuba, Ibaraki, Japan; ²Department of Radiological Sciences, University of California Irvine, Irvine, CA, United States

**Computer 3 4163.** 10 Minute Isotropic MRI of the Knee Using Accelerated 3D SPACE with Incoherent Undersampling and Iterative Reconstruction: Comparison with Standard 2D TSE MRI  
Jan Fritz¹, Gaurav Thawat¹, Shivani Aghawat¹, Shadpour Demehri¹, Heiko Meyer², Wesley Gilson³, Esther Raithel²  
¹Russell H. Morgan Department of Radiology and Radiological Science, Johns Hopkins University School of Medicine, Baltimore, MD, United States; ²Healthcare Sector, Siemens AG, Erlangen, Bavaria, Germany; ³Siemens Healthcare USA, Baltimore, MD, United States

**Computer 4 4164.** Improving Slice Resolution of Knee Imaging Using Multiband Slice Accelerated TSE  
Dingxin Wang¹, ², Chen Lin¹, Abraham Padvaa¹, Bruce Spottiswoode¹, Jutta Ellermann², Edward Auerbach², Kamil Ugurbi³, Kenneth Buckwalter³, Vibhas Deshpande⁴  
¹Department of Electrical and Computer Engineering, Texas A&M University, College Station, TX, United States; ²Paul C. Lauterbur Research Center for Biomedical Imaging, Chinese Academy of Sciences, Shenzhen, Guangdong, China; ³MaRVis Medical GmbH, Hannover, Germany; ⁴Department of Cardiology and Angiology I, University Heart Center Freiburg, Germany
Electronic Poster

1Siemens Healthcare, Minneapolis, MN, United States; 2CMRR, Department of Radiology, University of Minnesota, Minneapolis, MN, United States; 3Department of Radiology, University of Indiana, Indianapolis, IN, United States; 4Siemens Healthcare, Houston, TX, United States; 5Siemens Healthcare, Chicago, IL, United States; 6Siemens Healthcare, Austin, TX, United States

Computer 5 4165. Investigation of In-Vivo Relationship Between Cartilage Contact and Cartilage Quantitative MR Parameters
Fang Liu1, Jarred Kaiser1, Walter F. Block1, 2, Darryl G. Thelen1, 2, Richard Kijowski3
1Department of Medical Physics, University of Wisconsin-Madison, Madison, WI, United States; 2Department of Mechanical Engineering, University of Wisconsin-Madison, Madison, WI, United States; 3Department of Biomedical Engineering, University of Wisconsin-Madison, Madison, WI, United States; 4Department of Radiology, University of Wisconsin-Madison, Madison, WI, United States

Computer 6 4166. A Comprehensive 7 Tesla MRI Protocol for Quantitative (T1-, T2-, T2*-Mapping) and Morphological Hip Cartilage Imaging
Andrea Lazik1, 2, Jens M. Theysohn1, Stephan Orzada2, Harald H. Quick2, 3, Oliver Kraff2
1Department of Diagnostic and Interventional Radiology and Neuroradiology, University Hospital Essen, Essen, NRW, Germany; 2Erwin L. Hahn Institute for Magnetic Resonance Imaging, University Duisburg-Essen, Essen, NRW, Germany; 3High Field and Hybrid MR Imaging, University Hospital Essen, Essen, NRW, Germany

Computer 7 4167. Quantitative Magnetic Resonance Imaging for Evaluation of ACL Injuries: a Pilot Multicenter Study
Keiko Amano1, Valentina Pedeoa1, Drew A. Lansdown1, Cory Wyatt1, Narthiro Okazaki2, Favian Su1, Dragana Savic2, Kimberly Amrami3, Matthew Frick1, Joel Felmlee3, Matthew F. Koff4, Aaron Krych5, Hollis Potter1, C. Benjamin Ma1, Scott Rodero2, Xiaojuan Li2, Sharmila Majumdar2
1Department of Orthopaedic Surgery, University of California, San Francisco, San Francisco, CA, United States; 2Department of Radiology, University of California, San Francisco, San Francisco, CA, United States; 3Department of Radiology, Mayo Clinic, MN, United States; 4Department of Orthopaedic Surgery, Mayo Clinic, MN, United States; 5Department of Orthopaedic Surgery, Hospital for Special Surgery, NY, United States

Computer 8 4168. A New 3D Isotropic T1ρ Mapping Technique for In Vivo Human Knee Cartilage at 7T MRI
Guruprasad Krishnamoorthy1, Puneet Bagga1, Ravi Prakash Reddy Nanga1, Hari Hariharan1, John Bruce Kneeland2, Ravinder Reddy2
1Center for Magnetic Resonance and Optical Imaging, University of Pennsylvania, Philadelphia, PA, United States; 2Department of Radiology, University of Pennsylvania, Philadelphia, PA, United States

Computer 9 4169. Cartilage Assessment in Femoroacetabular Impingement Using Bloch-Simulation-Based T2 Mapping at 3 T: Preliminary Validation Against Intra-Operative Findings
Noam Ben-Eliezer1, 2, Matthieu Guillemin1, Akio Yoshimoto1, Kai Tobias Block2, 2, Roy Davidson2, Thomas Youm1, Robert Meislin3, Michael Recht1, Daniel K. Sodickson1, 2, Riccardo Lattanzi1, 2
1Center for Biomedical Imaging, Department of Radiology, New York University Medical Center, New York, NY, United States; 2Center for Advanced Imaging Innovation and Research (CAI2R), Department of Radiology, New York University School of Medicine, New York, NY, United States; 3Department of Orthopedic Surgery, New York University Hospital for Joint Diseases, New York, NY, United States; 4Department of Radiology, New York University Langone Medical Center, New York, NY, United States

Computer 10 4170. Highly-Accelerated 3D T1rho Mapping of the Knee Using K-T SPARSE-SENSE
Ding Xia1, 2, Li Feng1, 2, Tiejun Zhao, Ravinder R. Regatte1, 2
1Center for Advanced Imaging Innovation and Research (CAI2R), Department of Radiology, New York University School of Medicine, New York, NY, United States; 2Bernard and Irene Schwartz Center for Biomedical Imaging, Department of Radiology, New York University School of Medicine, New York, NY, United States; 3Bernard and Irene Schwartz Center for Biomedical Imaging, Department of Radiology, New York University School of Medicine, New York, NY, United States; 4Siemens Medical Solution USA, Inc, New York, NY, United States

Computer 11 4171. High Isotropic, Balanced SSFP 3D Radial Imaging for Hip Joint Assessment at 3.0T
Larry Hernandez1, Habib Al saleh1, Kevin Johnson1, Walter F. Block1, 2, Richard Kijowski3
1Medical Physics, University of Wisconsin-Madison, Madison, WI, United States; 2Biomedical Engineering, University of Wisconsin-Madison, Madison, WI, United States; 3Radiology, University of Wisconsin-Madison, Madison, WI, United States

Computer 12 4172. T1ρ Voxel Based Relaxometry for the Local Evaluation of the Knee Cartilage
Valentina Pedeoa1, Favian Su1, Deepak Kumar1, Richard Souza1, Benjamin Ma1, Xiaojuan Li1, Sharmila Majumdar1
1UCSF, San Francisco, CA, United States
Computer 13 4173. Characterization of Knee Osteoarthritis Using Spatial Distribution of T1p Values: A Longitudinal Study
Aditi Guha1, Deepak Kumar1, Lorenzo Nardo1, Richard Sozza1, Thomas Link1, Xiaojuan Li1, Sharmila Majumdar1
1Radiology and Biomedical Imaging, UCSF, San Francisco, CA, United States

Computer 14 4174. Characterization of Cartilage Using Diffusion Imaging and Correlation with T1p/T2 Relaxation Times: A Longitudinal Evaluation in Knee Osteoarthritis
Aditi Guha1, Cory Wyatt1, Dimitrios Karampinos2, Lorenzo Nardo1, Thomas Link1, Sharmila Majumdar1
1Radiology and Biomedical Imaging, UCSF, San Francisco, CA, United States; 2Radiology, Technische Universität München, Munich, Germany

Computer 15 4175. Evaluation of Multiband Slice-Accelerated TSE in Knee Joint MR Imaging
Xiaona Li1, Zhigang Peng1, Pan-Li Zuo1, Dingxin Wang1, Jianling Cui1
1the 3rd Hospital of Hebei Medical University, Shijiazhuang, Hebei, China; 2Siemens Healthcare, Beijing, China; 3Siemens Medical Solutions USA, MN, Armenia; 4the 3rd Hospital of Hebei Medical University, Hebei, China

Computer 16 4176. T2, DGE-MR and GagC-EST Cartilage Assessment in an In Vivo OA Canine Model
Maria I. Menendez1, Daniel Clark1, Bianca Hettlich1, Michael Knopp1
1The Ohio State University, Columbus, OH, United States

Computer 17 4177. A Robust Way to Make Good Contrast in the Deeper Layer of Articular Cartilage Using UTE Imaging
Chanhee Lee1, Jang-Yeon Park1
1Biomedical Engineering, IBS Center for Neuroscience Imaging Research, Sungkyunkwan University, Suwon, Gyeonggi, Korea

Computer 18 4178. Assessment of the Clinical Relevance of Triple-Echo Steady-State T2 Mapping in Articular Cartilage
Vladimir Juras1, 2, Klaus Bohndorf1, Rahul Heule1, Claudia Krommerwetter1, Pavol Szomolanyi1, 2, Benedikt Hager1, Oliver Bieri3, Siegfried Trattnig1
1High Field MR Centre, Department of Biomedical Imaging and Image-Guided Therapy, Medical University of Vienna, Vienna, Austria; 2Department of Imaging Methods, Institute of Measurement Science, Bratislava, Slovakia; 3Division of Radiological Physics, Department of Radiology, University of Basel Hospital, Basel, Switzerland

Computer 19 4179. Does Cartilage Transplantation Harm or Regenerate Adjacent Cartilage? a Longitudinal Study
Alina Messner1, Sebastian Apprich2, Lukas Zak2, Pavol Szomolanyi1, Siegfried Trattnig1
1High Field MR Center, Department of Biomedical Imaging and Image-guided Therapy, Medical University of Vienna, Vienna, Austria; 2Department of Orthopaedics, Medical University of Vienna, Vienna, Austria; 3Department of Traumatology, Medical University of Vienna, Vienna, Austria

Computer 20 4180. Optimization of Adiabatic T1p and T2p for Quantification of Articular Cartilage at 3T
Victor Casula1, 2, Mikko J. Nissi1, 4, Joonas Autio1, Michaeli Shalom1, Silvia Mangia2, Edward Auerbach4, Jutta Ellermann2, Evelina Lammentausta1, Miika T. Nieminen1, 3
1Radiology, University of Oulu, Oulu, Finland; 2Medical Research Center Oulu, Oulu University Hospital and University of Oulu, Oulu, Finland; 3Department of Diagnostic Radiology, Oulu University Hospital, Oulu, Finland; 4Center for Magnetic Resonance Research, Department of Radiology, University of Minnesota, Minneapolis, United States

Computer 21 4181. Comparison of T1rho Imaging Between Spoiled Gradient Echo (SPGR) and Balanced Steady State Free Precession (B-FFE) Sequence of Knee Cartilage at 3 Tesla
Taiki Nozaki1, Yasuhito Kaneko1, Hon J. Yu1, Kayleigh Kaneshiro1, Ran Schwarzkopf1, Hiroshi Yoshikawa1
1Radiological Sciences, University of California, Irvine, Orange, CA, United States; 2Orthopaedic Surgery, University of California, Irvine, Orange, CA, United States

Computer 22 4182. Cluster Analysis for T2 and T1rho Relaxation Times Using 3D Projection Maps of the Femoral Condyle in a Healthy and ACL-Injured Population
Uchechukwu Diana Monu1, 2, Brian A. Hargreaves1, 23, Caroline D. Jordan1, 2, Gary E. Gold1, 3, Emily J. McWalter1, 2
1Biomedical Engineering, IBS Center for Neuroscience Imaging Research, Sungkyunkwan University, Suwon, Gyeonggi, Korea; 23Orthopaedic Surgery, University of California, Irvine, Orange, CA, United States
Patients who require long-term steroid use are at high risk for occurrence of osteonecrosis. Early diagnosis of this condition is crucial. In this study, we evaluated the use of a specific MRI sequence on determining the onset of osteonecrosis of the femoral head following steroid-related osteonecrosis.

---

**Electronic Poster**

**Bone & UTE**

**Exhibition Hall**

**Wednesday 14:30-15:30**

**Computer 23 4183.** Assessments of Ankle Condition After Fixator Distraction for OA with T1ρ MRI: 8-10 Year Follow-Up  
Daniel R. Thedens¹, Mai P. Nguyen², Annunciatto Amendola², Douglas R. Pedersen²  
¹Radiology, University of Iowa, Iowa City, IA, United States; ²Orthopaedics and Rehabilitation, University of Iowa, Iowa City, IA, United States

**Computer 24 4184.** Multiparametric MRI Assessment of Necrotic Epiphyseal Cartilage Induced by Transection of Cartilage Canal Blood Vessels in Goat Kids  
Luning Wang¹, Mikko J. Nissi², Ferenc Toth, Michael Garwood², Cathy Carlson, Jutta Ellermann¹  
¹Center for Magnetic Resonance Research, University of Minnesota, Twin Cities, Minneapolis, MN, United States; ²Medical Research Center Oulu, Oulu University Hospital and University of Oulu, Finland

**Computer 25 4185.** Water-Selective 3D BSSFP Imaging of Biomaterials Promoting Bone Repair in Rats; Comparison with Micro-CT  
Emeline Julie Ribot¹, Clément Tournier¹, Aurélien Julien Trotier¹, Didier Wecker³, Didier Letourneur⁴, Joelle Amédée², Sylvain Miraux⁴  
¹RMSB - UMR5536, CNRS - University Bordeaux, Bordeaux, France, Metropolitan; ²Biotics - U1026, INSERM - University Bordeaux, Bordeaux, France, Metropolitan; ³Bruker Biospin GmbH, Etlingening, Germany; ⁴LRVT - UMR1148, INSERM - University Paris 7, Paris, France, Metropolitan

**Computer 26 4186.** 7T MRI of Trabecular Microarchitecture at the Distal Radius: How Bone Quality Varies at the Epiphysis, Metaphysis, and Diaphysis  
Lindsay M. Griffin¹, Stephen Honig², Yinxiu Liu³, Cheng Chen³, Punam K. Saha³, Ravinder Regatte¹, Gregory Chang¹  
¹Department of Radiology, New York University School of Medicine, New York, United States; ²Department of Medicine, New York University, NY, United States; ³University of Iowa, IA, United States

**Computer 27 4187.** MRI Study of the Changes of Perfusion and Fat Content in Radiation-Induced Bone Marrow Injury in Rats  
kejun wang¹, Yunfei Zha², Hao Lei²  
¹Department Of Radiology, Renmin Hospital Of Wuhan University, Wuhan, Hubei, China; ²Wuhan Institute Of Physics and Mathematics,Chinese Academy of Sciences, Wuhan, Hubei, China

**Computer 28 4188.** Significant Reduction in Scan Time for Ultra Short TE Imaging of the Knee  
Zhe Liu¹, Alexey Dimov¹, Jiang Du², Yi Wang²  
¹Biomedical Engineering, Cornell University, New York, United States; ²Radiology, University of California, San Diego, San Diego, CA, United States; ³Radiology, Weill Cornell Medical College, NY, United States

**Computer 29 4189.** Age Estimation in Adolescents and Young Adults Using MRI Data of the Manubrium  
Naira P. Martinez Vera¹, Johannes Höller², Bernhard Neumayer¹, Thomas Widek¹, Sabine Grassegger², Thomas Ehammer¹, Eva Scheuern¹, Martin Urschler²  
¹Ludwig Boltzmann Institute for Clinical Forensic Imaging, Graz, Styria, Austria; ²Institute of Forensic Medicine, Medical University of Graz, Graz, Styria, Austria

**Computer 30 4190.** The Value of BOLD-MRI in Early Diagnosis of Osteonecrosis of the Femoral Head in Patients with Steroid Treatment  
Jing Li¹, Fei Yuan¹, Quan Zhang¹, Jun Zhao¹, Yu Zhang²  
¹MRI Department, PingJin Hospital, He Dong District, Tianjin, China; ²Philips Healthcare, Beijing, China
Electronic Poster

Computer 31 4191. Intermittent Parathyroid Hormone Treatment Reduces Scar Tissue Formation at the Proximity of Calvarial Grafts, Demonstrate by Collagen-Sensitive MRI Scanning Methods

Doron Cohn Yakubovich1, Uzi Eliav1, Gadi Peled1, , Dan Gazit1, , Zulma Gazit1, 1, Gil Navon2
1Skeletal Biotech Laboratory, Hebrew University of Jerusalem, Jerusalem, Israel; 2School of Chemistry, Tel Aviv University, Tel Aviv, Israel

Computer 32 4192. Bone Curvature Changes of the Knee in OA Subjects as on Detected on MRI Can Predict Who Will Progress to TKR in Five Years Time: Data from the OAI

Joshua Michael Farber1, Jose Tamez-Pena2, David Hunter1, Michael Hannon3, Saara Tottterman4, Zhijie Wang, Robert Boudreau4, Kent Kowalk7
1Radiology, Qmetrics Technologies, Cincinnati, OH, United States; 2Imaging Sciences, Escuela de Medicina, Tec de Monterrey, Monterrey, Mexico; 3Rheumatology, Royal North Shore Hosp. and Northern Clinical Sch, Univ. of Sydney, Sydney, Australia; 4Epidemiology, Dept. of Epidemiology, Univ. of Pittsburgh, Pittsburgh, PA, United States; 5Radiology, Qmetrics Technologies, Rochester, NY, United States; 6Epidemiology, dept. of Epidemiology, Univ. of Pittsburgh, Pittsburgh, PA, United States; 7Rheumatology, The University of Arizona, Arthritis Center, Tuscon, AZ, United States

Computer 33 4193. Native 3T MRI for Skeletal Age Assessment of the Hand and Wrist: A Comparison of Two Methods

Sabine GRASSEGBERG1, 2, Thomas EHAMMER1, Thomas WIDK1, Andreas PETROVIC1, Pia BAUMANN2, Eva SCHEUER1, 2
1Ludwig Boltzmann Institute for Clinical-Forensic Imaging, Graz, Styria, Austria; 2Institute of Forensic Medicine, Medical University of Graz, Graz, Styria, Austria; 3Institute of Medical Engineering, Graz University of Technology, Graz, Styria, Austria; 4University Centre of Legal Medicine, University of Lausanne, Lausanne, Vaud, Switzerland

Computer 34 4194. Relaxation Time Constants T1 and T2* of Bound and Free Water in Cortical Bone at 600 MHz and 700 MHz.

Bainan Wu1, Robert Nikolov2, Hongda Shao2, Jun Chen3, Graeme Bye4, Maurizio Pellecchia1, Jiang Du2
1Sanford-Burnham Medical Research Institute, La Jolla, CA, United States; 2Radiology, University of California, San Diego, San Diego, CA, United States

Computer 35 4195. Knee Cartilage and Subchondral Bone Marrow Changes of Chronic Kidney Disease in a Rat Model Investigated by Quantitative MR Imaging

Chao-Ying Wang1, Guo-Shu Huang2, Shih-Wei Chiang3, Yi-Chih Hsu2, Ming-Huang Lin4, Hsiao-Wen Chung5
1Department of Biology and Anatomy, National Defense Medical Center, Taipei, Taiwan, Taiwan; 2Department of Radiology, Tri-Service General Hospital, Taipei, Taiwan, Taiwan; 3Graduate Institute of Biomedical Electronics and Bioinformatics, National Taiwan University, Taipei, Taiwan, Taiwan; 4Institute of Biomedical Sciences, Academia Sinica, Taipei, Taiwan, Taiwan

Computer 36 4196. Musculoskeletal MR-Imaging in Fracture Dating

Katharina Baron1, Bernhard Neumayer2, Thomas Widek1, Sylvia Scheicher1, Eva Maria Hassler2, Fritz Schick1, Eva Scheurer1
1Ludwig Boltzmann Institute for Clinical-Forensic Imaging (LBI-CFI), Graz, Styria, Austria; 2Department of Radiology, Medical University of Graz, Graz, Styria, Austria; 3Diagnostic and Interventional Radiology, Eberhard-Karls-University Tübingen, Baden-Württemberg, Germany


Allegra Conti1, Raffaele Sinibaldi1, Sara Spadone1, Tonino Trabant2, Giuliana Tromba2, Silvia Capuani2, Gian Luca Romani1, 3, Stefania Della Penna1, 3
1Department of Neuroscience, Imaging and Clinical Sciences, G. d'Annunzio Univ. of Chieti and Pescara, Chieti, CH, Italy; 2Department of Stomatology and Biotechnologies, G. d'Annunzio Univ. of Chieti and Pescara, Chieti, CH, Italy; 3Elettra-Sincrotrone Trieste S.C.p.A., Basovizza, TS, Italy; 4Physics Department, 'La Sapienza' University of Rome, Roma, RM, Italy; 5Institute for Advanced Biomedical Technologies (ITAB), G. d'Annunzio Univ. of Chieti and Pescara, Chieti, CH, Italy

Computer 38 4198. Comparison of Relaxation-Based NMR Methods for Quantifying Bound and Pore Bone Water Fractions

Alan C. Seifert1, Suzanne L. Wehrli2, Felix W. Wehrli1
1University of Pennsylvania, Philadelphia, PA, United States; 2Children's Hospital of Philadelphia, Philadelphia, PA, United States

Computer 39 4199. Cortical Bone Porosity: A Novel MRI-Based Clinical Biomarker to Assess Cortical Bone Quality In Vivo

Shahrokh Abbasi Rad1, 2, Atena Akbari1, Niloofar Tondro3, Mohsen Shojaie-Moghadam4, Hamidreza Saligeh Raide, 2
1Skeletal Biotech Laboratory, Hebrew University of Jerusalem, Jerusalem, Israel; 2School of Chemistry, Tel Aviv University, Tel Aviv, Israel; 3Epidemiology, Departments of Epidemiology and Public Health, University of California, Berkeley, CA, United States; 4Epidemiology, dept. of Epidemiology, Univ. of Pittsburgh, Pittsburgh, PA, United States
The aim of this study is to evaluate peripheral nerves in amyloid-related neuropathy using high-resolution MRI. A... fat and decreased number of fascicles. Early diagnosis of this neuropathy may impact patient treatment and outcome.

Computer 40 4200. MRI of Intraneural Perineurioma: Review of 27 Cases with Histopathologic Correlation
Gavin McKenzie1, Michelle Mauermann2, Robert Spinner2, Doris Wenger2, Joel Felmlee2, Shuji Nagata2, Benjami Howe2, Kimberly Amrami2
1Radiology, Mayo Clinic, Rochester, MN, United States; 2Mayo Clinic, MN, United States; 3Kurume University School of Medicine, Kurume, Japan

Computer 41 4201. Microstructural Organization and Macromolecular Contents in Fibrous Tissues of Normal and Hypertensive Eyes with Diffusion Tensor Imaging and Magnetization Transfer Imaging
Leon C. Ho1, 2, Jan A. Sigal1, Ning-Jian Jan1, Tao Jin1, Ed X. Wu1, Seong-Gi Kim1, 4, Joel S. Schuman1, Kevin C. Chan1, 3
1Neuroimaging Laboratory, University of Pittsburgh, Pittsburgh, PA, United States; 2Department of Electrical and Electronic Engineering, The University of Hong Kong, Pokfulam, Hong Kong, China; 3Departments of Ophthalmology and Bioengineering, University of Pittsburgh, Pittsburgh, PA, United States; 4Center for Neuroscience Imaging Research, Institute for Basic Science, Sungkyunkwan University, Suwon, Korea

Computer 42 4202. Assessment of Extent and Activity of Musculoskeletal Involvement in Systemic Sclerosis Using Hybrid [18F]-FDG-PET/MRI
Marius Stefan Horger1, Nina Schwenzer1, Sergios Gatisdis1, Christian la Fougere2, Konstantin Nikolaou2, Alexander Walier Sauter1, 3
1Radiology, Eberhard-Karls-University Tuebingen, Tuebingen, Germany; 2Nuclear Medicine, Eberhard-Karls-University Tuebingen, Tuebingen, Germany; 3Radiology and Nuclear Medicine, University Hospital Basel, Tuebingen, Germany

Computer 43 4203. Characterizing the Blood Oxygen Level-Dependent Fluctuation in Musculoskeletal Tumors Using Functional Magnetic Resonance Imaging
Li-Sha Duan1, Meng-Jun Wang1, Feng Sun1, Zhen-Jiang Zhao1, Mei Xing1, Yu-Feng Zang2, Steven Louis3, Sheng-Jie Cui4, Han Zhang2, Jianling Cui1
1Department of Radiology, The Third Hospital of Hebei Medical University, Shijiazhuang, Hebei, China; 2Center for Cognition and Brain Disorders and the Affiliated Hospital, Hangzhou Normal University, Hangzhou, Zhejiang, China; 3Physics Department, Oakland University, Rochester, MI, United States; 4Department of Anatomy and Cell Biology, Wayne State University School of Medicine, East Can&#64257;eld Avenue, Detroit, United States

Computer 44 4204. Quantitative Assessments of Facial Soft-Tissue Mobility by Means of Watershed Segmentation and Constrained Elastic Registration in Upright Accelerated 3D MRI
Marco Vicari1, Stefan Heldmann1, Hans Meine1, Frank Hug1, Juergen Hennig2, Niklas Iblher3
1Fraunhofer MEVIS, Bremen, Germany; 2Fraunhofer MEVIS, Luebeck, Germany; 3Radiology and Nuclear Medicine, University Hospital Tuebingen, Tuebingen, Germany

Computer 45 4205. Protein MRI Contrast Agents (ProCAs) with Unique Capability in Early Detection and Molecular Imaging of Varies Types of Cancer
Jenny Yang1, 2, Jingjuan Qiao1, Shenghui Xue1, Fan Pu1, Shanshan Tan1, Jie Jiang1, Anvi Patel1, Zhi-ren Liu, 23
1Chemistry Department, Georgia State University, Atlanta, GA, United States; 2Center for Diagnostics and Therapeutics, Georgia State University, Atlanta, GA, United States; 3Biology Department, Georgia State University, Atlanta, GA, United States

Computer 46 4206. MR Micro-Neurography in the Investigation of Amyloid-Related Neuropathy
Paolo F. Felsaz1, Eric Y. Chang2, Polese Marco3, Irene Carne1, Maugeri Giulia4, Giovanni Palladini4, Obici Laura5, Giampaolo Merlini5, Baldi Maurizia6, Stefano Bastianello7, Fabrizio Calliada1
1Radiology Department, University of Pavia, Pavia, Italy; 2Radiology Service, VA San Diego Healthcare System, San Diego, CA, United States; 3Medical Physics Department, IRCCS Salvatore Maugeri Foundation, Scientific Institute of Pavia, Italy; 4Amyloid Research and Treatment Center, Scientific Institute Policlinico San Matteo, Pavia, Italy; 5Radiology Department, IRCCS Salvatore Maugeri Foundation, Scientific Institute of Pavia, Italy; 6Department of Brain and Behavioral Sciences, University of Pavia, Pavia, Italy; 7Department of Neurology, Scientific Institute of Pavia, Italy

558
Electronic Poster

Exhibition Hall Wednesday 14:30-15:30

Computer 1 4209. Quantitative Susceptibility Mapping of Meniscus at 11.7T
Qun He1, Zhe Liu2, Hongda Shao1, Alexey Dimov3, Graeme M. Bydder4, Yi Wang2, Jiang Du1
1Radiology, University of California, San Diego, CA, United States; 2Biomedical Engineering, Cornell University, Ithaca, NY, United States

Computer 2 4210. Using the Ratio of T1ρ and T2 MR Parameters to Examine the Relationship Between Anterior Cruciate Ligament (ACL) Abnormalities and Patellofemoral Cartilage Integrity
Nathaniel E. Calixto1, Lorenzo Nardo1, Deepak Kumar1, Richard B. Souza1, Xiaojuan Li1, Thomas M. Link1, Sharmila Majumdar1
1Department of Radiology and Biomedical Imaging, University of California, San Francisco, San Francisco, CA, United States; 2Division of Physical Therapy, College of Health Professions, Medical University of South Carolina, Charleston, SC, United States

Computer 3 4211. MRI Evaluation of the Polyethylene Tibial Insert in Total Knee Arthroplasty
Angela E. Li1, Darryl B. Sneag1, 2, Alissa J. Burge1, 2, Shari T. Jawetz1, 2, Joseph D. Lipman1, Hollis G. Potter1, 2
1Radiology, Hospital for Special Surgery, New York, NY, United States; 2Weill Cornell Medical College, New York, NY, United States; 3Biomechanics, Hospital for Special Surgery, New York, NY, United States

Computer 4 4212. 3T MRI of Arthroplasty Implants Using Highly Undersampled SEMAC: 3T Versus 1.5T Intra-Subject Comparison
Jan Fritz1, Gaurav Thawait2, Shadpour Demehri1, Shivani Ahlawat3, Heiko Meyer2, Wesley Gilson1, Esther Raithel2, Mathias Nittka1
1Russell H. Morgan Department of Radiology and Radiological Science, Johns Hopkins University School of Medicine, Baltimore, MD, United States; 2Healthcare Sector, Siemens AG, Bavaria, Germany; 3Siemens Healthcare USA, Baltimore, United States

Computer 5 4213. MR Imaging of Knee Implants Using SEMAC at 3T
TAO Ai1, Panli Zuo1, Yiqi Hu1, Mathias Nittka1, Liming Xia1
1Radiology, Tongji Hospital, Tongji Medical College, Huazhong University of Science and Technology, Wuhan, Hubei, China; 2Siemens Healthcare, MR Collaborations NE Asia, Beijing, China; 3Siemens Healthcare, Germany, Erlangen, Germany

Martijn A. Cloos1, Mary Bruno1, Tiejun Zhao2, Leeror Alon2, Riccardo Lattanzi2, Daniel K. Sodickson1
1Center for Biomedical Imaging, Department of Radiology, New York University School of Medicine, New York, NY, United States; 2Center for Biomedical Imaging, Department of Radiology, New York University School of Medicine, New York, NY, United States; 3Siemens Medical Solutions USA Inc., Malvern, PA, United States

Computer 7 4215. Highly Accelerated SEMAC for MRI of Arthroplasty Implants: Comparison with Optimized TSE and Conventional SEMAC
Jan Fritz1, Gaurav Thawait2, Shadpour Demehri1, Shivani Ahlawat3, Heiko Meyer2, Wesley Gilson1, Esther Raithel2, Mathias Nittka1
1Russell H. Morgan Department of Radiology and Radiological Science, Johns Hopkins University School of Medicine, Baltimore, MD, United States; 2Healthcare Sector, Siemens AG, Bavaria, Germany; 3Siemens Healthcare USA, Baltimore, United States
Electronic Poster

Computer 8 4216. Spectrum of Complications Demonstrated on MRI in Patients Who Undergo Revision Total Knee Arthroplasty

Angela E. Li1, Darryl B. Sneag1, 2, Alissa J. Burge1, 2, Shari T. Jawetz1, 2, Darius P. Melisaratos1, 2, Hollis G. Potter1, 2

1Radiology, Hospital for Special Surgery, New York, NY, United States; 2Weill Cornell Medical College, New York, NY, United States

Computer 9 4217. MR Neurography Using Robust Fat and Blood Suppressed Volumetric T2-Weighted Imaging

Xinzen Wang1, Crystal E. Harrison1, Yogesh K. Martiapan2, Karthik Gopalakrishnan1, Avneesh Chhabra1, 2, Robert E. Lenkinski1, 2, Ananth J. Madhuranthakam1, 2

1Radiology, UT Southwestern Medical Center, Dallas, TX, United States; 2Philips Innovation Campus, Philips Healthcare, Bangalore, Karnataka, India; 3Advanced Imaging Research Center, UT Southwestern Medical Center, Dallas, TX, United States

Computer 10 4218. Quantitative Ultrashort TE (UTE) Imaging Predicts Joint Health in Hemophilic Arthropathy

Eric Y. Chang1, Annette von Drygalski2, Thomas J. Cramer2, Sheronda Statum1,2, Christine B. Chung1

1Radiology Service, VA San Diego Healthcare System, San Diego, CA, United States; 2Department of Hematology/Oncology, University of California, San Diego Medical Center, San Diego, CA, United States; 3Department of Radiology, University of California, San Diego Medical Center, San Diego, CA, United States

Computer 11 4219. Quantitative MR Imaging of the Temporomandibular Joint Disc Using UTE

Karen Chi-Lynn Chen1, 2, Reni Biswas1, Sheronda Statum1, Won Bae1, Eric Chang1, 2, Christine Chung1

1Radiology, Veterans Administration Healthcare System San Diego, San Diego, CA, United States; 2Radiology, University of California San Diego Medical Center, San Diego, CA, United States; 3Radiology, University of California, San Diego, CA, United States

Computer 12 4220. Reduced Magic Angle Effects Using Ultrashort Echo Time Magnetization Transfer (UTE-MT) for Quantification of Human Rotator Cuff Tendon

Eric Y. Chang1, Jiang D2, Reni Biswas1, Betty Tran1, Sheronda Statum1, Won C. Bae2, Christine B. Chung1

1Radiology Service, VA San Diego Healthcare System, San Diego, CA, United States; 2Department of Radiology, University of California San Diego Medical Center, San Diego, CA, United States

Computer 13 4221. UTE T2* Decay Analysis of the Rabbit Supraspinatus Tendon at 7T

Gerd Melkus1, 2, Greg O. Cron1, 2, Peder E. Larson1, Adnan Sheikhd1, 2, Ian Cameron1, 2, Hakim Louati1, 2, Peter Lapner1, Tim Ramsay5, Guy Trudel4, 7

1Department of Medical Imaging, The Ottawa Hospital, Ottawa, ON, Canada; 2Department of Radiology, University of Ottawa, Ottawa, ON, Canada; 3Radiology and Biomedical Imaging, University of California San Francisco, San Francisco, CA, United States; 4Bone and Joint Laboratory, University of Ottawa, Ottawa, ON, Canada; 5Division of Orthopaedic Surgery, The Ottawa Hospital, Ottawa, ON, Canada; 6Ottawa Hospital Research Institute, The Ottawa Hospital, Ottawa, ON, Canada; 7Department of Medicine, University of Ottawa, Ottawa, ON, Canada

Computer 14 4222. Evaluation of the Glycosaminoglycan Content in Healthy and Degenerated Menisci with GagCEST at 3T

Benedit Hager1, Vladimir Juras1, 2, Olgica Zanic1, Vladimir Mlynarik1, Stefan Zyn1, Pavol Sromolany1, 2, Siegfried Trattnig1

1High Field MR Centre, Department of Biomedical Imaging and Image-guided Therapy, Medical University of Vienna, Vienna, Austria; 2Department of Imaging Methods, Institute of Measurement Science, Slovak Academy of Sciences, Dubravska cesta 9, Bratislava, Slovakia

Computer 15 4223. Rapid, High-Resolution, and Multi-Contrast Knee MRI of Short T2 Tissues with Ultrashort TE Double-Echo Steady-State

Akshay S. Chaudhari1, 2, Catherine J. Moran1, Emily J. McWalter1, Garry E. Gold1, 2, Brian A. Hargreaves1, 2

1Bioengineering, Stanford University, Palo Alto, CA, United States; 2Radiology, Stanford University, Palo Alto, CA, United States

Computer 16 4224. Assessment of Degenerative Changes in Disc Endplates Using DCEMRI and T1ρ

Volkan Emre Arpinar1, L Tugan Muftuler1, 2

1Department of Neurosurgery, Medical College of Wisconsin, Milwaukee, WI, United States; 2Center for Imaging Research, Medical College of Wisconsin, WI, United States

Computer 17 4225. Evaluation of the Applicability of IGagCESL and GagCEST on Both Cartilage and Disc at 3T

Wen Ling1, Nam Vo2, Gwendolyn A. Sowa1, James Kang1, Kyongtae Ty Bae1

1Radiology, VA San Diego Healthcare System, San Diego, CA, United States; 2Philips Innovation Campus, Philips Healthcare, Bangalore, Karnataka, India
Computer 18 4226. **Triple-Echo Steady State T2 Mapping and High Resolution Axonal Bundle Assessment of the Median Nerve in Healthy Volunteers and Patients with Carpal Tunnel Syndrome at 7Tesla**

    Georg Riegler1, Gregor Drlicek1, Claudia Kronnerwetter2, Rahel Heule2, Oliver Bieri1, Benedikt Hager1, Peter Bär1, Siegfried Trauttmansdorff3

1MR Centre of Excellence, Dept. of Biomedical Imaging and Image-Guided Therapy, Medical University Vienna, Vienna, Austria; 2Department of Radiology, Division of Radiological Physics, University of Basel Hospital, Basel, Switzerland

Computer 19 4227. **A Fast Scanning Technique of MR Micro-Neurography Using the 3-Point-Dixon Method at 3T**

    Paolo F. Felisaz1, Eric Y. Chang2, Irene Carne3, Poleset Marco4, Stefano Montagna5, Maugeri Giulia1, Baldi Maurizia1, Fabrizio Calliada1, Stefano Bastianello6

1Radiology Department, University of Pavia, Pavia, Italy; 2Radiology Service, VA San Diego Healthcare System, San Diego, CA, United States; 3Medical Physics Department, IRCCS Salvatore Maugeri Foundation, Scientific Institute of Pavia, Italy; 4Radiology Department, IRCCS Salvatore Maugeri Foundation, Scientific Institute of Pavia, Italy; 5Department of Brain and Behavioral Sciences, University of Pavia, Pavia, Italy

Computer 20 4228. **The Magic Angle Effect on Ultrashort Echo Time MRI for Analysis of T2* and Magnetization Transfer Ratio**

    Hongda Shao1, Michael Cart2, Eric Chang1, Christine B. Chung1, Graeme M. Bydder1, Jiang Du1

1Radiology, University of California, San Diego, CA, United States; 2GE Healthcare, San Diego, CA, United States

Computer 21 4229. **Clinical Evaluation of IVIM and DCE in Sarcoma**

    Jing Zhang1, Pan-Li Zuo1, Thorsten Feiweier1, Xiaoguang Cheng1

1Beijing Jishuitan Hospital, Beijing, China; 2Siemens Healthcare, MR Collaborations NE Asia, Beijing, China; 3Siemens Healthcare, Erlangen, Germany

Computer 22 4230. **Optimized Refocusing-Flip-Angle-Train Design for Small Peripheral Nerve Imaging with 3D TSE**

    Barbara Cervantes1, Jan S. Bauer1, Hendrik Kooijman1, Marcus Settles1, Axel Haase6, Ernst J. Rummens1, Klaus Wörter1, Dimitrios C. Karapetinos2

1Diagnostic and Interventional Radiology, Technische Universität München, Munich, Germany; 2Neuroradiology, Technische Universität München, Munich, Germany; 3Phllips Healthcare, Hamburg, Germany; 4Zentrallabor für Medizintechnik, Technische Universität München, Garching, Germany

Computer 23 4231. **An Improved Saturation Scheme for Measuring GagCEST in Human Knee at 7 T**

    Vladimir Mlynarík1, Stefan Zbyň1, Vladimir Juras1, Pavol Zamolay1, Martin Brix1, Benjamin Schmitt1, Siegfried Trauttmansdorff1

1High Field MR Center, Medical University of Vienna, Vienna, Austria; 2Siemens Ltd, Macquarie Park, Australia

Computer 24 4232. **Quantitative MRI of Triangular Fibrocartilage (TFC): Correlation with Biomechanical Properties.**

    Mohammed Akef1, Tania Kumar1, Reni Biswas1, Betty Tran1, Sheronda Statum1, Eric Y. Chang2, Won C. Bae1, Christine B. Chung1, 2

1Radiology, University of California, San Diego, CA, United States; 2Veterans Affairs San Diego Healthcare System, CA, United States; 3Radiology, University of California, San Diego, CA, United States

**Electronic Poster**

**Muscle MRS/MRI**

Exhibition Hall  Wednesday 14:30-15:30

Computer 25 4233. **Reproducibility of Carnosine Quantification in the Calf Muscle by 1H MRS at 7T and Detection of Its Concentration Changes Following Acute Physical Activity**

    Ivica Just Kukurova1, Barbara Ukropcová2, 3, Marijeta Tušek Jelenc1, Milan Sedliak4, Marek Chmelík1, Jozef Ukropec2, Martin Krššák1, 5, Siegfried Trauttmansdorff1, Ladislav Valkovič#269, 1, 6

1High Field MR Centre, Department of Biomedical Imaging and Image-guided Therapy, Medical University of Vienna, Vienna, Austria; 2Institute of Experimental Endocrinology, Slovak Academy of Sciences, Bratislava, Slovakia; 3Faculty of Medicine, Comenius University, Bratislava, Slovakia; 4Faculty of Physical Education and Sport, Comenius University, Bratislava, Slovakia; 5Faculty of Medicine, Comenius University, Bratislava, Slovakia; 6Faculty of Physical Education and Sport, Comenius University, Bratislava, Slovakia;
This study investigated changes in mitochondrial response to ischemia in skeletal muscle of non-obese type 2 diabetic ... Level -Dependent (BOLD) imaging. Results from 12- and 18-week rats showed a progression of mitochondrial dysfunction.

The aim of this study was to compare Dixon imaging and single voxel spectroscopy (SVS) for determination of low fat ... Dixon and between independent measures of right and left shoulders and between the two different muscles investigated.

Fat to water levels and their transverse relaxation (T2) times measured with magnetic resonance in spinal bone marrow ... in 19 of the volunteers. Measurements were performed with a Point RESolved Spectroscopy (PRESS) sequence at 3 T.

Monitoring 31P metabolism during exercise and recovery has typically been done using non- localized functional 31P MRS ... a high- sensitivity dual- tuned 1H/31P volume coil, functional 2D 31P spectroscopic imaging (thus, 4D) is demonstrated.

Functional 31P-MRS was performed in five patients after spinal fusion during a standardized isometric exercise to ... exercise indicating higher energy demand and thus higher muscle stress (patients: 61 ± 17 % vs. controls: 37 ± 11 %).

An effect of one hour running on carnosine concentration was examined on 7 volunteers, which did not prove to be significant. However, changes in the ... of carnosine buffering capacity in oxidative and glycolytic muscle fibres leading to different pH in these compartments.

Reproducibility of carnosine measurement in the calf muscles was tested on 5 volunteers by STEAM sequence with very good results of CV (6.3% for SOL, 9.1% for GM). Effect of one hour running...
Dystrophic Skeletal Muscle $^1$H2O T2 Analyzed for Multiple Components

Donnie Cameron1, Mustapha Bouhrara1, David A. Reiter1, Kenneth W. Fishbein1, Christopher M. Bergeron1, Richard Jeff L. Zhang1, Christopher J. Hanrahan1, Jason Mendes1, Gwenael Layec2, Corey Hart2, Kristi Carlston1, Michelle Junghwan Kim1, 2, Serter Gumus2, Piva Sara Regina3, Tae Kim2, Tamer Ibrahim1, 2, Kyongtae Ty Bae1, 2, Melissa Hooijmans1, Martijn Froeling2, Maarten Versluis3, Andrew Webb1, Erik Niks4, Jan Verschuuren4, Hermien Vijay Shah1, Therese Crilly1, Larry Molinelli1, William Badger2, Jon Riek1

1University of Florida, Gainesville, FL, United States; 2Department of Radiology; 3Philips, Netherlands; 4Neurology, Leiden University Medical Center, Leiden, Zuid-holland, Netherlands

Advanced Pathology in Aged Mdx Muscle Characterized by Quantitative Multi-Parametric MRI

Nathan David Bryant1, 2, Ke Li1, 2, Bruce Damon1

1Vanderbilt University Institute of Imaging Science, Vanderbilt University, Nashville, TN, United States; 2Department of Radiology and Radiological Sciences, Vanderbilt University, Nashville, TN, United States
**Electronic Poster**

**Computer 43** 4251. Simultaneous Acquisition of Transverse Relaxation, Perfusion, and Diffusion Information of Lower-Leg Muscle Using Diffusion EPI with Different TE

Makoto Terazono1, Toshiaki Miyati1, Naoki Ohno1, Shuya Fujihara1,2, Natsumi Makino3, Satoshi Kobayashi4, Toshifumi Gabata4
1Division of health sciences, Graduate school of Medical Sciences, Kanazawa University, Kanazawa, Ishikawa, Japan; 2Department of Radiology, Shinsyu University Hospital, Nagano, Japan; 3School of Health Sciences, College of Medical, Pharmaceutical and Health Sciences, Kanazawa, Ishikawa, Japan; 4Department of Radiology, Kanazawa University Hospital, Kanazawa, Ishikawa, Japan

**Computer 44** 4252. Deformation-Induced Damage in Rat Skeletal Muscle: Role of the Vascular System

Jules Nelissen1,2, Willeke Trau1, Kevin Moerman1, Cees Oomens1, Aart Nederveen4, Gustav Strijkers1
1CUBRIC, School of Psychology, Cardiff University, Cardiff, Wales, United Kingdom; 2University of Nottingham, England, United Kingdom; 3School of Biosciences, Cardiff University, Cardiff, Wales, United Kingdom; 4Department of Radiology, Kanazawa University Hospital, Kanazawa, Ishikawa, Japan

**Computer 45** 4253. Muscle Oxygenation Changes in Different Bone Mineral Density Subjects - A BOLD Based Study

Heather T. Ma1,2, James F. Griffith1, Yang Chen1, Shoulin Huang1, David K. Yeung3, Li Liang1
1Radiology and Radiological Sciences, Vanderbilt University Institute of Imaging Science, Nashville, TN, United States; 2Radiology, Academic Medical Center, Amsterdam, Netherlands; 3Department of Biomedical Engineering, Eindhoven University of Technology, Eindhoven, Netherlands

**Computer 46** 4254. Significance of Perfusion Parameters and Muscle Performance in the Rotator Cuff Muscles of Young Badminton Athletes: Assessment by Dynamic Contrast-Enhanced MR Imaging

Chih-Wei Yu1, Tiffany Ting-Fang Shih1, Hsing-Kuo Wang2, Chao-Yu Hsu1, Xun-Xin Chen3
1Radiology and Medical Imaging, National Taiwan University College of Medicine and Hospital, Taipei, Taiwan; 2School and Graduate Institute of Physical Therapy, National Taiwan University College of Medicine, Taipei, Taiwan; 3Medical Imaging, National Taiwan University Hospital, Taipei, Taiwan

**Computer 47** 4255. Dynamic Analysis of T2 and Proton Density of Exercise-Induced Muscle Using SE-EPI

Noriyuki Tawara1, Takahiro Ohnishi2, Toru Yamamoto1
1Division of health sciences, Graduate school of Medical Sciences, Kanazawa University, Kanazawa, Ishikawa, Japan; 2Department of Radiology, Shinsyu University Hospital, Nagano, Japan

**Computer 48** 4256. Correlation Between Quantitative MRI Features and Functional Assessment of Myopathy

Hon J. Yu1,2, Manaswita Khare1, Mathew Gargus1, Marie Wencel2, Abhilasha Surampalli3, Vince Ciofizzo4, Virginia Kimonis4
1Radiological Sciences, University of California, Irvine, CA, United States; 2Tu & Yuen Center for Functional Onco-Imaging, University of California, Irvine, CA, United States; 3Pediatrics, University of California, Irvine, CA, United States; 4Orthopaedic Surgery, University of California, Irvine, CA, United States

**Electronic Poster**

Mechanisms of Neural Degeneration & Damage 1

Exhibition Hall Wednesday 16:00-17:00

**Computer 43** 4257. CSF Alpha Synuclein Levels Modulate BOLD Connectivity of Executive Control Network Regions in Parkinson’s Disease

Swati Rane1, Mamus J. Donahue2,3, Daniel Claassen1
1Radiology and Radiological Sciences, Vanderbilt University Institute of Imaging Science, Nashville, TN, United States; 2Radiology and Radiological Sciences, Vanderbilt University, Nashville, TN, United States; 3Neurology, Vanderbilt University, Nashville, TN, United States

**Computer 44** 4258. Tissue Volume Fraction as a Biomarker of Genetically-Determined Disease Burden in Huntington’s Disease

Jessica Steventon1, Rebecca Trueman1, Anne E. Rosser1, Derek K. Jones1
1CUBRIC, School of Psychology, Cardiff University, Cardiff, Wales, United Kingdom; 2University of Nottingham, England, United Kingdom; 3School of Biosciences, Cardiff University, Cardiff, Wales, United Kingdom
Computer 3 4259. Altered Topological Properties of Functional Connectome in Early-Stage PD Revealed by Graph Theoretical Analysis
Xueling Suo1, Du Lei2, Fuqin Chen2, Lei Li2, Nanman Li3, Lan Cheng3, Rong Peng3, Qiyong Gong2
1Huaxi MR Research Center (HMRRC), Department of Radiology, West China Hospital, Chengdu, Sichuan, China; 2Huaxi MR Research Center (HMRRC), Department of Radiology, West China Hospital, Chengdu, Sichuan, China; 3Department of Neurology, West China Hospital, Chengdu, Sichuan, China

Computer 4 4260. MRI Guided Magnetic Nanoparticle Based Drug Delivery for Neurodegenerative Diseases: Preliminary In-Vivo and In-Vitro Study
Yujuan Zhao1, Noah Snyder1, Tiejun Zhao1, Liza Bruk1, James Ele1, Xia Li1, X. Tracy Cui1, Tamer S. Ibrahim1
1University of Pittsburgh, Pittsburgh, PA, United States; 2Siemens Medical Solutions USA, Pittsburgh, PA, United States

Computer 5 4261. Aberrant Brain Network Connectivity Assessed Using Graph Theory in Paroxysmal Kinesigenic Dyskinesia
Lei Li1, Du Lei2, Xueling Suo2, Xinyu Hu1, Jiechuan Ren1, Xiaoqi Huang2, Qiyong Gong2
1Huaxi MR Research Center (HMRRC), Department of Radiology, West China Hospital of Sichuan University, Chengdu, Sichuan, China; 2Huaxi MR Research Center (HMRRC), Department of Radiology, West China Hospital of Sichuan University, Sichuan, China; 3Department of Neurology, West China Hospital of Sichuan University, Sichuan, China

Computer 6 4262. QSM of Substantia Nigra and Improved Characterization of Substantia Nigra
Jason Langley1, Daniel E. Huddlestone2, Nishani Zachariah3, Xiangchuan Chen1, Xiaoping Hu1
1Wallace H. Coulter Department of Biomedical Engineering, Emory University and Georgia Institute of Technology, Atlanta, GA, United States; 2Center for Health Research, Southeast, Kaiser Permanente, Atlanta, GA, United States; 3Department of Electrical and Computer Engineering, Georgia Institute of Technology, Atlanta, GA, United States

Computer 7 4263. Assessing the Level of Pathology of the Corticospinal Pathway in Patients with PLP1 Mutations Using Diffusion Tensor Imaging.
Malek I. Makki1, Jeremy J. Laukka2
1MRI Research, University Children Hospital of Zurich, Zurich, Switzerland; 2Department of Neuroscience and Neurology, University of Toledo, Toledo, OH, United States

Computer 8 4264. Parkinson's Disease Related Pattern from Resting State fMRI
An Vo1, Wataru Sako1, Frank M. Skidmore2, David Eidelberg1, Aziz M. Ulug1, 3
1Center for Neurosciences, Feinstein Institute for Medical Research, Manhasset, NY, United States; 2Neurology, University of Alabama, AL, United States; 3Institute of Biomedical Engineering, Bogazici University, Istanbul, Turkey

Computer 9 4265. Abnormal Structural Connectivity Networks of Patients with Major Depressive Disorder: Graph Theoretical and Network-Based Statistical Analyses
Hao Hu1, Vincent Chin-Hung Chen1, Ming-Chou Ho1, Yeu-Sheng Tyan4, 5, Jun-Cheng Weng4, 5
1Department of Radiology, First Affiliated Hospital of Nanjing Medical University, Nanjing, Jiangsu Province, China; 2Department of Psychiatry, Chung Shan Medical University Hospital, Taichung, Taiwan; 3Department of Psychology, Chung Shan Medical University, Taichung, Taiwan; 4School of Medical Imaging and Radiological Sciences, Chung Shan Medical University, Taichung, Taiwan; 5Department of Medical Imaging, Chung Shan Medical University Hospital, Taichung, Taiwan

Computer 10 4266. T1rho Imaging as a Biomarker for Huntington's Disease Progression
Vincent Magnotta1, Casey Johnson1, John Wemmie2, Shafiq Wassef1, Hans Johnson3, Jeffrey Long2, Jane Paulsen2
1Radiology, University of Iowa, Iowa City, IA, United States; 2Psychiatry, University of Iowa, Iowa City, IA, United States; 3Electrical and Computer Engineering, University of Iowa, Iowa City, IA, United States

Computer 11 4267. A Protean Poseur–SSPE
Sniya Valsa Sudhakar1, Maya Mary Thomas2
1Radiodiagnosis, Christian Medical College, Vellore, Tamil Nadu, India; 2Neurology, cme vellore, Vellore, Tamil Nadu, India

Computer 12 4268. Alterations of Cerebral Cortical Thickness in the Sensory and Pain Systems in Restless Legs Syndrome
Byeong-Yeul Lee1, James R. Connor2, Wei Chen1, Qing X. Yang23
1Huaxi MR Research Center (HMRRC), Department of Radiology, West China Hospital, Chengdu, Sichuan, China; 2Department of Radiology, West China Hospital, Chengdu, Sichuan, China; 3Department of Neurology, West China Hospital, Chengdu, Sichuan, China
Computer 20 4276. **Brain Changes in End-Stage Renal Disease Patients with Hemodialysis: A Voxel-Based Analysis of Morphometry and CBF Based on Cognition Assessment**

Bo Hou¹, Ke Zheng², Hui You¹, Jing Yuan¹, Hai-yun Wang², Xue-wei Li², Feng Feng¹

¹Department of Radiology, Peking Union Medical College Hospital, Beijing, China; ²Department of Nephrology, Peking Union Medical College Hospital, Beijing, China

Computer 21 4277. **Altered Striatal Functional Connectivity in Parkinson's Disease Patients with Impulse Control Disorder**

Yi-Ming Wu¹, Chin-Song Lu², Yi-Hsin Weng², Yao-Liang Chen², Sung-hsun Lin², Jian-Jie Wang²

¹Department of Radiology and Intervention, Chang Gung Memorial Hospital, Taoyuan, Taiwan; ²Department of Neurology, Chang Gung Memorial Hospital and College of Medicine, Chang Gung University, Taoyuan, Taiwan; ³Medical Imaging and Radiological Science, Chang Gung University, Taoyuan, Taiwan


Darrell Ting Hung Li¹, Edward Sai Kam Hui, Queenie Chan², Siew-Eng Chua³, Grainne McAlonan⁴, Shu Leong Ho², Henry Ka Fung Mak¹

¹Department of Diagnostic Radiology, The University of Hong Kong, Hong Kong, Hong Kong; ²Philips Healthcare, Hong Kong, China; ³Department of Psychiatry, Queen Mary Hospital, The University of Hong Kong, Hong Kong; ⁴Department of Forensic and Neurodevelopmental Science, Institute of Psychiatry, King's College London, London, United Kingdom; ⁵Department of Medicine, The University of Hong Kong, Hong Kong

Computer 23 4279. **Altered Spontaneous Brain Activity in Type 2 Diabetes Related Cognitive Dysfunction: A Resting-State Functional MRI Study**

Ying Xiong¹, Zhipeng Xu², Qiang Zhang², Shiqi Yang¹, Shun Zhang¹, Wenzhen Zhu²

¹Department of Radiology, Tongji Hospital, Tongji Medical College, Huazhong University of Science and Technology, Wuhan, Hubei, China; ²Pathophysiology Department, Tongji Medical College, Huazhong University of Science and Technology, Wuhan, Hubei, China; ³Neurology department, Tongji Hospital, Tongji Medical College, Huazhong University of Science and Technology, Wuhan, Hubei, China

Computer 24 4280. **A Tract Based Spatial Statistic Study of Fractional Anisotropy Alterations Caused by Simian Immunodeficiency Virus Infection**

Zhenchao Tang¹, Zhenyu Liu², Jiaojiao Liu³, Hongjun Li³, Seng-Chang Dong¹, Jie Tian²

¹School of Mechanical, Electrical & Information Engineering, Shandong University, Weihai, Shandong Province, China; ²Institute of Automation, Chinese Academy of Sciences, Beijing, China; ³Beijing YouAn Hospital, Capital Medical University, Beijing, China

**Electronic Poster**

**Mechanisms of Neural Degeneration & Damage 2**

Exhibition Hall Wednesday 16:00-17:00


Gerd Melkus¹,², Santanu Chakraborty³, Pierre Bourque³

¹Department of Medical Imaging, The Ottawa Hospital, Ottawa, ON, Canada; ²Department of Radiology, University of Ottawa, Ottawa, ON, Canada; ³Department of Neurology, University of Ottawa, Ottawa, ON, Canada

Computer 26 4282. **Longitudinal Diffusion Tensor Imaging of the Rat Brain After Hexachlorophene Exposure**

Jaijivay Ramu¹, Teyyana Konak², Merle G. Paule³, Joseph Hanig³, Serguei Liachenko³

¹Neurotoxicology, NCTR / FDA, Jefferson, AR, United States; ²OTR, CDER / FDA, White Oak, MD, United States

Computer 27 4283. **Altered Default Mode Network Functional Connectivity and White Matter Integrity in Parkinson's Disease and Relation with Cognitive Functions**

Arzu Ceylan HAS¹, Ozlem CELEBI², Andac UZDOGAN³, Filiz AKBIYIK¹, Bulent ELIBOL2, Esen SAKA³, Kader K. OGUZ²,⁴

¹National Magnetic Resonance Research Center (UMRAM), Ankara, Turkey; ²Department of Neurology, Hacettepe University, Ankara, Turkey; ³Department of Biochemistry, Hacettepe University, Ankara, Turkey; ⁴Department of Radiology, Hacettepe University, Ankara, Turkey

567
The aim of this study was to assess the volumes of white matter lesions (WMLs) of T2DM on MRI using an automatic...to cognitive dysfunction.

This present study is to compare the diagnostic efficiency of CEST imaging and DTI in PD. Our results clearly show that...more information than DTI.

Alterations in the caudal portion of substantia nigra (SN) in Parkinson's disease (PD) were investigated through magnetic...these results are consistent with the findings of histological studies on post mortem brains.

Mesial temporal lobe epilepsy (mTLE) is the most common type of refractory focal epilepsy. Concordant...only to reduce the need for Phase II monitoring. Briefly the purpose of this study is...model that would not only...results are consistent with the findings of histological studies on post mortem brains.

Computer 34 4290.

Detection of the Local Volumes of White Matter Lesions in Type 2 Diabetes Mellitus by an Automatic...with HFE mutations.

Parkinson's Disease, Cognitive Functioning, Resting State, Default Mode Network, Functional Connectivity, Diffusion Tensor Imaging, Tract Based Spatial Statistics.

Electronic Poster
In this work, we proposed an approach to enhance the CNR of the nigrosome 1 structure. Additionally, a navigator echo was used to correct for the effects of respiration in the data. The new approach substantially improved CNR and successfully visualized nigrosome 1 at 3T.

1Department of Electrical and Computer Engineering, Seoul National University, Seoul, Korea; 2Medical Device Development Center, Computer 41 4297.

Fractional Anisotropy (FA) and Mean Diffusivity (MD) have been shown to be affected in Parkinson’s Disease (PD) but no evidence of the correlation between these two parameters and drug efficiency were shown to be promising biomarkers to evaluate structural changes with disease progression in PD patients.

1Instituto de Biofisica e Engenharia Biomedica, Faculdade de Ciencias, Universidade de Lisboa, Lisbon, Portugal; 2Neurological Department of Hospital Santa Maria, Centro Hospitalar Lisboa Norte, Lisbon, Portugal; 3Clinical Pharmacology Unit, Instituto de Medicina Molecular, Lisbon, Portugal

To assess whether gray matter (GM) atrophy between 2 Parkinson disease (PD) subtypes: the tremor dominant (TD) subtype and the akinetic-rigid (AK) subtype, MRI scans were obtained in 23 patients with TD and 18 patients with AK. The results suggest that there is significant GM atrophy in patients with PD, with the AK subtype showing more pronounced atrophy than the TD subtype, which suggest GM atrophy may provide useful information for classification different motor subgroup of PD.

1Sir Peter Mansfield Imaging Centre, School of Medicine, University of Nottingham, Nottingham, Nottinghamshire, United Kingdom; 2Division of Neurology, Nottingham University Hospitals NHS Trust, Nottingham, Nottinghamshire, United Kingdom; 3Sir Peter Mansfield Imaging Centre, School of Physics and Astronomy, University of Nottingham, Nottingham, Nottinghamshire, United Kingdom

GM1 gangliosidosis is a fatal neurodegenerative disease of children for which there is no cure. A well characterized mouse model has been generated, and data suggest that MRS is a sensitive measure of therapeutic efficacy in discrete brain areas.

1Scott-Ritchey Research Center, Auburn University, Auburn, AL, United States; 2Seimens Healthcare, Malvern, PA, United States; 3Auburn University MRI Research Center, Auburn University, AL, United States; 4Clinical Sciences, Auburn University, AL, United States; 5Auburn University MRI Research Center, Auburn University, AL, United States; 6Neurology, University of Massachusetts, MA, United States; 7Department of Electrical Engineering, Auburn University, AL, United States; 8Anatomy, Physiology and Pharmacology, Auburn University, AL, United States

Structural MRI changes were assessed in 19 Writer’s Cramp (WC) primary dystonia patients and 30 healthy controls, using T1 and T2 weighted images. The results suggest that there are significant brain gray and white matter alterations in WC primary dystonia. Structural and DT MRI hold promise to achieve a better in vivo understanding of such an enigmatic disease.

1University, Milan, Italy; 2Clinic of Neurology, Faculty of Medicine, University of Belgrade, Belgrade, Yugoslavia; 3Department of Neurology, San Raffaele Scientific Institute, Vita-Salute San Raffaele University, Milan, Italy; 4Clinic of Neurology, Faculty of Medicine, University of Belgrade, Belgrade, Yugoslavia; 5Department of Neurology, San Raffaele Scientific Institute, Vita-Salute San Raffaele University, Milan, Italy

An Improved SWI Method for Nigrosome 1 Imaging

Yangsoo Ryu1, Yoonho Nam1, Han Jang1, Sung Suk Oh1, Eung Yeop Kim1, Jongho Lee1

1Department of Electrical and Computer Engineering, Seoul National University, Seoul, Korea; 2Medical Device Development Center, Daegu-Gyeongbuk Medical Innovation Foundation, Daegu, Korea; 3Gachon University Gil Medical Center, Radiology, Incheon, Korea
Alzheimer's Disease

Exhibition Hall

Wednesday 16:00-17:00

Computer 43 4299. Alterations of Water Diffusion and Magnetization Transfer Metrics in the Brains of Amyotrophic Lateral Sclerosis Patients
Florian Borsodi1, Christian Langkammer2, Valeriu Culea1, Lukas Pirpamer1, Stefan Quasthoff1, Christian Enzinger1,2, Reinhold Schmidt1, Franz Fazeika1, Stefan Ropele1

1Dept. of Neurology, Medical University of Graz, Graz, Austria; 2MGH/HST Martinsos Center for Biomedical Imaging, Harvard Medical School, Boston, MA, United States; 3Div. of Neuroradiology, Dept. of Radiology, Medical University of Graz, Graz, Austria

Computer 44 4300. Altered Hippocampal White Matter Connectivity and Memory Impairment in Type 2 Diabetes Mellitus
Frank C.G. van Bussel1, Walter H. Backes1, Paul A.M. Hofman1, Alfons G.H. Kessels2, Tamar M. van Veenendaal1, Harm J. van de Haar1, Martin P.J. van Boxtel1, Miranda T. Schram1, Coen D.A. Stehouwer1, Joachim E. Wildberger1, Jacobus F.A. Jansen1

1Radiology, Maastricht University Medical Center, Maastricht, Limburg, Netherlands; 2Clinical Epidemiology and Medical Technology Assessment, Maastricht University Medical Center, Maastricht, Limburg, Netherlands; 3Psychiatry and Neuropsychology, Maastricht University Medical Center, Maastricht, Limburg, Netherlands; 4Internal Medicine, Maastricht University Medical Center, Maastricht, Limburg, Netherlands

Computer 45 4301. Neuramelin-Sensitive Imaging Correlates of Idiopathic Rapid Eye Movement Sleep Behavior Disorders
Michaël Ehrminger1, Alice Latimer1, Daniel García-Lorenzo1, Smaranda Leu-Semenescu1, Marie Vidal1, Isabelle Arnulf1, Stéphane Lehericy1

1Ecole Normale Supérieure, Paris, France; 2Service des pathologies du sommeil, ICM - Institut du Cerveau et de la Moelle, Paris, France; 3CENIR - Centre for NeuroImaging Research, ICM - Institut du Cerveau et de la Moelle, Paris, France; 4Service des pathologies du sommeil, Hopital Pitie-Salpetriere, Paris, France; 5Service de Neurologie, ICM - Institut du Cerveau et de la Moelle, Paris, France; 6CENIR - Center for NeuroImaging Research, ICM - Institut du Cerveau et de la Moelle, Paris, France

Computer 46 4302. Region-Specific Disturbed Iron Distribution in Early Idiopathic Parkinson’s Disease Measured by Quantitative Susceptibility Mapping
Naying He1, Fuhua Yan1, Huwei Ling1, Yong Zhang2, Zhongying Zhang3

1Ruijin Hospital, Shanghai Jiao Tong University School of Medicine, Shanghai, China; 2MR Research, GE Healthcare, China, Shanghai, China; 3MR Research, GE Healthcare, China, Guangzhou, China

Computer 47 4303. Multimodal MRI of a Novel Transgenic Model of Parkinson’s Disease (MitoPark Mice)
Linlin Cong1, Eric R. Muir1, Yusheng Qian2, Cang Chen2, Senlin Li2, Timothy Q. Duong3

1Research Imaging Institute, University of Texas Health Science Center at San Antonio, San Antonio, TX, United States; 2Departments of Medicine and Pharmacology, University of Texas Health Science Center at San Antonio, San Antonio, TX, United States

Sandy Goncalves1,2, Todd K. Stevens1, Robert Bartha1,2, Neil Duggal1,3

1Medical Biophysics, Western University, London, Ontario, Canada; 2Centre for Functional and Metabolic Mapping, Robert Research Institute - Western University, London, Ontario, Canada; 3Clinical Neurological Sciences, University Hospital - London Health Sciences Centre, London, Ontario, Canada

Electronic Poster

Alzheimer's Disease

Exhibition Hall

Wednesday 16:00-17:00

Computer 49 4305. Chemical Exchange Saturation Transfer MR Imaging of Alzheimer's Disease at 3 Tesla: A Preliminary Study
Rui Wang1,2, Suying Li1,2, Min Chen1,2, Jinyuan Zhou1,2, Dantao Peng1,2, Chen Zhang1,2, Yongming Dai3

1Department of Radiology, Beijing Hospital, Beijing, China; 2Johns Hopkins University School of Medicine, MD, United States; 3Department of Neurology, China-Japan Friendship Hospital, Beijing, China; 4Philips Healthcare, Shanghai, China

Computer 50 4306. Pharmacological Treatment with HDAC-6 Inhibitor (ACY-738) Recovers Alzheimer's Phenotype in APP/PS1 Mice
Tabassum Majid1,2, Deric Griffin1,2, Zachary Criss1,2, Asante Hatcher1, Matthew Jarpe1,2, Robia Pautler1,2

1Translational Biology and Molecular Medicine, Baylor College of Medicine, Houston, TX, United States; 2Molecular Physiology & Biophysics, Baylor College of Medicine, Houston, TX, United States; 3Department of Neuroscience, Baylor College of Medicine, Houston, TX, United States; 4Acetylone Pharmaceuticals, Boston, MA, United States
In this work, the potential of diffusion MRI (dMRI) parameters in the characterization of neuropathological features of Alzheimer’s disease (AD) is investigated. It is shown that diffusion MRI can be used to quantify the amount of amyloid plaques, with applications in the diagnosis and monitoring of therapy effects on AD patients.

Cerebral arteries are often morphologically altered and dysfunctional in AD. In this study, 4D flow MRI is used to assess intracranial hemodynamics. The results suggest that 4D flow MRI can contribute to identifying patients who could benefit from interventions to improve circulatory system functions.

Connectivity analysis of resting state fMRI has been widely used to identify biomarkers of AD based on changes in Default Mode Network (DMN) functional connectivity. We found such a focus in the brain stem whose output was significantly diminished in AD as compared to matched controls. Such DMN rsfMRI connectivity alterations could be useful for early detection of amnestic Mild Cognitive Impairment (aMCI) or even of AD.

This study aims at studying the white matter alterations in type 2 diabetes mellitus (T2DM) patients and the relationship between T2DM and AD. It is observed that there was no difference in FA and MD between the diabetes patients with normal cognition and the controls.

Clinical Symptoms can often overlap between Alzheimer Disease (AD) and Dementia with Lewy Body (DLB), and this can cause difficulties in diagnosis. This study contributes to recent evidence of specific, selective HDAC-6 inhibitor therapies in neurodegenerative diseases.

The RfMRI data were collected through an international collaboration effort across 17 imaging sites. The imaging biomarkers were found to be robust, reliable, and can be applied to prospective studies.
Increased generation of free radicals leads to oxidative damage and changes in antioxidant status and cognitive function. In this study it was shown that subjects with Mild Cognitive Impairment (MCI) do not have significantly different antioxidant status with dairy intake as well as cognitive function, suggesting the importance of an adequate antioxidant status.

Iron accumulation in the brain and oxidative stress are observed in a number of neurodegenerative disorders, such as Alzheimer’s disease (AD). In the current study, reduced T1ρ relaxation time might be associated with this mechanism as a single measure cannot be used as a biomarker for brain dysfunction as reflected by cognitive impairment.

Loss of Centrality in Directed Brain Networks

We estimated Betweenness Centrality (BC) from directed networks derived from the application of Granger causality to functional brain imaging data. We found that BC and MP of a few brain regions progressively decreased from NC to EMCI to LMCI to AD.

Brain T1rho MR Imaging in Parkinson Disease: Female Vs Male

In the current study, we have measured the gender based changes in the T1ρ relaxation time in medial-temporal-lobe and compared to healthy controls. The results suggest that T1ρ might provide a clinical measure to differentiate the severity of disease and outcome of the treatment responses among gender.

Apolipoprotein E ε4 Genotype Is Associated with the Changes in Cortical Thickness and CSF Biomarkers in Mild Cognitive Impairment and Alzheimer’s Disease

We estimated the ApoE ε4 genotype in subjects with Mild Cognitive Impairment (MCI) and Alzheimer’s disease (AD). The results suggest that ApoE ε4 genotype is associated with the changes in cortical thicknesses likely including loss of neurons and other supporting cells.

Differential MRI Relaxation in Alzheimer’s Patients with Mutant HFE and Transferrin Genotypes

We estimated the genotypes of HFE and transferrin in subjects with Mild Cognitive Impairment (MCI) and Alzheimer’s disease (AD). The results suggest that these genotypes might be associated with the changes in MRI relaxation times.

Correlation Between Cerebral Glutathione, Dietary Intake and Cognitive Function in Aging and Alzheimer’s Disease

We estimated the correlation between cerebral glutathione, dietary intake and cognitive function in subjects with Mild Cognitive Impairment (MCI) and Alzheimer’s disease (AD). The results suggest that these factors might be associated with the changes in cognitive function.
4321. **Double Inversion Recovery Imaging Improves to Evaluate Brain Tissue Volume Loss in Patients with Alzheimer’s Disease Compared to That of 3D T1-Weighted Imaging**


1Radiology, Kyung Hee University Hospital at Gangdong, Seoul, Korea; 2Biomedical Engineering, Hanyang University, Seoul, Korea; 3Neurology, Kyung Hee University Hospital at Gangdong, Seoul, Korea; 4Biomedical Engineering, Kyung Hee University, Suwon, Gyeonggi-do, Korea

4322. **Combination of Intravoxel Incoherent Motion (IVIM) and Pulsed Arterial Spin Labeling (PASL) MRI on Studying Characteristic Features of Early Stage Alzheimer’s Disease**

**Zhenhua Zhang**, **Zhongwei Chen**, **Haiwei Miu**, **Qiong Ye**

1The department of Radiology, The First Affiliated Hospital of Wenzhou Medical University, Wenzhou, Zhejiang, China

4323. **Diffusion Kurtosis Imaging Reveals Widespread White Matter Abnormalities in Alzheimer’s Disease**


1Radiology Department, the First Affiliated Hospital of Dalian Medical University, Dalian, Liaoning, China; 2GE Healthcare China, Beijing, China

4324. **Comparisons of QSM Data Obtained from a Single Echo and Multiple Echoes in Patients with Cognitive Normal, Mild Cognitive Impairment, and Alzheimer's Disease**


1Biomedical Engineering, Kyung Hee University, Youngin, Gyeonggi-do, Korea; 2Radiology, Kyung Hee University Hospital-Gangdong, Seoul, Korea; 3Neurology, Kyung Hee University Hospital-Gangdong, Seoul, Korea; 4Biomedical Engineering and Radiology, Cornell University, New York, United States

4325. **Changes of Indices in Diffusion Tensor Images of Patients with Depressive Symptoms in the Elderly with Dementia**

**Tsung-Yuan Li**, **Ni-Jung Chang**, **Wei-Che Wu**, **Jyh-Wen Chai**, **Clayton Chi-Chang Chen**

1Department of Radiology, Taichung Veterans General Hospital, Taichung, Taiwan, Taiwan; 2Department of Psychiatry, Taichung Veterans General Hospital, Taichung, Taiwan, Taiwan; 3College of Medicine, China Medical University, Taichung, Taiwan, Taiwan; 4Department of Biomedical Engineering, Hung Kuang University, Taichung, Taiwan, Taiwan

4326. **Searching for New Dementia-Related Features Within MRI: Keypoint Detection and Description**

**Elisabeth Stühler**

1Department of Computer and Information Science, University of Konstanz, Konstanz, Baden-Württemberg, Germany

4327. **Mitochondrial Catalase Overexpression Recovers Axonal Transport Deficits and Improves Hippocampal Long-Term Potentiation in APP/PS1 Mice**

**Tabassum Majid**, **Caiwei Guo**, **Tao Ma**, **Erik Klann**, **Robia Pautler**

1Translational Biology and Molecular Medicine, Baylor College of Medicine, Houston, TX, United States; 2Molecular Physiology & Biophysics, Baylor College of Medicine, Houston, TX, United States; 3Department of Neuroscience, Baylor College of Medicine, Houston, TX, United States; 4New York University, New York, United States

4328. **Investigating Haemodynamic Changes in the Default Mode Network in Alzheimer’s Disease**

**Richard J. Dury**, **Latha Velayudhan**, **Penny A. Gowland**, **Susan T. Francis**

1Sir Peter Mansfield Imaging Centre, The University of Nottingham, Nottingham, United Kingdom; 2Department of Health Sciences, Leicester General Hospital, Leicester, United Kingdom
Electronic Poster

**Electronic Poster**

**MS 1**

**Exhibition Hall**

**Wednesday 16:00-17:00**

**Computer 73 4329. Imaging Biomarker and Pathophysiology of Early Memory Impairment in Multiple Sclerosis: A Pre-Clinical Study with Diffusion-Tensor Imaging of Hippocampal Layers.**

Thomas Toudias¹, Vincent Planche², Bassem Hiba³, Aline Desmedt⁴, Gerard Raffard⁴, Aude Panatier⁴, Stéphane Olier¹, Vincent Doussset², ²

¹INSERM U862 Neurocentre Magendie, University of Bordeaux, Bordeaux, France; ²Department of Neuroradiology, Bordeaux University hospital, Bordeaux, France; ³UMR CNRS 5536, University of Bordeaux, Bordeaux, France

**Computer 74 4330. SWI Lesion Load and Tissue Hypoxia in Multiple Sclerosis: A Study Using the Experimental Autoimmune Encephalomyelitis Animal Model at 9.4T**

Raveena Dhaliwal¹, Nabeela Nathoo¹, Ying Wu¹, James A. Rogers², V. Wee Yong³, Jeff F. Dunn¹

¹Radiology, University of Calgary, Calgary, Alberta, Canada; ²Clinical Neurosciences, University of Calgary, Calgary, Alberta, Canada

**Computer 75 4331. Vascular Expansion and Blood-Brain-BARRIER Permeability: A Comparative Volumetric Study in Acute Japanese Macaque Encephalomyelitis**

Ian Tagge¹, ², Steven Kohama¹, Jim Pollaro¹, Lawrence Sherman³, Dennis Boudrette⁴, Randy Woltjer⁴, Scott Wong⁴, William Rooney², ²

¹Advanced Imaging Research Center, Oregon Health & Science University, Portland, OR, United States; ²Biomedical Engineering, Oregon Health & Science University, Portland, OR, United States; ³Oregon National Primate Research Center, Oregon Health & Science University, OR, United States; ⁴Neurology, Oregon Health & Science University, Portland, OR, United States

**Computer 76 4332. Diffusion Kurtosis Imaging Probes Cortical Alterations and White Matter Pathology Following Cuprizone-Induced Demyelination and Spontaneous Remyelination**

Caroline Guglielmetti¹, Jelle Veraart², Ella Roelant³, Zhenhua Mai⁴, Jasmijn Daans⁵, Johan Van Audekerke⁴, Jelle Praet¹, Peter Ponsaerts, Ian Sijbers², Annemie Van der Linden³, Marleen Verhoye⁴

¹Bio Imaging Lab, University of Antwerp, WILRIJ, ANTWERPEN, Belgium; ²IBBT Vision LaboratoryDepartment of Physics, University of Antwerp, ANTWERPEN, Belgium; ³Statistical Center for Statistics, University of Antwerp, ANTWERPEN, Belgium; ⁴Bio Imaging Lab, University of Antwerp, ANTWERPEN, Belgium; ⁵Experimental Cell Transplantation Group, Laboratory of Experimental Hematology, Vaccine and Infect, ANTWERPEN, Belgium

**Computer 77 4333. Cerebral Blood Flow Modulation Insufficiency in Default Mode Network in Multiple Sclerosis: A Hypercapnia MRI Study**

Olga Marshall¹, Sanjeev Chawla¹, Hanzhang Lu¹, Ilya Kister³, Jacqueline Smith¹, Yulin Ge¹

¹Radiology/Center for Biomedical Imaging, New York University School of Medicine, New York, NY, United States; ²Advanced Imaging Research Center, University of Texas Southwestern Medical Center, TX, United States; ³Neurology, New York University School of Medicine, New York, NY, United States

**Computer 78 4334. Describing the Distribution of Myelin Water Fraction Change Among Early Stage MS Lesions**

Elizabeth Monohan¹, Wendy Vargas¹, Sneha Pandya¹, Michael Dayan¹, Thanh Nguyen², Ashish Raj¹, Sandra Hurtado¹, Susan Gauthier¹

¹Neurology and Neuroscience, Weill Cornell Medical College, New York, NY, United States; ²Radiology, Weill Cornell Medical College, New York, NY, United States; ³Public Health, Weill Cornell Medical College, New York, United States

**Computer 79 4335. Dynamic Changes in Venous Susceptibility in the Spinal Cord of an Animal Model of MS Are Detected with Susceptibility-Weighted Imaging**

Nabeela Nathoo¹, Ying Wu¹, James A. Rogers², ³, V. Wee Yong³, Jeff F. Dunn¹, ⁴

¹Radiology, University of Calgary, Calgary, Alberta, Canada; ²Hotchkiss Brain Institute, University of Calgary, Calgary, Alberta, Canada; ³Clinical Neurosciences, University of Calgary, Calgary, Alberta, Canada; ⁴Experimental Imaging Centre, University of Calgary, Calgary, Alberta, Canada

**Computer 80 4336. Advanced Imaging in Lesion and Normal-Appearing White Matter Over 2 Years in MS Patients Treated with Alemtuzumab**

Irene Vavasour¹, Alex MacKay¹, ², David Li¹, Cornelia Laule¹, ³, Anthony Traboulsee

¹Bio Imaging Lab, University of Antwerp, WILRIJ, ANTWERPEN, Belgium; ²IBBT Vision LaboratoryDepartment of Physics, University of Antwerp, ANTWERPEN, Belgium; ³Experimental Cell Transplantation Group, Laboratory of Experimental Hematology, Vaccine and Infect, ANTWERPEN, Belgium
Computer 81 4337. Longitudinal MR Frequency Shift Imaging in Patients with Clinically Isolated Syndrome

Vanessa Wiggermann1,2, Inga Ibs,3, Stephanie M. Schoerner,4, Enedino Hernandez Torres5,6, Luanne Metz7, David K.B. Li7,8, Anthony Traboulsee5,9, Alexander Rauscher5,10
1Physiology, University of British Columbia, Vancouver, British Columbia, Canada; 2Radiology, University of British Columbia, Vancouver, British Columbia, Canada; 3Pathology and Laboratory Medicine, University of British Columbia, Vancouver, British Columbia, Canada

Volumetric T1 and T2-weighted volumes were acquired on 38 MS patients with average disease duration of 2 years, but the volume in the caudate and the hippocampus was reduced in the younger group (P<0.001 for both), which was not reflected in the older group.

Computer 82 4338. In-Vivo Measurement of Cerebral Metabolic Rate of Oxygen Consumption in an Animal Model of Multiple Sclerosis Using Combined MRI and Near-Infrared Spectroscopy

Thomas W. Johnson1,2, Linhui Yu3, Kartekeya Murari4, Jeff F. Dunn1,2
1Radiology, University of Calgary, Calgary, Alberta, Canada; 2Hotchkiss Brain Institute, Calgary, Alberta, Canada; 3Electrical Engineering, University of Calgary, Calgary, Alberta, Canada

Our focus was to investigate use of fMRI in the recovery process in multiple sclerosis patients with optic neuritis (ON). Increase in quadrant volume was observed in affected eye (p<0.024) and average quadrant volume (p<0.003). No correlations were observed in the unaffected eye.

Computer 83 4339. Differences in Visual fMRI Activation and OCT Metrics Between Affected and Unaffected Eyes After Recovery from Optic Neuritis

Blessy Mathew1, Mark J. Lowe1, Pallab Bhattacharyya1, Rob Bermel1
1Cleveland Clinic, Cleveland, OH, United States

Differences in Visual fMRI Activation and OCT Metrics Between Affected and Unaffected Eyes After Recovery from Optic Neuritis

Computer 84 4340. Local Tissue Volume Changes in Early MS Are Most Strongly Reflected in Non-Peripheral Grey Matter

Courtney A. Bishop2,3, Jean SZ Lee4, Charlotte L. Thomas5, Rebecca Quest6, Lesley Honeyfield5, Paolo A. Muraro2,6, Adam D. Waldman7,8, Roxel D. Newsbold9,2
1Image Analysis Department, Imanova Centre for Imaging Sciences, London, United Kingdom; 2Division of Brain Sciences, Imperial College London, London, United Kingdom; 3Radiology Department, Oxford University Hospitals NHS Trust, Oxford, United Kingdom; 4Department of Medicine, St George's Hospital, London, United Kingdom; 5Department of Imaging, Imperial College Healthcare NHS Trust, London, United Kingdom; 6Department of Clinical Neurosciences, Imperial College Healthcare NHS Trust, London, United Kingdom; 7Division of Experimental Medicine, Imperial College London, London, United Kingdom

Cerebral metabolic rate of oxygen consumption was measured in the cortex of mice with long term (day 36 post induction) ON. Abnormal metabolism could be due to uncoupled mitochondria, and may point to neurodegeneration.

Computer 85 4341. Phase Contrast MRI Differentiates Between Brain Lesions in Neuromyelitis Optica and Multiple Sclerosis – Preliminary Data from a 7T MRI Study

Tim Sinnecker1, Sophie Hahnдорf2, Katharina Mueller1, Petr Dusek2,3, Lutz Harms4,5, Sanjeev Chawla6, Thoralf Niendorf3,6, Ilya Kister3, Friedemann Paul1,2, Yulin Ge6, Jens Wuerfel1,7
1Image Analysis Department, Imanova Centre for Imaging Sciences, London, United Kingdom; 2Division of Brain Sciences, Imperial College London, London, United Kingdom; 3Radiology Department, Oxford University Hospitals NHS Trust, Oxford, United Kingdom; 4Department of Medicine, St George's Hospital, London, United Kingdom; 5Department of Imaging, Imperial College Healthcare NHS Trust, London, United Kingdom; 6Department of Clinical Neurosciences, Imperial College Healthcare NHS Trust, London, United Kingdom; 7Division of Experimental Medicine, Imperial College London, London, United Kingdom

Clinically isolated syndrome (CIS) patients experience demyelinating events, without fulfilling the criteria for multiple sclerosis. Proton relaxation time before enhancement, steep increase during their formation and elevated frequency for 12 months after lesion formation.

Computer 86 4342. High Percentage of MS Lesions Found to Have a Central Vein Using Single Slice SWI at 7 Tesla

Jacob Alois Matasinec1, Zahra Hossein1, Junmin Liu1, David A. Rudko1, Mathew P. Quinn1, Marcelo Kremenchutzky1, Ravi Menon1,2, Maria Drangova3,4
1Radiology, University of British Columbia, Vancouver, British Columbia, Canada; 2Hotchkiss Brain Institute, Calgary, Alberta, Canada; 3Imaging Research Laboratories, Robarts Research Institute, Western University, London, Ontario, Canada; 4Brain Imaging Centre Montreal Neurological Hospital and Institute, McGill University, Quebec, Canada; 5Department of Clinical Neurological Sciences, Schulich School of Medicine & Dentistry, Western University, London, Ontario, Canada; 6Centre for Functional and Metabolic Mapping, Robarts Research Institute, Western University, London, Ontario, Canada; 7Department of Medical Biophysics Schulich School of Medicine & Dentistry, Western University, Ontario, Canada

Alemtuzumab is a multiple sclerosis (MS) therapy designed to inhibit inflammation and prevent the accumulation of new lesion appearance indicating less edema and inflammation for lesions formed while under the effects of alemtuzumab.

Computer 87 4343. Diagnose Acute Gadolinium Enhancing Multiple Sclerosis Lesions Using Gradient Echo MRI (R2* and QSM) Without Gadolinium Injection

Lijie Tu1,2, Yan Zhang1, Ajay Gupta1, Joseph Comunale1, Thanh Nguyen1, Susan Gauthier4, Yi Wang1,5
1Radiology, University of British Columbia, Vancouver, British Columbia, Canada; 2Imaging Research Laboratories, Robarts Research Institute, Western University, London, Ontario, Canada; 3Imaging Research Laboratories, Robarts Research Institute, Western University, London, Ontario, Canada; 4Department of Medical Biophysics Schulich School of Medicine & Dentistry, Western University, Ontario, Canada; 5Department of Clinical Neurological Sciences, Schulich School of Medicine & Dentistry, Western University, Ontario, Canada

Without Gadolinium Injection Diagnose Acute Gadolinium Enhancing Multiple Sclerosis Lesions Using Gradient Echo MRI (R2* and QSM) Without Gadolinium Injection

Computer 88 4344. Preliminary Data from a 7T MRI Study

575
Characterization of DTI Brain Connectivity in Different Clinical Forms of Multiple Sclerosis Patients Based on Graph Theory

Gabriel KOCEVAR, Claudio STAMILO, Salem HANNOUN, Francois COTTON, Françoise DURAND-DUBIEF, Dominique SAPPEY-MARINIER

CREATIS (CNRS UMR5220 & INSERM U1044), Université Lyon 1, INSA-Lyon, Villeurbanne, France; Service de Radiologie, Centre Hospitalier Lyon-Sud, Hospices Civils de Lyon, Pierre-Benite, France; Service de Neurologie A, Hôpital Neurologique, Hospices Civils de Lyon, Bron, France; CERMÉP - Imagerie du Vivant, Université de Lyon, Bron, France

Comparison of QSM, T2-Relaxometry and T2-Weighted Imaging at 7T for Assessment of Basal Ganglia Iron in MS Patients

Petra Schmalbrock, Mary Russell, Grant K. Yang, Jacqueline A. Nicholas, Michael V. Knopp, David Pitt

Radiology, The Ohio State University, Columbus, OH, United States; Neurology, The Ohio State University, Columbus, OH, United States; Neurology, Yale School of Medicine, New Haven, CT, United States

Magnetization Transfer from Inhomogeneously Broadened Lines (1hMT): Application on Multiple Sclerosis (MS)

Guillaume Duhamel, Arnaud le Troter, Valentin Prevost, Gopal Varma, Maxime Guye, Jean-Philippe Ranjeva, Jean Pelletier, David C. Alsop, Olivier M. Girard

Aix Marseille University, CRMBM / CNRS UMR 7339, Marseille, France; Department of Radiology, BIDMC, Harvard Medical School, Boston, MA, United States; Pôle de Neurosciences Cliniques, Service de Neurologie, APHM, Hôpital La Timone, Marseille, France

Deep Grey Matter Iron Deposition and Brain Atrophy in Early Multiple Sclerosis: A Longitudinal Study

Matthew P. Quinn, Joseph S. Gati, L Martyn Klassen, Marcelo Kremenchutzky, Ravi S. Menon

Centre for Functional and Metabolic Mapping, Robarts Research Institute, Western University, London, Ontario, Canada; Department of Medical Biophysics, Schulich School of Medicine & Dentistry, Western University, London, Ontario, Canada; Department of Clinical Neurological Sciences, Schulich School of Medicine & Dentistry, Western University, London, Ontario, Canada

DTI and Visually Evoked Potential Changes in Mice with Optic Neuritis

Christopher Nishioka, Jennifer Meir, Hsiao-Fang Liang, Wei-Xing Shi, Shu-Wei Sun

Neurology, Weill Cornell Medical College, New York, NY, United States; Biomedical Engineering, Cornell University, Ithaca, NY, United States; Biomedical Engineering, Cornell University, Ithaca, NY, United States; Biomedical Engineering, Cornell University, Ithaca, NY, United States

Exploration of Advanced MR Imaging Contrasts for Automated Detection of White Matter and Cortical Lesions in Early-Stages of Multiple Sclerosis

Mário João Fartaria de Oliveira, Joseph S. Gati, L Martyn Klassen, Marcelo Kremenchutzky, Ravi S. Menon

Computer 94 4350. Whole Brain Multi-Metabolite Statistical Mapping Analyses to Characterize Metabolic Disorders in Multiple Sclerosis Using Combination of Two Tilted 3D-EPSI Acquisitions

Maxime Donadieu, Yann Le Fur, Andrew A. Maudsley, Angèle Lecocq, Wafaa Zaaqouli, Elisabeth Soulier, Marie-Liesse Lesage, Sulaiman Sheriff, Mohammad Sabati, Sylviane Confort-Gouny, Maxime Guye, Jean Pelletier, Bertrand Audoin, Jean-Philippe Ranjeva
This work assesses the impact of rhythmic auditory stimulation on functional activation during mental imagery of walking in patients with multiple sclerosis.

Abnormal iron accumulation in subcortical grey matter is a consistent finding in patients with multiple sclerosis. We hypothesize that this abnormal iron accumulation may correlate with functional imaging parameters. We plan to perform a 2-year longitudinal study in patients with multiple sclerosis using 4.7 T imaging to assess the relationship between iron accumulation and functional imaging parameters.

Haemodynamic changes have been reported in multiple sclerosis (MS), using MRI techniques. However, the extent to which these changes differ between patients with MS and healthy controls is not well understood. We propose to use Dynamic Contrast Enhanced MRI (DCE-MRI) and Arterial Spin Labelling (ASL) to compare perfusion parameters in patients with MS and healthy controls.

In this work, we evaluate a fully automated spinal cord segmentation method (PropSeg) in a large cohort of people with multiple sclerosis. We will validate this method in future studies to assess its potential as an approach for analysis of large datasets in therapeutic trials in MS.

This work proposes to use scalar features calculated from diffusion MR data alongside structural MR intensities in the classification of patients with multiple sclerosis. We will compare the performance of these features estimated from the diffusion tensor to existing T1 and T2 intensities for the classification task.

In patients with MS and age/sex-matched healthy controls, metrics of diffusion, magnetization transfer, and perfusion in normal-appearing white matter and flow parameters using 4D flow MRI are compared.

Recent advances in regenerative medicine raise hope that the transplantation of human GRPs may be an effective approach for the treatment of multiple sclerosis. However, diffusion tensor imaging data did not show significant improvement compared to non-transplant controls.

Computer 1
4351. Multi-Contrast MRI of Myelination After Transplantation of Human Glial-Restricted Progenitor Cells in a Dysmyelinated Mouse Model
Antje Arnold1, 2, Jiangyang Zhang1, 2, Guanshu Liu1, 3, Agatha Lyczek1, 2, Miroslaw Janowski1, 4, Jeff W.M. Bulle1, 2, Piotr Walczak1, 2
1Dept. of Radiology and Radiological Science, Johns Hopkins University School of Medicine, Baltimore, MD, United States; 2Cellular Imaging Section, Institute for Cell Engineering, Baltimore, MD, United States; 3F.M. Kirby Research Center for Functional Brain Imaging, Kennedy Krieger Institute, Baltimore, MD, United States; 4NeuroRepair Department, Polish Academy of Sciences, Warsaw, Poland

Computer 2
4352. Normal-Appearing White Matter and Venous Flow Multiparameter Comparison Between Multiple Sclerosis and Healthy Control Subjects
Eric Mathew Schrauben1, Kevin M. Johnson1, Oliver Wieben1, 2, Aaron Field3
1Medical Physics, University of Wisconsin - Madison, Madison, WI, United States; 2Radiology, University of Wisconsin - Madison, WI, United States; 3Radiology, University of Wisconsin - Madison, Madison, WI, United States

Computer 3
4353. Using Diffusion and Structural MRI for the Automated Segmentation of Multiple Sclerosis Lesions
Pedro A. Gómez1, 2, Tim Sprenger1, 2, Ana A. López1, Jonathan I. Sperl1, Brice Fernandez1, Miguel Molina-Romero1, 2, Xin Liu1, 2, Vladimir Golkov1, 2, Michael Czisch1, Philipp Saemann1, Marion I. Menzel2, Björn H. Menze3
1Technical University Munich, Munich, Germany; 2GE Global Research, Munich, Germany; 3GE Healthcare, Munich, Germany; 4Max Plank Institute of Psychiatry, Munich, Germany

Computer 4
4354. Fully Automated Segmentation of the Cervical Cord Using PropSeg: Application to Multiple Sclerosis
Marios C. Yiannakas1, Ahmed Mustafa1, Benjamin De Leener1, Hugh Kearney1, David H. Miller1, Julien Cohen-Adad2, Claudia A. M. Wheeler-Kingshott3
1NMR Research Unit, Department of Neuroinflammation, Queen Square MS Centre, UCL Institute of Neurology, London, WC1N3BG, United Kingdom; 2Institute of Biomedical Engineering, Polytechnique Montreal, Montreal, QC, Canada

Computer 5
4355. Comparison of 3T Arterial Spin Labelling and Dynamic Contrast Enhanced MRI in Multiple Sclerosis
Afaf S. Elsarraj1, 2, Paul S. Morgan2, 3, Crist S. Constantinescu2, 4, Dorothee P. Auer4, Robert A. Dineen2
1Department of Radiology, Miller School of Medicine University of Miami, Miami, FL, United States; 2Department of Neurology, Timone University Hospital, Marseille, France, Metropolitan

Computer 6
4356. Quantitative Spin Echo R2 and Brain Atrophy Measurements for Subcortical Grey Matter in Patients with Multiple Sclerosis: A 2-Year Longitudinal Study
Md Nasir Uddin1, R Marc Lebel1, Peter Seres1, Gregg Blevins2, Alan H. Wilman1
1Biomedical Engineering, University of Alberta, Edmonton, Alberta, Canada; 2Division of Neurology, University of Alberta, Edmonton, Alberta, Canada

Computer 7
4357. Effect of Rhythmic Auditory Stimulation on Cortical Activation During the Mental Imagery of Walking in Patients with Multiple Sclerosis
Katherine A. Koenig1, Mark J. Lowe1, Darlene K. Stough2, Lisa Gallagher2, Dwyer Conklyn1, Francois Bethoux3
1The Cleveland Clinic, Cleveland, OH, United States; 2Neurological Institute, The Cleveland Clinic, Cleveland, OH, United States; 3DBC3 Music Therapy, Independence, OH, United States

Computer 8
4358. Mapping of the Optic Nerve in Multiple Sclerosis Patients with and Without Optic Neuritis
Robert L. Harrigan1, Katrina M. Nelson1, Lindsey M. Dethrage1, Robert L. Galloway1, Bennett A. Landman1, 2, Louise A. Mawn1, Seth A. Smith2
1Department of Radiology, Miller School of Medicine University of Miami, Miami, FL, United States; 2Department of Neurology, Timone University Hospital, Marseille, France, Metropolitan
Electronic Poster

1Electrical Engineering, Vanderbilt University, Nashville, TN, United States; 2Institute for Imaging Science, Vanderbilt University, Nashville, TN, United States; 3Biomedical Engineering, Vanderbilt University, Nashville, TN, United States; 4Ophthalmology and Neurological Surgery, Vanderbilt University, Nashville, TN, United States; 5Radiology and Radiological Sciences, Vanderbilt University, Nashville, TN, United States

Computer 9 4359. Cortical Abnormalities in Multiple Sclerosis by 7T MRI: Novel Imaging Insights and Update
Yulin Ge1, Ilya Kister2, Sanjeev Chawla3, Tim Sinnecker4, Jean-Christophe Brisset5, Joseph Herbert2, Friedemann Paul1, Jens Wuerfel1
1Radiology, NYU Langone Medical Center, New York City, NY, United States; 2Neurology, NYU Langone Medical Center, NY, United States; 3Universitätsmedizin Göttingen, Berlin, Germany

Computer 10 4360. Computerised Cognitive Rehabilitation in Multiple Sclerosis May Result in Improved Working Memory
Jamie Campbell1, Dawn Langdon1, Waqar Rashid1, Mara Cercignani1
1Clinical Imaging Sciences Centre, Brighton & Sussex Medical School, University of Sussex, Brighton, East Sussex, United Kingdom; 2Neuropsychology, University of London, London, United Kingdom; 3Neurology, Brighton & Sussex University Hospitals NHS Trust, Brighton, East Sussex, United Kingdom

Computer 11 4361. A Comparison of FLAIR* and T2*-Weighted Imaging in Detecting White Matter Lesions and Central Veins in Patients with MS and Ischaemic Lesions at 3T.
Amal Samaraweera1, Margaret Clarke1, Olivier Mougins2, Rob Dineen3, Ian Driver4, Paul S. Morgan, Nikos Evangelou1
1Division of Clinical Neuroscience, University of Nottingham, Nottingham, United Kingdom; 2Clinical Neurology, Nottingham University Hospitals NHS Trust, Nottingham, United Kingdom; 3Sir Peter Mansfield MR Centre, University of Nottingham, Nottingham, United Kingdom; 4Department of Neuroradiology, Nottingham University Hospitals NHS Trust, Nottingham, United Kingdom

Computer 12 4362. Age Related Metabolic Consequences of Reduced Myelin Basic Protein – MRS and MRI of Heterozygous Shiverer Mice
Juergen Baudewig1, Giulia Poggi2, Hannelore Ehrenreich2, Susann Boretius1
1Section Biomedical Imaging, Dept. of Radiology and Neuroradiology, Christian-Albrechts-University Kiel, Kiel, Germany; 2Max Planck Institute of Experimental Medicine, Goettingen, Germany

Computer 13 4363. High-Field Characterization of Spinal Cord Damage in Multiple Sclerosis
Bailey Littled1, Adrienne Dula2,3, Benjamin Conrad2, Richard Dortich2,1, Megan Barry4, Subramaniam Sriram4, Shilpa Reddy1, Seth Smith2,4, Siddharuma Pawate1
1Neuroscience, Vanderbilt University, Nashville, TN, United States; 2Vanderbilt University Institute of Imaging Science, Vanderbilt University, Nashville, TN, United States; 3Radiology and Radiological Sciences, Vanderbilt University, Nashville, TN, United States; 4Neurology, Vanderbilt University, Nashville, TN, United States

Computer 14 4364. Identification of Quantitative Differences in Normal-Appearing White Matter of Multiple Sclerotic Patients Vs. Healthy Controls Using a Novel Bloch-Simulation-Based T2 Mapping Technique
Noam Ben-Eliezer1,2, Veronica Cosi1, Akio Yoshimoto1, Daniel K. Sodickson1,2, Mary Bruno1, Kai Tobias Block1,2, Timothy M. Shepherd1,2
1Center for Biomedical Imaging, Department of Radiology, New York University Medical Center, New York, NY, United States; 2Center for Advanced Imaging Innovation and Research (CAI2R), Department of Radiology, New York University School of Medicine, New York, NY, United States

Computer 15 4365. Magnetization Transfer from Inhomogeneously Broadened Lines (IhMT): Application on a Mouse Model of Experimental Autoimmune Encephalomyelitis (EAE)
Valentin H. Prevost1, Angele Viola1, Olivier M. Girard2, Adriana T. Perles-Barbacaru1, Jennifer Trace2, Gopal Varma1, David C. Alsop2, Guillaume Duhamel1
1CRMBM CNRS UMR 7339, Aix-Marseille University, Marseille, France; 2Department of radiology, BIDMC, Harvard Medical School, Boston, MA, United States
Electronic Poster

Computer 16  4366.  **Quantify White Matter Damage with Confounding Fiber Crossing and CSF Contamination**

*Yong Wang*, *Ying Sun*, *Qing Wang*, *Kathryn Trinkaus*, *Robert T. Naismith*, *Robert E. Schmidt*, *Anne H. Cross*, *Sheng-Kwei Song*

1Radiology, Washington University in St. Louis, Saint Louis, MO, United States; 2Hope Center for neurological Disorders, Washington University in St. Louis, Saint Louis, MO, United States; 3Biostatistics, Washington University in St. Louis, Saint Louis, MO, United States; 4Neurology, Washington University in St. Louis, Saint Louis, MO, United States

Computer 17  4367.  **Multi-Modal Analysis of Cortico-Cortical Connectivity Based on GM and WM Anatomical Properties: Application to Secondary Progressive Multiple Sclerosis**

*Emma Biondetti*, *Jonathan D. Clayden*, *Matteo Pardini*, *Alessandra Bertoldo*, *Declan T. Chard*, *Claudia A. M. Wheeler-Kingshott*

1UCL Department of Medical Physics and Biomedical Engineering, University College London, London, England, United Kingdom; 2Developmental Imaging and Biophysics Section, UCL Institute of Child Health, University College London, London, England, United Kingdom; 3Department of Neuroscience, Rehabilitation, Ophthalmology, Genetics, Maternal and Child Health, University of Genova, Genova, Italy; 4NMR Research Unit, Department of Neuroinflammation, Queen Square MS Centre, UCL Institute of Neurology, London, England, United Kingdom; 5University of Padova, Padova, Italy

Computer 18  4368.  **Quantification of Normal-Appearing White Matter in Multiple Sclerosis (MS) by Quantitative Susceptibility Mapping (QSM)**

*Weiwei Chen*, *Yan Zhang*, *Wenzhen Zhu*, *Ketao Mu*, *Chu Pan*, *Susan A. Gauthier*, *Yi Wang*

1Radiology, Tongji Hospital, Tongji Medical College, Huazhong University of Science & Technology, Wuhan, Hubei, China; 2Neurology, Weill Cornell Medical College, NY, United States; 3Radiology, Weill Cornell Medical College, NY, United States

Computer 19  4369.  **Application of 3D Double Inversion Recovery Sequence in the Demyelinating Disease of Cervical and Thoracic Cord**

*Yelong Shen*, *Tianyi Qian*, *Yanbing Wang*, *Guangbin Wang*, *Bin Zhao*

1Shandong Medical Imaging Research Institute, School of Medicine, Shandong University, Jinan, Shandong, China; 2MR Collaborations NE Asia, Siemens Healthcare, Beijing, China; 3Rizhao People's Hospital of Shandong, Shandong, China

Computer 20  4370.  **Relationship of Sodium Concentration and T2 Relaxation in Multiple Sclerosis**

*Patricia Alves Da Mota*, *Marios C. Yiannakas*, *Ferran Prados*, *Manuel Jorge Cardoso*, *David Paling*, *Frank Riemer*, *Daniel Tozer*, *Sébastien Ourselin*, *David H. Miller*, *Xavier Golay*, *Claudia AM Wheeler-Kingshott*, *Bhavana S. Solanky*

1NMR Research Unit, Department of Neuroinflammation, Queen Square MS Centre, UCL Institute of Neurology, London, England, United Kingdom; 2NMR Research Unit, Department of Neuroinflammation, Queen Square MS Centre, UCL Institute of Neurology, London, England, United Kingdom; 3Department of Medical Physics and Bioengineering Wolfson House, Translational Imaging Group CMIC, London, England, United Kingdom; 4Department of Clinical Neurosciences, University of Sheffield, Sheffield, England, United Kingdom; 5Department of Clinical Neurosciences, University of Cambridge, Cambridge, England, United Kingdom; 6NMR Research Unit, Department of Brain Repair and Rehabilitation, UCL Institute of Neurology, London, England, United Kingdom

Computer 21  4371.  **Improve Myelin Imaging Biomarkers Specificity by Modeling Extra-Cellular Tissue Water**


1Radiology, Washington University in St. Louis, Saint Louis, MO, United States; 2Hope Center for neurological Disorders, Washington University in St. Louis, Saint Louis, MO, United States; 3Biostatistics, Washington University in St. Louis, Saint Louis, MO, United States; 4Neurology, Washington University in St. Louis, Saint Louis, MO, United States; 5Hope Center for neurological Disorders, Washington University in St. Louis, Saint Louis, MO, United States

Computer 22  4372.  **Tracking the Individual Lesion Myelination Status in Multiple Sclerosis**

*Hagen H. Kitzler*, *Caroline Koehler*, *Hannes Wahl*, *Tjalf Ziemssen*, *Sean C. Deoni*

1Neuroradiology, Technische Universitaet Dresden, Dresden, SN, Germany; 2Neurology, Technische Universitaet Dresden, Dresden, SN, Germany; 3Engineering, Brown University, Providence, RI, United States

Computer 23  4373.  **Venous Oxygenation Mapping in Multiple Sclerosis: A Longitudinal Study**

*Sanjeev Chawla*, *Olga Marshall*, *Jean Christophe Brisset*, *Hanzhang Lu*, *Ilya Kister*, *Yulin Ge*

1Radiology, New York University Langone Medical Center, New York, NY, United States; 2Advanced Imaging Research Center, University of Texas Southwestern Medical Center, Dallas, TX, United States; 3Neurology, New York University Langone Medical Center, New York, NY, United States

579
Electronic Poster

Brain Tumour Advanced Methods

Exhibition Hall  Wednesday 17:00-18:00

Computer 24  4374. Evaluation of Demyelination in a New Myelin Basic Protein Mutant Mouse Using In Vivo MRI
Tom Dresselaers1, Kristof Govaerts1, James Dooley1,3, Uwe Himmelreich1, Adriaan Liston1,2, Kim A. Staats2,3
1Dept of Imaging and Pathology, KU Leuven, Leuven, Belgium; 2Autoimmune Genetics Laboratory, VIB, Leuven, Belgium; 3Dept. of Microbiology and Immunology, KU Leuven, Leuven, Belgium

Computer 25  4375. MR Perfusion of Human Brain Tumors Demonstrates Increased Blood Volume in Active Tumor Before Static Contrast Enhancement or Permeability.
Ajay Nemani1, Mirko Vukelich1, Kristina Wakeman1, Tibor Valyi-Nagy2, Keith Thulborn1
1Center for MR Research, University of Illinois at Chicago, Chicago, IL, United States; 2Pathology, University of Illinois at Chicago, Chicago, IL, United States

Computer 26  4376. Survival Prediction of Patients with Glioblastoma Based on Combination Analysis of Mammalian Target of Rapamycin (MTOR) - Epidermal Growth Factor Receptor (EGFR) Pathway and Dynamic Susceptibility Contrast (DSC)-MR Perfusion Imaging
Xiang Liu1, Wei Tian1, Rajiv Mangla1, Mahlon Johnson2, Sven Eklom2
1Department of Imaging Sciences, University of Rochester Medical Center, Rochester, NY, United States; 2University of Rochester Medical Center, NY, United States

Computer 27  4377. Weighted-Average Model Curve Preprocessing Strategy for Quantification of DSC Perfusion Imaging Metrics from Image-Guided Tissue Samples in Patients with Brain Tumors
Janine M. Lupo1, Quieting Wen1, Joanna J. Phillips2,3, Susan M. Chang2, Sarah J. Nelson1
1Radiology and Biomedical Imaging, University of California, San Francisco, CA, United States; 2Radiology, University of California, San Francisco, CA, United States; 3Pathology, University of California, San Francisco, CA, United States

Computer 28  4378. Tumour Response Assessment Using Volumetric DCE-CT and DCE-MRI in Metastatic Brain Cancer Patients
Catherine Coolens1,2, Brandon Driscoll3, Warren Foltz, Caroline Chung1
1Radiation Medicine Program, Princess Margaret Cancer Centre and University Health Network, Toronto, Ontario, Canada; 2Radiation Oncology and IBBME, University of Toronto, Toronto, Ontario, Canada; 3Radiation Medicine Program, Princess Margaret Cancer Centre, Ontario, Canada; 4Radiation Oncology, University of Toronto, Ontario, Canada

Computer 29  4379. Are There Differences Between Macrocyclic Gadolinium Contrast Agents for Brain Tumor Imaging? Results of a Multicenter Intra-Individual Crossover Comparison of Gadobutrol with Gadoteridol (The TRUTH Study)
Martin P. Smith1, Kenneth R. Maravilla2, Stefano Bastianello3, Eva Bueltmann4, Toshinori Hirai5, Tiziano Frattini6, Cesare Colosimo1, Gianpaolo Pirovano7
1Department of Radiology, Beth Israel Deaconess Medical Center, Boston, MA, United States; 2University of Washington, WA, United States; 3Neuroradiology Department, University of Pavia, Pavia, Italy; 4Oberartzin Institut fur Diagnostische und Interventionelle Neuroradiologie, Hannover, Germany; 5Kumamoto University, Kumamoto, Japan; 6Ospedale Valduce, Como, Italy; 7Policlinico “Agostino Gemelli”, Rome, Italy; 8Bracco Diagnostics Inc., Monroe, NJ, United States

Computer 30  4380. The Role of DWI in Postoperative High Grade Glioma Trials
Dewen Yang1
1ICON Medical Imaging, Warrington, PA, United States

Computer 31  4381. Differentiation of High-Grade and Low-Grade Diffuse Gliomas by Intravoxel Incoherent Motion MRI
Osamu Togao1, Akio Hiwatashi1, Koji Yamashita1, Kazuhiro Kikuchi1, Marc Van Cauteren2, Hiroshi Honda1
1Clinical Radiology, Graduate School of Medical Sciences, Kyushu University, Fukuoka, Japan; 2Philips Electronics Japan, Tokyo, Japan

Computer 32  4382. Cerebral Gliomas: Correlation of Diffusion Kurtosis Imaging with Tumour Grade and Ki-67
Rifeng Jiang1, Wenzhen Zhu1, Jingjing Jiang1, Nanxi Shen1, Changliang Su1
1Radiology, Tongji Hospital, Tongji Medical College, HUST, Wuhan, Hubei, China
Computer 33 4383. **Differentiation of Low-Grade and High-Grade Gliomas Using a Non-Gaussian Diffusion Imaging Model**
Yi Su1,2, Ying Xiong1,4, Karen Xie1, Frederick C. Damen1, Xiaohong Joe Zhou3,5, Wenzhen Zhu1
1Center for MR Research, University of Illinois Hospital & Health Sciences System, Chicago, IL, United States; 2Bioengineering, University of Illinois at Chicago, Chicago, IL, United States; 3Radiology, Tongji Hospital, Wuhan, Hubei, China; 4Radiology, University of Illinois Hospital & Health Sciences System, Chicago, IL, United States; 5Departments of Radiology, Neurosurgery and Bioengineering, University of Illinois Hospital & Health Sciences System, Chicago, IL, United States

Computer 34 4384. **Diffusion-Weighted MR Imaging Using Mono-Exponential, Bi-Exponential and Mono-Exponential High-B Values Models in the Grading of Gliomas**
Yan Bai1, Carlos Torres2, Zhoushe Zhao1, Dandan Zheng1, Dapeng Shi1, Jie Tian4, Meiyun Wang5
1Henan Provincial People's Hospital, Zhengzhou, Henan, China; 2Department of Radiology, The Ottawa Hospital, The University of Ottawa, Ottawa, ON, Canada; 3GE Healthcare, Beijing, China; 4Institute of Automation, Chinese Academy of Sciences, Beijing, China

Computer 35 4385. **Brain Tumor Imaging Based, Histology Trained Maps (IBHTMs) of Cellularity Predict Tumor Presence in Pathologically Confirmed Regions Sampled Ex-Vivo**
Peter S. LaViolette1, Elizabeth J. Cochran1, Nikolai Mickevicius2, Jennifer Connelly4, Kathleen M. Schmainda1,3, Scott D. Rand1
1Radiology, Medical College of Wisconsin, Milwaukee, WI, United States; 2Pathology, Medical College of Wisconsin, Milwaukee, WI, United States; 3Biophysics, Medical College of Wisconsin, Milwaukee, WI, United States; 4Neurology, Medical College of Wisconsin, Milwaukee, WI, United States

Computer 36 4386. **Towards Imaging Tumor Cellularity: Diffusion Basis Spectrum Imaging (DBSI) and Amide Proton Transfer (APT)**
Chien-Yuan Eddy Lin1,2, Bing Wu2, Hung-Wen Kao1,4, Peng Sun3, Yong Wang4, Sheng-Kwei Song5
1GE Healthcare, Taipei, Taiwan; 2GE Healthcare China, Beijing, China; 3Tri-Service General Hospital, National Defense Medical Center, Taipei, Taiwan; 4Department of Biomedical Imaging and Radiological Sciences, National Yang-Ming University, Taipei, Taiwan; 5Department of Radiology, Washington University School of Medicine, St. Louis, MO, United States

Computer 37 4387. **Hierarchical Non-Negative Matrix Factorization Using Multi-Parametric MRI to Assess Tumor Heterogeneity Within Gliomas.**
Nicolas Sauven2,3, Diana Sima1,2, Sofie Van Cauter1, Jelle Verraerdt4,5, Alexander Leemans4, Frederik Maes1,2, Uwe Himmelreich4, Sabine Van Huffel1,2
1Department of Electrical Engineering (ESAT), KU Leuven, Leuven, Belgium; 2iMinds Medical IT, Leuven, Belgium; 3Department of Radiology, University Hospitals of Leuven, Leuven, Belgium; 4iMinds Vision Lab, Department of Physics, University of Antwerp, Antwerp, Belgium; 5Center for Biomedical Imaging, Department of Radiology, New York University Langone Medical Center, New York, NY, United States; 1Image Sciences Institute, University Medical Center Utrecht, Utrecht University, Utrecht, Netherlands; 2Biomedical MRI/MoSAIC, Department of Imaging and Pathology, KU Leuven, Leuven, Belgium

Computer 38 4388. **Association Between Texture Feature Ratios and Patient Survival in Glioblastoma**
Joonsang Lee1, Rajan Jain2, Kamal Khalil1, Brent Griffith1, Ryan Bosca1, Ganesh Rao1, Arvind Rao1
1Bioinformatics and Computational Biology, The University of Texas MD Anderson Cancer Center, Houston, TX, United States; 2Radiology, New York University School of Medicine, Langone Medical Center, New York, NY, United States; 3Radiology, Henry Ford Hospital, Detroit, MI, United States; 4Medical Physics, University of Wisconsin, Madison, WI, United States; 5Neurosurgery, The University of Texas MD Anderson Cancer Center, Houston, TX, United States

Computer 39 4389. **Multiparametric MRI Towards a Predictive Model to Differentiate Solitary Brain Metastasis from Glioblastoma Multiforme**
Kambiz Nael1, Adam H. Bauer1
1Medical Imaging, University of Arizona, Tucson, AZ, United States

Computer 40 4390. **Relationship of Subventricular Zone with Tumor Blood Volume, Tumor Genomics and Patient Survival in Patients with Glioblastoma : A TCGA Glioma Phenotype Research Group Project**
Brent Griffith1, Laila Poisson1, Lev Bangiyev1, Jason Huse1, Rajan Jain2
1Radiology, Henry Ford Hospital, Detroit, MI, United States; 2Radiology, Stony Brook University School of Medicine, NY, United States; 3Pathology, Memorial Sloan-Kettering Cancer Center, NY, United States; 4Radiology, NYU School of Medicine, New York, NY, United States
Currently, no noninvasive technique exists for the accurate classification of tumor grade in glioma. Tumor mechanical properties have been shown to correlate with tumor grade. The results of this study show the potential of using shear stiffness as a biomarker for tumor grade in glioma.

**Noninvasive Characterization and Staging of Glioma with MR Elastography - A Pilot Study**


Graduate School, Mayo Clinic, Rochester, MN, United States; Radiology, Mayo Clinic, MN, United States; Physiology and Biomedical Engineering, Mayo Clinic, MN, United States
Electronic Poster

Traumatic Brain Injury

Exhibition Hall  Wednesday 17:00-18:00

Computer 49  4399.  Investigation of Vigilance and Working Memory Impairment in Sport Related Concussion Patients with Functional MRI

Binjian Sun1, Thomas G. Burns2, Tricia Z. King2, Laura L. Hayes1, Ana Arenivas3, Susan McManus1, Kim E. Ono1, Richard A. Jones1, 4

1Children's Healthcare of Atlanta, Atlanta, GA, United States; 2Georgia State University, Atlanta, GA, United States; 3Kennedy Krieger Institute, Baltimore, MD, United States; 4Emory University, Atlanta, GA, United States

Computer 50  4400.  Resting State Dynamic Functional Network Analysis in Mild Traumatic Brain Injury

Wenshuai Hou1, Chandler Sours2, Joseph Jala3, Rao Gallapalli2

1ECE, University of Maryland, College Park, MD, United States; 2Department of Diagnostic Radiology and Nuclear Medicine, University of Maryland School of Medicine, MD, United States; 3ECE, University of Maryland, MD, United States

Computer 51  4401.  MRI Monitoring of Stem Cells Transplantation in Traumatic Brain Injury Mice and Its Therapeutic Potential

Sushanta Kumar Mishra1, Subash Khushu2, Gangenahalli U. Gurudutta2

1NMR Research Centre, Institute of Nuclear Medicine and Allied Sciences, DRDO, Delhi, India; 2Stem Cells Research Group, Institute of Nuclear Medicine and Allied Sciences, DRDO, Delhi, India

Computer 52  4402.  Static and Dynamic Functional Connectivity Impairments in Concussed Soldiers with and Without PTSD

D Rangaprakash1, Gopiprskhana Deshpande1, 2, Thomas A. Daniel2, Adam Goodman2, Jeffrey S. Katz, 3, Nouha Salibi1, 4, Thomas S. Denney Jr.2, 5, MAJ Michael N. Dretsch2, 5

1AU MRI Research Center, Department of Electrical and Computer Engineering, Auburn University, Auburn, AL, United States; 2Department of Psychology, Auburn University, Auburn, AL, United States; 3MR R&D, Siemens Healthcare, Malvern, PA, United States; 4National Intrepid Center of Excellence, Walter Reed National Military Medical Center, Bethesda, MD, United States; 5U.S. Army Aeromedical Research Laboratory, Fort Rucker, AL, United States

Computer 53  4403.  Identify Potentially Vulnerable Functional Networks to Concussion in Sports: A Resting-State fMRI Longitudinal Study

David C. Zhu1, Sally Nogle1, Scarlett Doyle1, Doozie Russell1, Tracey Covassin1, Randolph L. Pearson1, J Kevin DeMarco1, David I. Kaufman1

1Michigan State University, East Lansing, MI, United States

Computer 54  4404.  Dynamic Susceptibility Contrast Perfusion Imaging Revealed Asymmetric Cerebral Blood Flow in Chronic TBI Patients

Wei Liu1, 2, Jennifer Pacheco, 12, Cyrus Eierud, 12, David Joy1, 3, Justin Senesney1, 12, Ping-Hong Yeh, 12, Dominic Nathan, 12, Elyssa Sham, 12, John Ollinger, 12, Terrence Oakes, 12, Gerard Riedy, 12

1National Intrepid Center of Excellence, Walter Reed National Military Medical Center, Bethesda, MD, United States; 2National Capital Neuroimaging Consortium, Bethesda, MD, United States; 3Center of Neuroscience and Regenerative Medicine, Bethesda, MD, United States

Computer 55  4405.  Reduction of Hippocampal Blood Flow in Collegiate Football Players

Michael Zeineh1, David Douglas1, Mansi Parekh1, Eugene Wilson1, Sherveen Parivash2, Lex Mitchell3, Brian Boldt1, Wei Scott Bian1, Scott Anderson4, Andrew Hoffman2, Huy Scott Do1, Gerald Scott Grant1, Jamshid Scott Ghajar4, Greg Zaharchuk1

1Radiology, Stanford University, Stanford, CA, United States; 2Duke University, NC, United States; 3Evans Army Community Hospital, Fort Carson, CO, United States; 4Sports Medicine, Stanford University, Stanford, CA, United States; 5Internal Medicine, Stanford University, Stanford, CA, United States; 6Neurosurgery, Stanford University, Stanford, CA, United States

Computer 56  4406.  Diffusion MRI Connectometry Findings and Symptom Reporting Following Traumatic Brain Injury

Ping-Hong Yeh1, Fang-Cheng Yeh1, John Ollinger1, Elyssa B. Sham1, Bingquan Wang1, David Joy1, Justin Senesney1, Terrence R. Oakes1, Gerard Riedy1

1Henry Jackson Foundation for the Advancement of Military Medicine, Bethesda, MD, United States; 2Department of Psychology & Center for the Neural Basis of Cognition, Carnegie Mellon University, Pittsburgh, PA, United States; 3National Intrepid Center of Excellence, Bethesda, MD, United States
Approximately 20% of mild traumatic brain injury (mTBI) are sports related concussive injuries, of which nearly half show an acute reduction in NAA/Cho ratio that appears to normalize on Return to Play (RTP).

The goal of this study was to use multiparametric MRI (T2, CBF, ADC, and FA) to longitudinally characterize the acute and chronic evolution of mTBI in a mouse model. The effects of mTBI were compared with motor function scores and behavioral outcomes using the forelimb asymmetry test. Moreover, comparisons were also made with published rat mild TBI data under essentially identical conditions.

MEMRI was hyperintense in the impact area at 1-3 hrs, hypointense on days 7 and 30 after injury, and homogenous on days 60 and 90. MEMRI offers novel contrast for detecting mTBI.

Simultaneous detection of the gray matter and white matter microstructural lesions is important in understanding the sequalae following mTBI. This study explored the use of diffusion kurtosis imaging (DKI) for the detection of gray matter and white matter lesions in mTBI patients with post-concussive syndrome. The capacity and sensitivity of diffusion-derived measures, fractional anisotropy (FA) and entropy, to dynamically assess tissue damage were compared. This study suggests that entropy exhibits the sensitivity, superior to FA, in probing the structural alterations in the area with crossing fibers.

Relating clinical symptoms to brain structural changes is critical in understanding the sequalae following brain injury. This study explored the use of multi-voxel pattern analysis (MVPA) to relate self-reporting symptoms in military TBI patients to the affected white matter tracts. We applied this approach to relate self-reporting symptoms in military TBI patients to the affected white matter tracts.
The purpose of this study was to investigate the individual effects of linear and rotational accelerations on the white matter changes in high school football players using DTI. A regional and lesion load analysis of different DTI parametric maps has been investigated; we have found that when... might give us better understanding behind the strong driving forces in predicting the FA white matter changes.

Identification of structural abnormalities in chronic traumatic brain injury remains challenging because the brain... the usefulness of this toolbox in clinical settings for fast volumetric analysis without complex post-processing steps.

Using diffusion-weighted MR imaging, a single subject-based approach is proposed here to detect athletes exhibiting... observed in the second half of the season, relative to the pre-season measures, for most asymptomatic soccer players.

In this study, we investigate the effect of seed-placement on the ability to identify reorganized brain networks using resting-state fMRI in a patient with hemorrhagic traumatic axonal injury lesions.

Effects of Linear and Rotational Head Impact on White Matter Changes in High School Football Players

Multi-Parameter Mapping of the Human Cervical Spinal Cord in Brachial Plexus Root Implantation
Using an image registration approach, we assess the spatial correlation between ex vivo myelin water fraction (MWF) and... cords injected with media alone, whereas Dtrans did not detect any statistically significant differences between groups.

Within-subject registration of spinal cord data is a difficult problem because the articulated nature of the spine can... than volume-based transformations and benefit from regularization in comparison with slice-by-slice techniques.

This study demonstrates a novel rsfMRI application to investigate the spinal cord. We found extensive functional networks... spatial resolution, validate the functional networks and to map connectivity of the entire spinal cord to the brain.

We propose a novel method for segmenting the spinal cord gray and white matter using atlas-based deformation. The main... is the accurate parcellation of the atlas of white matter tracts for quantifying multi-parametric MRI metrics.

Brachial plexus avulsion (BPA) may lead to paralysis and anaesthetic of the corresponding arm. Re-implantation of... In patients, the relationship between measured quantitative parameters and clinical outcome measures is explored.

MRI Investigation of Functional Connectivity in the Human Spinal Cord
Oscar San Emeterio Nateras1, Fang Yu2, Eric R. Muir3, 4, Carlos Bazan III2, 4, Crystal G. Franklin4, Wei Li3, 4, Jack L. Lancaster4, 5, Jinqi Li2, 4, Timothy Q. Duong3, 4
1Biomedical Engineering, University of Texas at San Antonio, San Antonio, TX, United States; 2Radiology, University of Health Science Center at San Antonio, TX, United States; 3Ophthalmology, University of Health Science Center at San Antonio, TX, United States; 4Research Imaging Institute, San Antonio, TX, United States

Slice-By-Slice Regularized Registration for Spinal Cord MRI: SliceReg
J. Cohen-Adad1, 2, S. Lévy1, B. Avants1
1Institute of Biomedical Engineering, Polytechnique Montreal, Montreal, QC, Canada; 2Functional Neuroimaging Unit, CRU, UCL/UCLH Biomedical Research Centre (BRC), London, England, United Kingdom

Whole Post-Mortem Spinal Cord Imaging with Diffusion-Weighted Steady State Free Precession at 7T
Sean Foxley1, Jeroen Molink1, Olaf Ansorge2, Connor Scott1, Saad Jbabdi1, Richard Yates2, Gabriele De Luca2, Karla Miller1
1FMRIB Centre, University of Oxford, Oxford, OXON, United Kingdom; 2Nuffield Department of Clinical Neurosciences, University of Oxford, Oxford, OXON, United Kingdom

Comparison Between Histology and MRI Markers of White Matter Damage in Confused Rat Spinal Cords Treated with Transplanted Schwann Cells: Correlation Analysis Based on Image Registration
Andrew C.H. Yung1, Peggy Asstneck2, Di Leo Wu3, Jie Liu4, Shaalee Dworski5, Freda Miller6, Wolfram Tetzlaff5, 6, Piotr Kozlowski5, 6
1UBC MRI Research Centre, University of British Columbia, Vancouver, BC, Canada; 2ICORD, Vancouver, BC, Canada; 3Physics, University of British Columbia, Vancouver, BC, Canada; 4Hospital for Sick Children, Toronto, ON, Canada; 5Zoology, University of British Columbia, Vancouver, BC, Canada
Comparison of White Matter Damage Progression in Dislocation Versus Contusion Injury in Rat Spinal Cord Using Longitudinal Diffusivity Measurements
Andrew C.H. Yang1, Stephen Mattucci2, Barry Bohnet3, Jie Liu2, Wolfram Tetzlaff2, Piotr Kozlowski1, Thomas Oxland2
1UBC MRI Research Centre, University of British Columbia, Vancouver, BC, Canada; 2ICORD, Vancouver, BC, Canada; 3UBC MRI Research Centre, University of British Columbia, Vancouver, BC, Canada

3D Brachial Plexus Imaging: Comparison Between STIR and Two Point Dixon Technique
Mitsuharu Miyoshi1, Shigeo Okuda1, Masahiro Jinzaki2, Atsushi Nozaki1, Hiroyuki Kabasawa1
1Global MR Application and Workflow, GE Healthcare Japan, Hino, Tokyo, Japan; 2Department of Diagnostic Radiology, Keio University School of Medicine, Tokyo, Japan
**Electronic Poster**

### Myocardial Tissue Differentiation

**Exhibition Hall**

**Thursday 10:30-11:30**

#### Computer 1 4447. High-Resolution Three-Dimensional ANGIE T1 Mapping of the Heart

*Bhavat Bin Mehta¹, 2, Michael Salerno, ³, 4, Frederick H. Epstein¹, 4*

¹Department of Biomedical Engineering, University of Virginia, Charlottesville, VA, United States; ²Department of Medicine, Cardiology Division, University of Virginia, Charlottesville, VA, United States; ³Department of Radiology and Medical Imaging, University of Virginia, Charlottesville, VA, United States; ⁴Northrise University HealthSystem, Evanston, IL, United States

#### Computer 2 4448. Evaluation of Extracellular Volume with Limited T1 Mapping Planes Using MOLLI Technique

*Wei Li¹, 4, Eugene Dunkle, ³, Claire Feczko, ³, Shivraman Giri⁴, Edelman R. Robert¹*

¹Northrise University HealthSystem, Evanston, IL, United States; ²Northrise University HealthSystem, IL, United States; ³Global Applied Science Laboratory, GE Healthcare, Menlo Park, CA, United States; ⁴Global Applied Science Laboratory, GE Healthcare, Hino, Japan

---

**Computer 90 4440. Isotropic Volumetric Imaging of Lumbar and Brachial Plexus Using Outer Volume Suppression CUBE MSDE**

*Masaaki Hori¹, 2, Ryuji Nojiri², Katsutoshi Murata³, Yuichi Suzuki⁴, Koji Kamagata¹, Mariko Yoshida¹, Kouhei Anand Kumar Venkatachari¹, Suchandrima Banerjee², Mitsuharu Miyoshi, Ajit Shankaranarayanan⁵, William Dillon⁶, Sharmila Majumdar⁷, Christopher Hess⁸*

¹Radiology and Biomedical Imaging, University of California San Francisco, San Francisco, CA, United States; ²Global Applied Science Laboratory, GE Healthcare, Menlo Park, CA, United States; ³Global Applied Science Laboratory, GE Healthcare, Hino, Japan; ⁴Neuroradiology, University of California San Francisco, San Francisco, CA, United States

#### Computer 91 4441. Resting State Spinal Cord Functional Connectivity at 3 Tesla

*Robert L. Barry¹, ², Seth A. Smith¹, ², John C. Gore³*

¹Vanderbilt University Institute of Imaging Science, Nashville, TN, United States; ²Radiology and Radiological Sciences, Vanderbilt University Medical Center, Nashville, TN, United States

#### Computer 92 4442. Investigating Functional-Structural Correlations in the Cervical Spinal Cord In Vivo

*Moreno Pasin¹, Marios C. Yiannakas¹, Ahmed T. Toosy², Claudia A M Wheeler-Kingshott¹*

¹NMR Research Unit, Department of Neuroinflammation, Queen Square MS Centre, ²UCL Institute of Neurology, London, England, United Kingdom; ³Department of Brain Repair and Rehabilitation, UCL Institute of Neurology, London, England, United Kingdom

#### Computer 93 4443. Comparison Between DTI, MWF, and Frequency Shift Mapping in Assessing White Matter Damage of Spinal Cord

*Evan I-Wen Chen¹, ², Jie Liu², Vanessa Wiggermann², Andrew Yang¹, Alexander Rauscher³, ⁴, Piotr Kozlowski¹, ³*

¹MRI Research Center, Vancouver, BC, Canada; ²International Collaboration On Repair Discoveries, Vancouver, BC, Canada; ³Radiology, University of British Columbia, Vancouver, BC, Canada

#### Computer 94 4444. Optimization of Spinal Cord NODDI Protocol with Multi-Band EPI for Clinical Use

*Masaaki Horii¹, ², Ryuii Nojiri², Katsutoshi Murata², Yuichi Suzuki², Koji Kamagata², Mariko Yoshida², Kouhei Tsuruta, ²⁵, Keichi Ishigame², Shigeki Aoki²*

¹Radiology, Juntendo University School of Medicine, Tokyo, Japan; ²Tokyo Medical Clinic, Tokyo, Japan; ³Siemens Japan K.K., Tokyo, Japan; ⁴Radiology, The University of Tokyo Hospital, Tokyo, Japan; ⁵Department of Health Science, Graduate School of Human Health Sciences, Tokyo Metropolitan University, Tokyo, Japan

#### Computer 95 4445. Velocity Phase Imaging with Simultaneous Multi-Slice EPI Reveals Respiration Driven Motion in Spinal CSF

*Alexander Beckett¹, ², Liyong Chen², ², Ajay Verma², David A. Feinberg¹, ²*

¹Helens Wills Neuroscience Institute, University of California, Berkeley, CA, United States; ²Advanced MRI Technology, Sebastopol, CA, United States; ³Biogen Idec, MA, United States

#### Computer 96 4446. The Comparative Research of Different Sequences on Lumbosacral Nerve Roots with 3.0T MR

*Yunlong Song¹, Lihua Sun¹, Guangnan Quan², Lizhi Xie²*

¹Department of CT & MRI, Air Force General Hospital, Beijing, China; ²GE Healthcare China, Beijing, China
Computer 3  4449. **Improving the Precision of Arrhythmia-Insensitive Rapid (AIR) T1 Mapping Through Optimization of Saturation Recovery Time Delay**  
Kyle Erjin Jeong¹, ², Kyunggyo Hong¹, ², Daniel Kim³  
¹Bioengineering Department, University of Utah, Salt Lake City, UT, United States; ²Utah Center for Advanced Imaging Research, University of Utah, Salt Lake City, UT, United States; ³Department of Radiology, University of Utah, UT, United States

Computer 4  4450. **Prognostic Value of Hypointense Cores Within Chronic Myocardial Infarctions on Balanced Steady-State Free Precession MRI for the Prediction of Malignant Ventricular Arrhythmias**  
Ivan Cokic¹, Avinash Kali², Hsin-Jung Yang³, Raymond Yee⁴, Richard Tang⁵, Mourad Tighiouart⁶, Xunzhang Wang⁷, Warren M. Jackman⁸, Sumeet S. Chugh⁹, James A. White⁸, Rohan Dharamkumar⁹  
¹Biomedical Sciences - BIRI, Cedars-Sinai Medical Center, Los Angeles, CA, United States; ²Department of Medicine - Division of Cardiology, London Health Sciences Centre, London, ON, Canada; ³Biostatistics and Bioinformatics Research Center, Cedars-Sinai Medical Center, Los Angeles, CA, United States; ⁴Cedars-Sinai Heart Institute, Cedars-Sinai Medical Center, Los Angeles, CA, United States; ⁵Heart Rhythm Institute, University of Oklahoma, Oklahoma City, OK, United States; ⁶Department of Cardiac Sciences, University of Calgary - Stephenson Cardiac Imaging Centre, Calgary, AB, Canada

Computer 5  4451. **Free-Breathing Myocardial 3D T1 Mapping Using Inversion Time Specific Image-Based Respiratory Navigators**  
Markus Henningsson¹, Rene Botnar¹, Tobias Voigt, ²  
¹Division of Imaging Sciences and Biomedical Engineering, King's College London, London, United Kingdom; ²Clinical Research Europe, Philips Research, Hamburg, United Kingdom

Computer 6  4452. **Assessment of Acute Cryo and RF Ablation Lesions by Non-Contrast and Contrast Enhanced MRI Techniques: Similarities and Differences**  
Eugene G. Kholmovski¹, Ravi Ranjan², Joshua Silvernagle², Nasser F. Marrouche²  
¹UCAIR, Department of Radiology, University of Utah, Salt Lake City, UT, United States; ²CARMA Center, University of Utah, Salt Lake City, UT, United States

Computer 7  4453. **Non-Contrast MRI for Assessing Myocardial Fibrosis: Initial Study in a Canine Model of Myocardial Reperfusion After Drug Treatments**  
Jie Zheng¹, Qian Yin², David Muccigrosso², Ridong Chen², Dana Abendschein²  
¹Radiology, Washington University School of Medicine, Saint Louis, MO, United States; ²APT Therapeutics, Saint Louis, MO, United States; ³Cardiology Division, Washington University School of Medicine, Saint Louis, MO, United States

Computer 8  4454. **T1p-Mapping of the Heart in a Single Breath-Hold**  
Joep van Oorschot¹, Hamza El Aidi², Freddy Visser², Peter Luijten¹, Tim Leiner¹, Jaco Zwanenburg¹  
¹University Medical Center Utrecht, Utrecht, Netherlands; ²Philips Healthcare, Best, Noord-Brabant, Netherlands

Computer 9  4455. **Geometrical Complexity of Left Ventricular Endocardial Border Measured by Fractal Analysis: A Comprehensive Study**  
Andrea S. Dell'Aquila¹, Sofia A. Papadopoulou¹, Sanjay Sharma¹, Lisa J. Anderson¹, Taigang He¹  
¹Cardiovascular Sciences Research Centre, St George's, University of London, London, Greater London, United Kingdom

Computer 10  4456. **Oxygen-Enhanced T2* Cardiac Magnetic Resonance Imaging in Non-Ischemic Cardiac Diseases**  
Satoshi Kawanami¹, Michinobu Nagao¹, Masato Yonezawa², Yaze Yamasaki², Takeshi Kamitani³, Torahiko Yamanouchi³, Tomomi Ide³, Ryohi Funatsu³, Hidetake Yabuuchi³, Hiroshi Honda³  
¹Molecular Imaging & Diagnosis, Kyushu University, Graduate School of Medicine, Fukuoka, Japan; ²Clinical Radiology, Kyushu University, Graduate School of Medicine, Fukuoka, Japan; ³Cardiovascular Medicine, Kyushu University, Graduate School of Medicine, Fukuoka, Japan; ⁴Radiological Technology, Kyushu University Hospital, Fukuoka, Japan; ⁵Health Sciences, Kyushu University, Graduate School of Medicine, Fukuoka, Japan

Computer 11  4457. **Feasibility Analysis of the Chemical Exchange and T1 Measurement Using Progressive Saturation (CUPS) Method for In Vivo Application to Human Myocardium**  
David A. Reiter¹, Mustapha Bouhrara¹, Richard G. Spencer¹  
¹Laboratory of Clinical Investigation, NIH; National Institute on Aging, Baltimore, MD, United States
Myocardial hemorrhage is a frequent complication in acute myocardial infarction; however, its impact on the remote tissue depends on whether this hemorrhage is associated with remote infarction. It has been suggested that hemorrhage may lead to the formation of reactive fibrosis and can cause alterations in T1 relaxation time. We hypothesized that hemorrhage could alter T2 BOLD response in remote myocardium following acute myocardial infarction. 

**Methods and Results**: Hemorrhage was observed in 3 out of 20 pigs following infarction. The T2 BOLD response was measured in remote myocardium using a contrast-enhanced T1-weighted (T1W) MRI protocol. Hemorrhage was associated with increased T2 BOLD signal, indicating altered tissue oxygenation. The magnitude of the T2 BOLD signal was correlated with the amount of hemorrhage present.

**Conclusion**: Hemorrhage following acute myocardial infarction can alter T2 BOLD response in remote myocardium, suggesting that hemorrhage may contribute to the formation of reactive fibrosis and altered tissue oxygenation in remote myocardium.
We enrolled 11 patients with chronic thromboembolic pulmonary hypertension and one with idiopathic pulmonary arterial hypertension. Improvement of left ventricular strain with reduction of mean pulmonary arterial pressure in pulmonary hypertension: treatment effect independent of right ventricular volumetric parameters. Efficient radial tagging: undersampled radial acquisition with polar Fourier transform reconstruction. Assessment of diffuse ventricular fibrosis in atrial fibrillation using extracellular volume fraction mapping: initial study. Early detection of doxorubicin induced diffuse myocardial fibrosis by contrast enhanced magnetic resonance imaging in rabbit model: compared with histology and electron microscopy. Our findings suggest that tissue phase mapping with low temporal resolution may serve as an alternative in quantifying cardiac motion for subjects who cannot hold the breath for a long time. Quantification of the global cardiac function from the tagged images is challenging due to the anatomy obstruction by the anatomic structures. In radial tagging, the information of taglines required for strain imaging is located on a donut-shaped region in k-space. Exhibition Hall Thursday 10:30-11:30
Patients with non-obstructive coronary artery disease may have abnormal myocardial perfusion reserve (MPR) resulting in ... demonstrate an abnormal stress endocardial to epicardial perfusion gradient as well as abnormal MPR in these patients.

We investigated the functional impact of combined intramyocardial transplantation of cardiomyocytes, endothelial cells, ... patch group. The Kpcr→ATP in the border zone is slightly increased in cell treated group compared with patch only group.

HARP is a commonly used technique for analyzing tagged images. Nevertheless, HARP tracking of the material points fails ... on numerical phantom and in-vivo images. The results show that BPOF is superior to HARP in tracking boundary taglines.

Conventional 2D cine requires long scan time and is not reformattable. Breathhold 3D cine suffers from reduced contrast ... is more robust than breathhold 3D cine and enables 3D imaging with isotropic resolution and thus offline reformatt ing.

A method is presented for detecting regional wall motion abnormality based on capturing the variation in myocardial ... tool for automatic and fast determination of regional wall motion abnormality from conventional untagged cine images.

Cardiac MRI provides important structural and functional information. However routine quantitative analysis of cine MRI ... for evaluating bi-atrial and biventricular interactions simultaneously that may be important in various disease states.

A novel approach to comprehensive atrio-ventricular functional analysis
Xiaoxia Zhang1,2, Nikhil Jha1, Himanshu Gupta1, Nouha Salibi2,3, Thomas Jr. Denney1,2
1Department of Electrical and Computer Engineering, Auburn University, Auburn, AL, United States; 2AU MRI Research Center, Auburn University, Auburn, AL, United States; 3Department of Medicine, Division of Cardiovascular Disease, University of Alabama at Birmingham, Birmingham, AL, United States; 4MR R&D, Siemens Healthcare, Malvern, PA, United States

Normalized wall thickening patterns for detecting cardiac functional abnormality from cine MRI images
Mai Waed1, El-Sayed H. Ibrahim2, Ahmed Fahmy3
1Nile University, Cairo, Egypt; 2University of Michigan, Ann Arbor, MI, United States

Left ventricular (LV) volume based indices for the evaluation of diastolic function using high frame rate cine SSFP imaging: Direct comparison with doppler echocardiography
Jiming Zhang1, Amol Pednekar2, Jie Chen1, Claudio Arena1, Debra Dees1, Benjamin Cheong1, Raja Muthupillai1
1Diagnostic and Interventional Radiology, CHI St Luke's Health, Houston, TX, United States; 2Philips Healthcare, Houston, TX, United States

Free breathing variable flip angle balanced SSFP cardiac cine imaging with reduced SAR at 3T
Subashini Srinivasan1,2, Randall M. Krocke1, Adam Plotnik1, Simon Gabriel1, Nancy Halnon1, Peng Hu1, J. Paul Finn1, Daniel B. Ermis1,2
1Department of Radiological Sciences, University of California, Los Angeles, CA, United States; 2Department of Bioengineering, University of California, Los Angeles, CA, United States; 3Siemens Healthcare, Malvern, PA, United States; 4Department of Pediatrics, University of California, Los Angeles, CA, United States

Robust free-breathing whole-heart cine MRI using multi-slab 3D acquisition with isotropic resolution and offline reformattability
Peng Lai1, Joseph Y. Cheng1, Shreyas S. Vasanawala2, Anja CS Brau1
1Global MR Applications & Workflow, GE Healthcare, Menlo Park, CA, United States; 2Radiology, Stanford University, CA, United States; 3Global MR Applications & Workflow, GE Healthcare, Munich, Germany

Can we rely on the new 1T “benchtop” systems for investigating cardiac function and viability?
Daniel James Stucker1, Thomas A. Roberts1, Laurence H. Jackson1, Rajiv Ramasawmy1, Valerie Taylor1, Anna L. David1, Bernard Siow*1, Mark F. Lythgoe*1
1Centre for Advanced Biomedical Imaging, UCL - University College London, London, United Kingdom; 2Institute for Women’s Health, UCL - University College London, London, United Kingdom

Evaluation of myocardial eulerian strain using bandpass optical flow. Comparison to harmonic phase imaging
Azza Hassanein1, Ayman Khalifa1, El-Sayed H. Ibrahim2
1Helwan University, Cairo, Egypt; 2University of Michigan, Ann Arbor, MI, United States

Heterogeneity of myocardial ATP flux rate via CK In Vivo Porcine Hearts with HiPSC Tri-Lineage Cell Transplantation Using 2D CSI P-31 MR Spectroscopy
Weina Cui1, Lei ye1, Albert Jang1, Pengyuan Zhang1, Qiang Xiong1, Jianyi Zhang1
1Department of Medicine/cardiology, University of Minnesota, Minneapolis, MN, United States

High resolution quantitative spiral CMR perfusion imaging demonstrates a reduced endocardial to epicardial perfusion gradient and myocardial flow reserve in patients with microvascular disease
Michael Salerno1,2, Yang Yang1, Peter Shaw4, Angela Taylor1, Craig Meyer1, Fred Epstein1, Christopher Kramer45
1Medicine, Cardiology, University of Virginia, Charlottesville, VA, United States; 2Radiology, University of Virginia, Charlottesville, VA, United States; 3Biomedical Engineering, University of Virginia, VA, United States; 4Medicine, Cardiology, University of Virginia, VA, United States; 5MRI, University of Virginia, VA, United States

Prospectively accelerated CMR first-pass perfusion imaging in patients with suspected heart disease
Xiao Chen1, Michael Salerno2,3, Christopher M. Kramer3,4, Bhairav B. Mehta1, Yang Yang1, Peter Shaw4, Frederick H. Epstein1
1Radiology, University of Virginia, VA, United States; 2Department of Radiology, University of Virginia, VA, United States; 3Global MR Applications & Workflow, GE Healthcare, Munich, Germany; 4MR R&D, Siemens Healthcare, Malvern, PA, United States; 5Medical Engineering, University of Virginia, VA, United States
A Novel Fully Automatic Motion Correction Scheme for Cardiac Perfusion MR Images Using Group-Wise Non-Rigid Registration
Sandeep Kaushik, Dattehs Shanhag, Anne Menini, Sheshadri Thiruvenkadham, Stephanie Reiter, Tobias Heer, Günter Pile, Anja Brau
1Medical Image Analysis Lab, GE Global Research, Bangalore, Karnataka, India; 3GE Global Research, Garching, Bavaria, Germany; 5GE Healthcare, Garching, Bavaria, Germany

FLASH Proton Density Imaging for Improved Surface Coil Intensity Correction in Quantitative and Semi-Quantitative SSFP Myocardial Perfusion Imaging
Sonia Nielles-Vallespin, Peter Kellman, Li-Yueh Hsu, Andrew E. Arai
1National Institutes of Health, Bethesda, MD, United States

Reducing Dark-Rim Artifacts in Free-Breathing First-Pass Perfusion Cardiac MRI with Cartesian Sampling and Instantaneous Image Reconstruction
Zhengwei Zhou, Xiaoming Bi, Hsin-Jung Yang, Rohan Dharmakumar, Reza Arsanjani, C Noel Bairey Merz, Daniel Berman, Debiao Li, Behzad Sharif
1Biomedical Imaging Research Institute, Cedars-Sinai Medical Center, Los Angeles, CA, United States; 2Cedars-Sinai Medical Center, Los Angeles, CA, United States; 3Cedars-Sinai Heart Institute, Los Angeles, CA, United States; 4Lawson Health Research Institute, ON, Canada; 5IMT Lucca Institute, Lucca, Italy

Through-Plane Dark-Rim Artefacts in 3D First-Pass Perfusion
Merlin J. Fair, Peter D. Gatehouse, David N. Firmin
Improving Flow Characterization in SNAP with K-Space Acquisition Reordering

Jinnan Wang1, Haining Liu2, Zechen Zhou2, Niranjan Bahl2, Thomas S. Hatsuakami2, Jin Liu2, Peter Boernert4, Chun Yuan2

1Philips Research North America, Seattle, WA, United States; 2University of Washington, Seattle, WA, United States; 3Tsinghua University, Beijing, China; 4Philips Research Europe, Hamburg, Germany

Non-Contrast-Enhanced Peripheral Venography Using Velocity-Selective Magnetization Preparation and Transient Balanced SSFP

Taehoon Shin1, Seth J. Kligerman1, Robert S. Crawford2, Sanjay Rajagopalan3, Rao P. Gullapalli1

1Radiology, University of Maryland, Baltimore, MD, United States; 2Vascular Surgery, University of Maryland, MD, United States

Non-Contrast MRA in PAD Patients: Diagnostic Comparison of QISS, ECG-FSE, and QIR Techniques

Christopher J. Hanrathan1, Marc Lindley1, Michelle Mueller2, Daniel Sommers2, Marta E. Heilbrun1, Glen Morrell1, Daniel Kim1, Vivian S. Lee1

1Radiology, UCAIR, University of Utah School of Medicine, Salt Lake City, UT, United States; 2Vascular Surgery, University of Utah School of Medicine, Salt Lake City, United States

Comprehensive Arterial Assessment in Diabetic Patients Using Combined Quiescent Interval Single Shot (QISS) Imaging for Leg Imaging and QISS-Arterial Spin Labeled MRA for Pedal Imaging: Preliminary Experience with Comparison to DSA

Ruth P. Lim1, 2, Adrienne CY Lam1, Matthew Lukies1, Dinesh Ranatunga1, Emma K. Horney1, Brenden McColl1, Yuliya Perchyonok1, 2, Jason Chen2, 3, Jason Heidrich1, Pei-Heng Ko3, Robert R. Edelman2

1Radiology, Austin Health, Melbourne, Victoria, Australia; 2The University of Melbourne, Melbourne, Victoria, Australia; 3Vascular Surgery, Austin Health, Melbourne, Victoria, Australia; 4Radiology, NorthShore University Health System, Chicago, IL, United States

Comparison of 3D Non-Contrast Enhanced Foot MR Angiography Using Steady-State Free Precession with Single and Multi-Directional FSD Modules Preparation

Na Zhang1, 2, Zhaoyang Fan1, Xin Liu2, 3

1Lauterbur Research Center for Biomedical Imaging, Shenzhen Institutes of Advanced Technology of Chinese Academy of Sciences, Shenzhen, Guangdong, China; 2Shenzhen Key Laboratory for MRI, Shenzhen, Guangdong, China; 3Biomedical Imaging Research Institute, Cedars-Sinai Medical Center, Los Angeles, CA, United States

Velocity-Selective Magnetization-Prepared Non-Contrast-Enhanced Cerebral MR Angiography at 3T

Qin Qin1, 2, Taehoon Shin3, Michael Schar1, Hua Guo4, Ye Qiao1

1Radiology, Johns Hopkins University, Baltimore, MD, United States; 2Kirby Center, Kennedy Krieger Institute, Baltimore, MD, United States; 3Radiology, University of Maryland, Baltimore, MD, United States; 4Center for Biomedical Imaging Research, Biomedical Engineering, Tsinghua University, Beijing, China

Velocity-Selective Magnetization-Prepared Non-Contrast-Enhanced Peripheral MR Angiography at 3T

Taehoon Shin1, Qin Qin1, Jang-Yeon Park2, Sanjay Rajagopalan3

1Diagnostic Radiology, University of Maryland, Baltimore, MD, United States; 2Radiology, Johns Hopkins University, Baltimore, MD, United States; 3Biomedical Engineering, Sungkyunkwan University, Suwon, Gyeonggi-do, Korea; 4Cardiology, University of Maryland, Baltimore, MD, United States

3D TOF MR Angiography Using Combined Compressed Sensing and Parallel Imaging with Coil Compression

Naoyuki Takei1, Kevin F. King2, Adriana Kanwischer2, Hiroyuki Kabasawa2

1GE Healthcare, Hino, Tokyo, Japan; 2GE Healthcare, WI, United States; 3GE Healthcare, Hino, Tokyo, Japan
Vascular imaging is an important step in the assessment of stroke; however, optimal evaluation of the neck vasculature is challenging. After the image quality was optimized, patients were recruited to demonstrate feasibility in the clinical setting.


Allison Grayev1, Utaroh Motosugi1, 2, Peter Bannas1, 3, Naoyuki Takei4, 5, Kevin King4, Kang Wang6, James Holmes7, Scott Reeder8, 9, Aaron Field1

1Department of Radiology, University of Wisconsin, Madison, WI, United States; 2Department of Radiology, University of Yamanashi, Yamanashi, Japan; 3Department of Radiology, University Hospital Hamburg-Eppendorf, Hamburg, Germany, Germany; 4Global MR Applications and Workflow, GE Healthcare, Hino, Japan; 5Global MR Applications and Workflow, GE Healthcare, Waukesha, WI, United States; 6Global MR Applications and Workflow, GE Healthcare, Madison, WI, United States; 7Department of Medical Physics, University of Wisconsin, Madison, WI, United States; 8Department of Radiology; Department of Medical Physics, University of Wisconsin, Madison, WI, United States; 9Department of Biomedical Engineering and Medicine; Department of Emergency Medicine, University of Wisconsin, Madison, WI, United States
### Electronic Poster

**Computer 65 4511.** Dietary Intake Enhances the Visualization of MR Portography Using Non-Contrast-Enhanced Time-Spatial Labeling Inversion Pulse (Time-SLIP) - Evaluation of Temporal Change After Meal to Determine an Appropriate Examination Timing -

Hiroki Matoba1, Akiyoshi Yamamoto1, Yuji Shintani1, Daiji Uchiyama1, Seigo Yoshida1, Katsumi Nakamura,1,2, Mitsue Miyazaki1
1Radiology, Tobata Kyoritsu Hospital, Kitakyusyu, Fukuoka, Japan; 2Radiology, Hikari Central Hospital, Hikari, Yamaguchi, Japan; 3Toshiba Medical Research Institute USA, Vernon Hills, IL, United States

**Computer 66 4512.** Fat Saturation Improves Fresh Blood Imaging of Peripheral Vessels in the Calf Station

Marc D. Lindley2, Daniel Kim1, Glen Morrell1, Marta E. Heilbrun1, Christopher J. Hannahan1, Vivian S. Lee1
1UCAIR, Radiology, University of Utah, Salt Lake City, UT, United States; 2Bioengineering, UT Dallas, Dallas, TX, United States; 3Advanced Imaging Research Center, UT Southwestern Medical Center, Dallas, TX, United States

**Computer 67 4513.** Velocity Selective Prepared Non-Contrast Enhanced MR Angiography Using Phase Sensitive Reconstruction

Xinzeng Wang1, Joshua S. Greer1,2, Shu Zhang1, Ananth J. Madhuranthakam1,2
1Radiology, UT Southwestern Medical Center, Dallas, TX, United States; 2Bioengineering, UT Dallas, Dallas, TX, United States; 3Bioengineering, UT Dallas, Dallas, TX, United States

**Computer 68 4514.** High Resolution, First Pass 3D Gadolinium-Enhanced Venography of the Jugular Veins: Application to Multiple Sclerosis

Andrew J. Walsh1, Derek J. Emery2, Ken Warren3, Ingrid Catz3, Alan H. Wilman1
1Biomedical Engineering, University of Alberta, Edmonton, Alberta, Canada; 2Radiology and Diagnostic Imaging, University of Alberta, Edmonton, Alberta, Canada; 3Neurology, University of Alberta, Edmonton, Alberta, Canada

**Computer 69 4515.** Positive Contrast High-Resolution 3D-Cine Imaging of the Cardiovascular System in Small Animals Using a UTE Sequence and Iron Nanoparticles at 4.7, 7 and 9.4 T

Aurélien Julien Trotier1, William Lefrancois1, Kris Van Renterghem1, Jean-Michel Franconi1, Eric Thiadière1, Sylvain Miraux1
1RMSB-UMR5536, CNRS - Université de Bordeaux, Bordeaux, Aquitaine, France

**Computer 70 4516.** The Effects of Injection Rate on Vascular Signal Intensity Profile in a Porcine Model Using Four Gadolinium Contrast Agents: Comparison Between Observation and Prediction Based on Measured Blood Relaxivity Values

Jeffrey H. Maki1, Guenther Schneider1, Alexander Massmann1, Matthias Leist2, Diane Wagner-Jochem2, Gregory J. Wilson1
1Radiology, University of Washington, Seattle, WA, United States; 2Radiology, University Hospital of Saarland, Homburg, Germany

**Computer 71 4517.** An MRI-Based CFD Analysis of Flow Patterns in the Jugular Vein

Evan Kao1,2, Farshid Faraji1, Sarah Kefayati1, Van Halbach1, Matthew Amans1, David Saloner1
1Radiology, UCSF, San Francisco, CA, United States; 2Bioengineering, UC Berkeley, Berkeley, CA, United States

**Computer 72 4518.** angioCEST: Using TmDOTMA Liposomes and Chemical Exchange Saturation Transfer for MR Angiography

Todd C. Soesbe1,2, Ketan B. Ghaghada1, S. James Ratnakar1, Chandreshkumar Patel1, Mark Milne1, A. Dean Sherry4, Robert E. Lenkinski1
1Advanced Imaging Research Center, UT Southwestern Medical Center, Dallas, TX, United States; 2Department of Radiology, UT Southwestern Medical Center, Dallas, TX, United States; 3Texas Children's Hospital, Houston, TX, United States; 4Department of Chemistry, University of Texas at Dallas, Dallas, TX, United States

### Electronic Poster

**Vessel Wall & Cardiovascular Image Processing**

**Exhibition Hall**

**Thursday 11:30-12:30**

**Computer 1 4519.** Effect of BOLD Contrast on Myocardial Registration

Ilkay Oksuz1, Anirban Mukhopadhyay1, Marco Bevilacqua1, Hsin-Jung Yang2,3, Rohan Dharmakumar2, Sotirios A. Tsaftaris1
1IMT Institute for Advanced Studies, Lucca, Tuscany, Italy; 2Biomedical Research Institute, Cedars Sinai Medical Center, Los Angeles, CA, United States; 3Medicine, University of California, Los Angeles, CA, United States; 4Electrical Engineering and Computer Science, Northwestern University, IL, United States
In this abstract we propose an integer optimization based method for unwrapping harmonic phase from tagged cardiac MR images. The method is designed for pre-processing of tagged MR images to derive biventricular cardiac strains.

Motion induced artifact is a common cause of unsatisfactory image quality in carotid artery imaging. This study evaluated an iterative motion correction approach for carotid vessel wall imaging.

Respiratory motion is a challenge in free-breathing whole-heart coronary MR angiography. This study proposes a prediction method for respiratory motion using machine learning techniques.

A 3D super-resolution technique was developed to improve image resolution and quality of whole-heart coronary MRA by utilizing graphical processing unit.

Software for multi-average processing in neonatal cardiac imaging was presented, which allows for improved image quality in neonatal cardiac MRI.

Retrospective motion correction for carotid vessel wall imaging was introduced, which can improve image quality in carotid artery imaging.

Artifact removal in carotid imaging based on motion measurement using structured light was introduced.

Data driven feature learning for representation of myocardial BOLD MR images was presented, which can improve the accuracy of myocardial ischemia detection.

Dictionary-based support vector machines for unsupervised ischemia detection at rest with CP-BOLD cardiac MRI were introduced, which can improve the accuracy of ischemia detection.

An integer optimization technique for measuring biventricular cardiac strain from tagged MR images was introduced, which can improve the accuracy of strain measurement.
The physiologically shaped sinus prosthesis (Uni-Graft® W SINUS, Braun) should preserve near-normal pressure gradients. The Venturi effect could be demonstrated across the aortic valve with a pressure drop in the bulb in peak systole.

Previous studies suggested that the hemodynamics of the Fontan connection may play a role in the outcome of Fontan surgery. Image type differences might lead to significant differences in the estimated lumen diameters, flows, and subsequently power losses.

Quantitative myocardial T2 mapping sequences generally use a breath-hold ECG-triggered T2-prepared steady-state free precession (SSFP) imaging of the heart. Myocardial T2 mapping and to evaluate its impact on in vivo reproducibility and spatial variability of myocardial T2.

Late gadolinium-enhanced (LGE) images could be derived from a post-contrast cardiac T1 map using the Bloch equation. Synthetic LGE images derived automatically from cardiac T1 mapping using K-Means clustering of T1: Virtual TI scout approach.

Cardiac T1 mapping sequences are conducted with breath-holding and ECG-gating to acquire multiple T1-weighted images. Gated, Free-Breathing Arrhythmia-Insensitive-Rapid (AIR) Cardiac T1 Mapping with Motion-Corrected Registration.

Synthetic LGE derived automatically from cardiac T1 mapping using K-Means Clustering of T1: Virtual TI scout approach.

Motion Correction of Free Breathing Quantitative T2 Mapping: Impact on Reproducibility and Spatial Variability.

The influence of geometric and in-flow boundary conditions on patient-specific computational fluid dynamics in a Fontan patient population.

In-vivo systolic pressure gradients across the aortic root in patients with a physiologically shaped sinus prosthesis and healthy volunteers analyzed by 4D flow MRI.
Iterative image reconstruction in which magnitude and phase are regularized separately was implemented to improve ... led to reduced directional error and divergence, increased streamline length and improved vector field visualization.

Electronic Poster

Let It Flow

Computer 19 4537. 3D Cine Atherosclerotic Plaque Images Using 3D Stack of Stars Trajectory Acquisition and Ciné Reconstruction Method Using Retrospective Ordering and Compressed Sensing (Ciné-ROCS)

Seong-Eun Kim¹, John A. Roberts¹, J. Scott Mcnally¹, Bradley D. Bolster, Jr. ², Gerald S. Treiman¹, 4, Dennis L. Parker¹
¹UCAIR, Department of Radiology, University of Utah, Salt Lake City, UT, United States; ²Siemens Healthcare, Salt Lake City, UT, United States; ³Department of Surgery, University of Utah, Salt Lake City, UT, United States; ⁴Department of Veterans Affairs, VASLCHCS, Salt Lake City, UT, United States

Computer 20 4538. Whole-Brain Intracranial Arterial Wall Imaging at 3 Tesla: 3D TSE with CSF Attenuation and Enhanced T1 Weighting

Zhaoyang Fan¹, Qi Yang¹, ², Debiao Li¹
¹Biomedical Imaging Research Institute, Cedars-Sinai Medical Center, Los Angeles, CA, United States; ²Radiology, Xuanwu Hospital, Beijing, China

Computer 21 4539. Volumetric Aortic Vessel Wall MRI Using Improved Flow-Independent T2-Prepared Phase Sensitive Inversion Recovery at 3T

M.G.M. van de Steeg¹, ², M. Henningsson², A. Noorani², K. Nicolay¹, R. Botnar²
¹Division of Molecular Bioengineering and Molecular Imaging, Eindhoven University of Technology, Eindhoven, Netherlands; ²Division of Imaging Sciences and Biomedical Engineering, King's College London, London, United Kingdom

Computer 22 4540. Comparison Between Carotid Wall T1,T2 Quantifications with and Without 3D IMSDE Reference Scan

Shan Gao¹, Bram F. Coolen¹, Rob J. van der Geest¹, Dirk H.J. Poot¹, ², Aart J. Nederveen²
¹Division of Image Processing, Department of Radiology, Leiden University Medical Center, Leiden, Netherlands; ²Radiology, Academic Medical Center, Amsterdam, Netherlands; ³Biomedical Imaging Group Rotterdam, Erasmus MC Rotterdam, Rotterdam, Netherlands; ⁴Imaging Science and Technology, Delft University of Technology, Delft, Netherlands

Computer 23 4541. Lumen Expansion at Five Locations Along the Venous System of Murine Models

Olivia Palmer², Amos Cao², Ulrich Scheven², Jose A. Diaz², Joan M. Greve²
¹Biomedical Engineering, University of Michigan, Ann Arbor, MI, United States; ²Biomedical Engineering, University of Michigan, MI, United States; ³Surgery, Section of Vascular Surgery, Conrad Jobst Vascular Research Lab, University of Michigan, MI, United States

Computer 24 4542. The Effect of I v abradine on Plaque Size, Biomechanics, and Microvasculature in Atherosclerotic Rabbits Measured Using MR and Ultrasound Imaging

Raf H.M. van Hoof¹, ², Evelien Hermeling³, ⁴, Julie Salzmann⁴, Judith C. Sluimer, ², Sylvia Heeneman, ², Arnold P.G. Hoeks, ²⁵, Harry A.J. Struijker-Boudier, ²⁶, Jérôme Roussel³, Joachim E. Wildberger¹, ², M. Eline Kooi¹, ²
¹Radiology, Maastricht University Medical Center, Maastricht, Netherlands; ²Cardiovascular Research Institute Maastricht (CARIM), Maastricht University, Maastricht, Netherlands; ³Institut de Recherches Internationales Servier, Suresnes, France; ⁴Pathology, Maastricht University Medical Center, Maastricht, Netherlands; ⁵Biomedical Engineering, Maastricht University Medical Center, Maastricht, Netherlands; ⁶Pharmacology, Maastricht University Medical Center, Maastricht, Netherlands

Electronic Poster

Let It Flow

Exhibition Hall Thursday 11:30-12:30

Computer 25 4543. Intracranial K-T Accelerated Dual-Venc 4D Flow MRI

Susanne Schnell¹, Can Wu¹, ², Ian G. Murphy¹, Julio Garcia¹, Michael Markl¹, ²
¹Radiology, Northwestern University, Chicago, IL, United States; ²Biomedical Engineering, Northwestern University, Evanston, IL, United States

Computer 26 4544. Accelerating Flow Encoded MRI by Exploiting Vector Field Divergence Regularization

Claudio Santelli¹, ², Michael Loecher¹, Julia Busch¹, Oliver Wieben¹, ², Tobias Schaeffter¹, ², Sebastian Kozerke¹, ²
¹Imaging Sciences and Biomedical Engineering, King's College London, London, United Kingdom; ²Institute for Biomedical Engineering, University and ETH Zurich, Zurich, Switzerland; ³Department of Medical Physics, University of Wisconsin-Madison, WI, United States; ⁴Department of Radiology, University of Wisconsin-Madison, WI, United States
Electronic Poster

**Computer 27 4545. New Method for Efficient, Volumetric Quantification of Aortic Hemodynamics**

Michael J. Rose¹, Kelly Jarvis², ³, Varun Chowdhary⁴, Alex J. Barker⁵, Bridley D. Allen⁶, Joshua D. Robinson⁴, ⁵, Michael Markl⁷, ², Cynthia K. Rigsby⁸, ², Susanne Schnell⁹

¹Medical Imaging, Ann & Robert H. Lurie Children's Hospital of Chicago, Chicago, IL, United States; ²Radiology, Northwestern University, Chicago, IL, United States; ³Biomedical Engineering, Northwestern University, Chicago, IL, United States; ⁴Pediatrics, Northwestern University, Chicago, IL, United States; ⁵Pediatric Cardiology, Ann & Robert H. Lurie Children's Hospital of Chicago, Chicago, IL, United States

**Time-Resolved Phase Contrast sequences is mostly performed in 2D or in thin 3D volumes with cartesian sequences. This is reflected in our results, where a spatial resolution of 156 µm. Flow measurements can be performed in numerous cardiac and pulmonary vessels of mice models.**

**Computer 28 4546. Dual-Velocity Encoding Phase-Contrast MRI: Extending the Dynamic Range and Lowering the Velocity to Noise Ratio**

Susanne Schnell¹, Julio Garcia¹, Can Wu¹, ², Michael Markl¹, ²

¹Radiology, Northwestern University, Chicago, IL, United States; ²Biomedical Engineering, Northwestern University, Evanston, IL, United States

**Wall shear stress inside vessels is associated with atherosclerosis and calculated generally by computational fluid dynamics. It is described as an important predictor for plaque development.**


Kelly Jarvis¹, ², Susanne Schnell¹, Alex J. Barker¹, James Carr¹, Joshua D. Robinson², ⁴, Cynthia K. Rigsby¹, ⁴, Michael Markl¹, ²

¹Radiology, Northwestern University, Chicago, IL, United States; ²Biomedical Engineering, Northwestern University, Chicago, IL, United States; ³Pediatrics, Northwestern University, Chicago, IL, United States; ⁴Medical Imaging and Cardiology, Ann & Robert H Lurie Children’s Hospital of Chicago, IL, United States

**Impact of View Ordering and Soft-Gating on Morphologic Assessment of Congenital Heart Disease with 4D Flow**

Joseph Y. Cheng¹, ², Kate Hanneman³, Tao Zhang¹, ², Marcus T. Alley³, Peng Lai³, Jonathan I. Tamir³, Martin Uecker³, Michael Lustig³, John M. Pauly³, Shreyas S. Vasanawala³

¹Electrical Engineering, Stanford University, Stanford, CA, United States; ²Biomedical Engineering, Stanford University, Stanford, CA, United States; ³Global MR Applications & Workflow, GE Healthcare, Menlo Park, CA, United States; ⁴Electrical Engineering and Computer Sciences, University of California, Berkeley, CA, United States

**Computer 30 4548. Impact of View Ordering and Soft-Gating on Morphologic Assessment of Congenital Heart Disease with 4D Flow**

Joseph Y. Cheng¹, ², Kate Hanneman³, Tao Zhang¹, ², Marcus T. Alley³, Peng Lai³, Jonathan I. Tamir³, Martin Uecker³, Michael Lustig³, John M. Pauly³, Shreyas S. Vasanawala³

¹Electrical Engineering, Stanford University, Stanford, CA, United States; ²Biomedical Engineering, Stanford University, Stanford, CA, United States; ³Global MR Applications & Workflow, GE Healthcare, Menlo Park, CA, United States; ⁴Electrical Engineering and Computer Sciences, University of California, Berkeley, CA, United States

**Computer 31 4549. Radial Displacement Errors and Correction Efficiency for Streamline Visualization in 4D-Flow MRI**

Michael Loecher², Kevin M. Johnson¹, Patrick Turski², Oliver Wieben¹, ²

¹Medical Physics, University of Wisconsin Madison, Madison, WI, United States; ²Radiology, University of Wisconsin Madison, Madison, WI, United States

**Computer 32 4550. Clinical Evaluation and Optimization of Highly Accelerated 2D and 4D Phase Contrast Flow Imaging Applications Using Sparse Sampling and Iterative Reconstruction**

Andreas Greiser⁴, Christoph Forman⁴, Jens Wetzel⁴, Christoph Tilmann⁵, Aurelien F. Stalder⁴, Michaela Schmidt⁴, Michael Zenge⁴, Edgar Mueller⁴

⁴Department of Computer Science, Friedrich-Alexander-Universität Erlangen-Nuernberg, Pattern Recognition Lab, Erlangen, Bavaria, Germany; ⁵Diagnostikum Berlin, Berlin, Germany; ⁶Siemens AG, Healthcare, Imaging & Therapy Systems, Magnetic Resonance, Erlangen, Bavaria, Germany; ⁷Siemens Healthcare, NY, United States

**Computer 33 4551. Comparison of MRI and CFD Based Wall Shear Stress and Their Relationship with Wall Thickening in Human Carotid Arteries**

Merih Cihis¹, Wouter V. Potters², Mariana Selwaness³, Frank J. Gijsen¹, Andres M. Arias Lorza⁴, Aad van der Lugt¹, Aart J. Nederveen², Jolanda J. Wentzel³

¹Biomedical Engineering, Erasmus MC, Rotterdam, Netherlands; ²Radiology, AMC, Amsterdam, Netherlands; ³Epidemiology, Erasmus MC, Rotterdam, Netherlands; ⁴Radiology and Medical Informatics, Erasmus MC, Rotterdam, Netherlands

**Computer 34 4552. USPIO Enhanced 3D-Cine Phase Contrast of the Whole Cardiovascular System in Small Animals at 7T with an Ultrashort Echo Time Sequence**

Aurelien Julien Trotier¹, Charles Castets¹, William Lefrancois¹, Jean-Michel Franconi¹, Eric Thiaudiere¹, Sylvain Miraux¹

¹RMSB-UMR5536, CNRS - Université de Bordeaux, Bordeaux, Aquitaine, France
This work presents an automatic inline flow processing method for analysis of 2D PC MRI data. Flow images were...
Successful clinical translation of cardiac Diffusion Tensor Imaging (DTI) will require efficient free-breathing approaches. Using a free-breathing NAV approach makes cardiac DTI accessible to patients with a broad range of cardiovascular conditions.

Exhibition Hall Thursday 11:30-12:30

Coil Array Compression for Tissue Phase Mapping
Jan Paul1, Stefan Wundrak1, Heiko Neumann2, Volker Rasche2
1Internal Medicine II, University Hospital Ulm, Ulm, Germany; 2Institute of Neural Information Processing, University of Ulm, Ulm, Germany

4D Flow MRI to Monitor Mean Pulmonary Arterial Pressure in Patients with Chronic Thromboembolic Pulmonary Hypertension Treated by Percutaneous Transluminal Pulmonary Angioplasty
Hideki Ota1, Koichiro Sugimura1, Haruka Sato2, Kotaro Nochioka1, Shunsuke Tatebe1, Saori Yamamoto1, Masanobu Miura1, Kimio Satoh3, Yuta Urushibata1, Yoshiaki Komori1, Aurelien F. Stalder1, Andreas Greiser4, Hiroaki Shimokawa1, Kei Takase1
1Diagnostic Radiology, Tohoku University Hospital, Sendai, Miyagi, Japan; 2Cardiology, Tohoku University Hospital, Sendai, Miyagi, Japan; 3Siemens Japan K.K, Tokyo, Japan; 4Siemens Healthcare, Erlangen, Germany

Systolic Pressure Gradients Derived from 4D Flow in a Physiological Healthy and Aortic Coarctation Phantom Versus Cardiac Catheterization
Jesus Urbina1, 2, Julio Sotelo3, 4, Cristián Montalba5, Cristián Tejos3, 4, Pablo Irrarrazaval3, 4, Marcelo Andía3, 4, Israel Valverde5, 6, Sergio Uribe7, 4
1School of Medicine, Pontificia Universidad Católica de Chile, Santiago, Chile; 2Biomedical Imaging Center, Pontificia Universidad Católica de Chile, Santiago, Chile; 3Electrical Engineering Department, Pontificia Universidad Católica de Chile, Santiago, Chile; 4Radiology Department, Pontificia Universidad Católica de Chile, Santiago, Chile; 5Pediatric Cardiology Unit, Hospital Virgen del Rocio, Seville, Spain; 6Institute of Biomedicine of Seville, Universidad de Sevilla, Seville, Spain

Electronic Poster
New Insights & Innovations in Cardiovascular MRI

Simultaneous Multi-Slice Dark Blood Cardiac Imaging Using Multiband Double-Inversion Recovery TSE
Dingxin Wang1, 2, Edward Auerbach1, Gary McNeal3, Peter Kollasch1, Uma Valeti5, Vibhas Deshpande6, Kamil Ugurub1, Greg Metzger7
1Siemens Healthcare, Minneapolis, MN, United States; 2CMRR, Department of Radiology, University of Minnesota, Minneapolis, MN, United States; 3CMRR, Department of Radiology, University of Minnesota, Minneapolis, MN, United States; 4Siemens Healthcare, Dallas, TX, United States; 5Departments of Medicine and Radiology, University of Minnesota, Minneapolis, MN, United States; 6Siemens Healthcare, Austin, TX, United States

Free-Breathing Diffusion Tensor MRI of the Entire Human Heart In Vivo Using Simultaneous Multislice Excitation and Spatiotemporal Registration
Choukri Mekkaoui1, Timothy G. Reese2, Stephen F. Cauley2, Kawin Setsompop2, Himanshu Bhat3, William J. Kostis3, Marcel P. Jackowski4, David E. Sosnovik2
1Harvard Medical School - Massachusetts General Hospital, Boston, MA, United States; 2Harvard Medical School-Massachusetts General Hospital, Boston, MA, United States; 3Siemens, Boston, MA, United States; 4University of São Paulo, São Paulo, Brazil

Respiratory Resolved Cardiac Cine Imaging Using Self-Gated Golden Angle Radial Acquisition
Karen Holst1, Martin Ugander1, Andreas Sigfridsson1
1Siemens Healthcare, Menlo Park, CA, United States; 2Radiology, Stanford University, CA, United States; 3Global MR Applications & Workflow, GE Healthcare, Munich, Germany
Cardiac Magnetic Resonance Imaging with Doppler Ultrasound as Alternative Trigger Method at 3T
Fabian Kording, Boern Schoenagel, Friedrich Ueberle, Gunnar Lund, Gerhard Adam, Jin Yamamura
1Department of Diagnostic and Interventional Radiology, University Medical Center Hamburg-Eppendorf, Hamburg, Germany; 2Faculty of Life Sciences, University of Applied Sciences, Hamburg, Germany

4D Flow MRI of the Great Vessels During Respiration Plateaus
Eric Mathew Schrauben, Christopher J. Francois, Oliver Wieben, Alejandro Roldán-Alzate
1Medical Physics, University of Wisconsin - Madison, Madison, WI, United States; 2Radiology, University of Wisconsin - Madison, WI, United States

Multi-Channel Double-Tuned TX/RX RF Coil Using Loop Elements for 23Na and Loopole Elements for 1H Cardiac MR Imaging at 7.0 Tesla
Helmar Waiczies, Jan Rieger, Armin M. Nagel, Andreas Graessl, Lukas Winter, Thoralf Niendorf
1MRI. Tools GmbH, Berlin, Germany; 2Division of Medical Physics in Radiology, Cancer Research Center (DKFZ), Heidelberg, Germany; 3Berlin Ultrahigh Field Facility (B.U.F.F.), Max Delbrück Center for Molecular Medicine, Berlin, Germany

MRI Assessment of Cardiac Function in Response to Exercise
Jacob Macdonald, Omid Forouzan, Jared Warczytowa, Oliver Wieben, Naomi Chesler, Christopher Francois
1Medical Physics, University of Wisconsin - Madison, Madison, WI, United States; 2Biomedical Engineering, University of Wisconsin - Madison, Madison, WI, United States; 3Radiology, University of Wisconsin - Madison, Madison, WI, United States

Real-Time Heart MRI of the Mouse
Amir Moussavi, Philipp R. Bovenkamp, Verena Hoerr, Cornelius Faber, Susann Boretius
1Department of Clinical Physiology, Karolinska Institutet and Karolinska University Hospital, Stockholm, Sweden

4D Flow MRI of the Great Vessels During Respiration Plateaus
Eric Mathew Schrauben, Christopher J. Francois, Oliver Wieben, Alejandro Roldán-Alzate
1Medical Physics, University of Wisconsin - Madison, Madison, WI, United States; 2Radiology, University of Wisconsin - Madison, WI, United States

Free-Breathing 3D Late Gadolinium Enhancement MRI Using Outer Volume Suppressed Projection Navigators
Tsung-Lun Wu, Ching-Lung Cheng, Ming-Ting Wu, Ming-Long Wu, Tzu-Cheng Chao
1Department of Computer Science and Information Engineering, National Cheng-Kung University, Tainan, Taiwan; 2Institute of Medical Informatics, National Cheng-Kung University, Tainan, Taiwan; 3Department of Radiology, Kaohsiung Veterans General Hospital, Kaohsiung, Taiwan; 4School of Medicine, National Yang-Ming University, Taipei, Taiwan

Accelerate Free Breathing Cardiac Cine Imaging with Propeller and GRAPPA
Tsung-Lun Wu, Ching-Lung Cheng, Ming-Ting Wu, Ming-Long Wu, Tzu-Cheng Chao
1Department of Computer Science and Information Engineering, National Cheng-Kung University, Tainan, Taiwan; 2Institute of Medical Informatics, National Cheng-Kung University, Tainan, Taiwan; 3Department of Radiology, Kaohsiung Veterans General Hospital, Kaohsiung, Taiwan; 4School of Medicine, National Yang-Ming University, Taipei, Taiwan

Detection of Myocardial Fibrosis Using Native T1ρ and T2* Mapping in an Animal Model of Chronic Myocardial Infarction
Joep van Oorschot, Sanne Jansen of Lorkeers, Fredy Visser, Pieter Dovendans, Johannes Gho, Steven Chumalead, Peter Luijter, Jaco Zwanenburg
1University Medical Center Utrecht, Utrecht, Netherlands; 2Philips Healthcare, Best, Noord-Brabant, Netherlands

7D DSA : a Dual Modality Combination of 4D DSA and 4D Flow MRI
CHARLES ANTHONY MISTRETTA, CHARLES STROTHER, OLIVER WIEBEN
1MEDICAL PHYSICS AND RADIOLOGY, U OF WISCONSIN-MADISON, MADISON, WI, United States

Free-Breathing 3D Late Gadolinium Enhancement MRI Using Outer Volume Suppressed Projection Navigators
Rajiv G. Menon, G Wilson Miller, Jean Jeudy, Sanjay Rajagopalan, Tzuhoon Shin
1Diagnostic Radiology and Nuclear Medicine, University of Maryland, Baltimore, Baltimore, MD, United States; 2Department of Radiology and Medical Imaging, University of Virginia, Charlottesville, VA, United States; 3Division of Cardiovascular Medicine, University of Maryland, Baltimore, Baltimore, MD, United States

4D Flow MRI of the Great Vessels During Respiration Plateaus
Eric Mathew Schrauben, Christopher J. Francois, Oliver Wieben, Alejandro Roldán-Alzate
1Medical Physics, University of Wisconsin - Madison, Madison, WI, United States; 2Radiology, University of Wisconsin - Madison, WI, United States

In Vivo Detection of Myocardial Fibrosis Using Native T1ρ and T2* Mapping in an Animal Model of Chronic Myocardial Infarction
Joep van Oorschot, Sanne Jansen of Lorkeers, Fredy Visser, Pieter Dovendans, Johannes Gho, Steven Chumalead, Peter Luijter, Jaco Zwanenburg
1University Medical Center Utrecht, Utrecht, Netherlands; 2Philips Healthcare, Best, Noord-Brabant, Netherlands

Accelerate Free Breathing Cardiac Cine Imaging with Propeller and GRAPPA
Tsung-Lun Wu, Ching-Lung Cheng, Ming-Ting Wu, Ming-Long Wu, Tzu-Cheng Chao
1Department of Computer Science and Information Engineering, National Cheng-Kung University, Tainan, Taiwan; 2Institute of Medical Informatics, National Cheng-Kung University, Tainan, Taiwan; 3Department of Radiology, Kaohsiung Veterans General Hospital, Kaohsiung, Taiwan; 4School of Medicine, National Yang-Ming University, Taipei, Taiwan

MRI Assessment of Cardiac Function in Response to Exercise
Jacob Macdonald, Omid Forouzan, Jared Warczytowa, Oliver Wieben, Naomi Chesler, Christopher Francois
1Medical Physics, University of Wisconsin - Madison, Madison, WI, United States; 2Biomedical Engineering, University of Wisconsin - Madison, Madison, WI, United States; 3Radiology, University of Wisconsin - Madison, Madison, WI, United States

Rapid Ungated Free-Breathing Cardiac MRI Protocol
Edward DiBella, Elwin Bassett, Kyungpyo Hong, Ganesh Adluru, Devavrat Likhite, Promporn Sukasaranjit, Brent Wilson, Chris McGann, Daniel Kim
1University of Utah, Salt Lake City, UT, United States; 2Bioengineering, University of Utah, Salt Lake City, UT, United States; 3Radiology, University of Utah, UT, United States

Real-Time Heart MRI of the Mouse
Amir Moussavi, Philipp R. Bovenkamp, Verena Hoerr, Cornelius Faber, Susann Boretius
1Department of Clinical Physiology, Karolinska Institutet and Karolinska University Hospital, Stockholm, Sweden
Electronic Poster

1Section Biomedical Imaging, Department of Radiology and Neuroradiology, Christian-Albrechts-University, Kiel, Germany; 2Institute of Clinical Radiology, University Hospital of Muenster, Muenster, Germany

Computer 62 4580. Cardiac Diffusion-Weighted MRI with Selective RF Excitation in a Single Breath-Hold
Mahdi Salmani Rahimi1, Dominik Fleischmann1, Anne Chiu1, 2, Roland Bamber1
1Radiology, Stanford University, Stanford, CA, United States; 2Radiology, Centre hospitalier de l'Université de Montréal, Montreal, QC, Canada

Computer 63 4581. Whole-Heart T1 and Extracellular Volume Fraction Mapping with 6 Heartbeats
Sohae Chung1, 2, Pippa Storey1, 2, Leon Axel1, 2
1Center for Advanced Imaging Innovation and Research (CAI2R), Department of Radiology, New York University School of Medicine, New York, NY, United States; 2Bernard and Irene Schwartz Center for Biomedical Imaging, Department of Radiology, New York University School of Medicine, New York, NY, United States

Computer 64 4582. A New Method for Quantification of Aortic Stiffness In Vivo Using Magnetic Resonance Elastography (MRE): A Translational Study from Sequence Design to Implementation in Patients
Rachel Clough1, Ondrej Holub1, Henry Fok1, Nick Gaddum1, Jordi Alastruey1, Ralph Sinkus1
1King's College London, London, United Kingdom

Computer 65 4583. A Novel Imagery-Based Method for Preoperative EVAR/TEVAR Modeling: Validation
Anon Sewont1, 2, Ramiro Moreno1, 2, Olivier Meyrignac3, Hervé Rousseau4
1I2MC, INSERM/UPS UMR 1048, Toulouse, France; 2ALARA Expertise, Strasbourg, France; 3Pôle imagerie, CHU Toulouse, Toulouse, France

Computer 66 4584. New Intrinsic Frequency Measures of Cardiac Function Vs. Cardiac MRI as a Gold Standard
Niema M. Pablevan1, 2, Thao T. Tran1, Peyman M. Tavallali1, Derek G. Rinderknecht1, Marie Csete, Morieza M. Gharib1
1Medical Engineering, California Institute of Technology, Pasadena, CA, United States; 2Magnetic Resonance Spectroscopy, Huntington Medical Research Institute, Pasadena, CA, United States; 3Magnetic Resonance Spectroscopy, Huntington Medical Research Institutes, Pasadena, CA, United States; 4Graduate Aerospace Laboratory, California Institute of Technology, Pasadena, CA, United States; 5Aerospace, California Institute of Technology, Pasadena, CA, United States

Computer 67 4585. In Vivo Cardiac MR Elastography on Mouse
Yifei Liu1, Thomas J. Royston1, 2, E Douglas Lewandowski3, 4
1Department of Mechanical & Industrial Engineering, University of Illinois at Chicago, Chicago, IL, United States; 2Department of Bioengineering, University of Illinois at Chicago, Chicago, IL, United States; 3Center for Cardiovascular Research, University of Illinois at Chicago, Chicago, IL, United States; 4Department of Physiology & Biophysics and Medicine (Cardiology), University of Illinois at Chicago, Chicago, IL, United States

Computer 68 4586. Simulation and Phantom Study of Wall Shear Stress in Arteriovenous Grafts
Daniel Beauchamp1, 2, Steven G. Lloyd1, 4, Michael Allon1, Timmy Lee1, Nouh Salibi1, 2, Thomas S. Denney Jr.1, 2
1AU MRI Research Center, Auburn University, Auburn, AL, United States; 2Electrical and Computer Engineering, Auburn University, Auburn, AL, United States; 3Department of Medicine, University of Alabama at Birmingham, Birmingham, AL, United States; 4VA Medical Center, Birmingham, AL, United States; 5MR R&D, Siemens Healthcare, Malvern, PA, United States

Computer 69 4587. Myocardial Steatosis and Its Association with Obesity and Regional Ventricular Dysfunction: Evaluated by Magnetic Resonance Tagging and 1H Spectroscopy in Healthy African Americans
Chia-Ying Liu1, David A. Bluemke1, Gary Gerstenblith1, Stefan L. Zimmerman2, Ji li2, hong zhu1, Shenghan Lai1, Hong Lai2
1Radiology and Imaging Sciences, NIH, Bethesda, MD, United States; 2Johns Hopkins School of Medicine, MD, United States; 3Johns Hopkins School of Medicine, MD, United States

Computer 70 4588. Dedicated Neonatal Cardiac Coil – Preliminary Results
Michael S. Hansen1, Russel R. Cross1, Laura J. Olivia1, 2, Kendall O'Brien, 1, 2, Hui Xue1, Matthew R. DiPrimio1, Paul Taylor1, Tsinghua Zheng1, Xiaoayu Yang1, Matthew Finnerty1, Peter Kellman1
Electronics Poster

Computer 71 4589. ECG and Navigator-Free 4D Whole-Heart Coronary MRA: Preliminary Comparisons with Conventional Protocols
Jianing Pang1, Behzad Sharif1, Zhaoyang Fan1, Xiaoming Bi2, Reza Arsanjani1, Daniel S. Berman1, Debiao Li1, 3
1Biomedical Imaging Research Institute, Cedars-Sinai Medical Center, Los Angeles, CA, United States; 2MR R&D, Siemens Healthcare, Los Angeles, CA, United States; 3Medicine and Bioengineering, University of California, Los Angeles, CA, United States

Computer 72 4590. Comprehensive Morphological Classification of Bicuspid Aortic Valve by Cine CMR in 368 Patients.
Ian Gavin Murphy1, Alex J. Barker2, Michael Markl1, Chris memorial Malaisrie3, Patrick M. McCarthy4, Colleen memorial Clennon4, James C. Carr1, Jeremy Collins1
1Cardiovascular Imaging, Feinberg School of Medicine, Northwestern Memorial Hospital, CHICAGO, IL, United States; 2Cardiovascular Imaging, Northwestern University, CHICAGO, IL, United States; 3Cardiothoracic Surgery, Feinberg School of Medicine, Northwestern Memorial Hospital, CHICAGO, IL, United States; 4Cardiothoracic Specialist Nurse, Feinberg School of Medicine, Northwestern Memorial Hospital, CHICAGO, IL, United States

Electronic Poster

Hyperpolarized MR

Exhibition Hall Thursday 13:30-14:30

Computer 1 4591. Comparison of FDG-PET and Hyperpolarized Pyruvate in Assessing Response to an Isoform-Specific PI3K Inhibitor in Breast Cancer
Aaron K. Grant1, Gopal Varma1, Hai Hu2, Xiaoen Wang2, Ashish Javekar2, Soumya Ullas3, Gerburg Wulf4
1Radiology, Beth Israel Deaconess Medical Center and Harvard Medical School, Boston, MA, United States; 2Hematology and Oncology, Beth Israel Deaconess Medical Center and Harvard Medical School, Boston, MA, United States

Computer 2 4592. High Resolution Hyperpolarized Metabolic Imaging with Three-Dimensional Spectral-Spatial EPI at 7T
Jack J. Miller1, 2, Angus Z. Lau1, 3, Damian J. Tyler1, 3
1Department of Physiology, Anatomy & Genetics, University of Oxford, Oxford, United Kingdom; 2Department of Physics, University of Oxford, Oxford, United Kingdom; 3Department of Cardiovascular Medicine, OCMR, University of Oxford, Oxford, United Kingdom

Computer 3 4593. Effect of Acetate Concentration on Its Cerebral Metabolism Studied by Hyperpolarized 13C MRS
Else Vincenbosch1, Mor Mishkowsky1, Arnaud Comment1, Rolf Gruetter2, 3
1Laboratory for Functional and Metabolic Imaging, École Polytechnique Fédérale de Lausanne, Lausanne, Switzerland; 2Institute Of Physics Of Biological Sytems, École Polytechnique Fédérale de Lausanne, Lausanne, Switzerland; 3Department of Radiology, Université de Lausanne et de Genève, Lausanne and Geneva, Switzerland

Computer 4 4594. Magnetic Field Dependence of Singlet State Lifetimes and Implications for Hyperpolarized Magnetic Resonance
Thomas Theis1, Matthew Morgan1, Kevin Claytor1, Ryan Davis2, Zijian Zhou1, Warren Warren2
1Chemistry, Duke University, Durham, NC, United States; 2Physics, Duke University, Durham, NC, United States; 3BME, Duke University, Durham, NC, United States; 4Chemistry, Physics, Radiology and BME, Duke University, Durham, NC, United States

Computer 5 4595. Time Evolution of [1,2-13C]Pyruvate Doublet Asymmetry in Hyperpolarized 13C MRS
Keshav Datta1, Daniel Spielman2
1Dept. of Electrical Engineering, Stanford University, Stanford, CA, United States; 2Dept. of Radiology, Stanford University, Stanford, CA, United States

Eunhae Joe1, Joonsung Lee1, Hansol Lee2, Seungwook Yang3, Young-suk Choi3, Eunkyung Wang3, Ho-Taek Song4, Dong-Hyun Kim1
1School of Electrical and Electronic Engineering, Yonsei University, Seoul, Korea; 2Severance Biomedical Science Institute, Yonsei University, Seoul, Korea; 3Department of Radiology, Yonsei University College of Medicine, Seoul, Korea
Hyperpolarization has enabled non-invasive metabolic imaging, but dynamic data is required to provide quantitative information. The method implemented here provides a fast and clinically efficacious method to acquire dynamic $^{13}$C data with human-sized FOVs.

Ramp-Sampled, Symmetric EPI for Rapid Dynamic Metabolic Imaging of Hyperpolarized $^{13}$C Substrates on a Clinical MRI Scanner

Inhaled drug delivery is often preferred because it enables local treatment of asthma, chronic obstructive pulmonary disease, and other respiratory conditions. The possibility of using hyperpolarized $^{13}$C-MRI for monitoring the arrival of the drug at the site of lung inflammation is demonstrated.

Hyperpolarized $^{1-13}$C Pyruvate Metabolism as Marker of Inflammation and Progression of Lung Injury

Hyperpolarized $^{1-13}$C Pyruvate Metabolism of Inflamed Lung Via Pulmonary Delivery: A Preliminary Study

In vivo observation of glucose metabolism and gluconeogenesis is of great importance in the study of various diseases. Hyperpolarized $^{13}$C-substrates provide a powerful tool for this purpose.

ParaHydrogen Induced Polarization Via Side Arm Hydrogenation (PHIP-SAH) Allows Hyperpolarization of Acetate and [1-13C] Pyruvate

Mechanical ventilation is an essential component of the care of patients with acute respiratory distress syndrome. Monitoring lung inflammation and neutrophil infiltration during protective ventilation is crucial for patient management.

Electronic Poster
Computer 17 4607. **A Novel Bloch-McConnell Simulator for Perfused Hyperpolarized Substrates**

*Christopher M. Walker*, *James Bankson* 1

1Department of Imaging Physics, UT MD Anderson Cancer Center, Houston, TX, United States

---

Computer 18 4608. **Characterization of Glycolytic Activity and Perfusion in a Renal Cell Carcinoma Model During Sunitinib Treatment and Resistance with Hyperpolarized 13C MRI**

*Leo L. Tsaı*, *Xiaoren Wang*, *Gopal Varma*, *David Alspö*, *Aaron K. Grant* 1

1Department of Radiology, Beth Israel Deaconess Medical Center, Boston, MA, United States

---


*Mukundan Ragavan*, *Xiaorong Fu*, *Matthew E. Merritt* 1

1Advanced Imaging Research Center, University of Texas Southwestern Medical Center, Dallas, TX, United States

---

Computer 20 4610. **Assessing Tumor Microenvironment in Rat Glioma Model Using Hyperpolarized 13C MRSI with a Sliding Window**

*Jae Mo Park*, *Ralph E. Hurd*, *Dirk Mayer*, *Lawrence D. Recht*, 1 *Daniel M. Spielman* 1

1Radiology, Stanford University, Stanford, CA, United States; 2Department of Medical Biophysics, University of Toronto, Toronto, Ontario, Canada; 3GE Healthcare, Toronto, Ontario, Canada

---

Computer 21 4611. **Quantification of TAE-Induced Alterations in Tumor Metabolism Using Hyperpolarized 13C-MRSI**


1Radiology, University of Pennsylvania, Philadelphia, PA, United States; 2Cell and Developmental Biology, University of Pennsylvania, Philadelphia, PA, United States

---


*Benjamin J. Geraghty*, 1 *Justin Y.C. Lau*, 2 *Albert P. Chen*, 1, 2 *William Dominguez-Viqueira*, 1 *Charles H. Cunningham* 1

1Imaging Research, Sunnybrook Health Sciences Centre, Toronto, Ontario, Canada; 2Dept. of Medical Biophysics, University of Toronto, Toronto, Ontario, Canada; 3GE Healthcare, Toronto, Ontario, Canada

---

**Electronic Poster**

**MRS-Animal Models & Non-Proton MRI**

**Exhibition Hall**  
**Thursday 13:30-14:30**

Computer 25 4613. **Gender Differences in the Effect of Acute Nicotine Administration in Rat Brain by MRS.**

*Tetyana Konak*, *Jaivijay Ramu*, 1 *Serguei Liachenko* 1

1Neurotoxicology, NCTR / FDA, Jefferson, AR, United States

---

Computer 26 4614. **Brain Energy Metabolism Measured by 13C MRS In Vivo Upon Infusion of [3-13C]lactate**

*João M.N. Duarte*, *Freya-Merret Girault*, 1 *Rolf Gruetter* 1, 2

1LIFMET, EPFL, Lausanne, Vaud, Switzerland; 2Radiology, UNIL and UNIGE, Lausanne and Geneva, Vaud & Geneva, Switzerland

---

Computer 27 4615. **CMRO2, Quantification by Direct 17O MRI at 7 T in the Macaque Brain: Assessment of Energy Metabolism Impairment In Vivo**

*Chloé Najac*, 1, 2 *Brice Tirel*, 1, 2 *Julien Flament*, 1, 3 *Martine Guillermin*, 1, 2 *Diane Houitte*, 1, 2 *Romina Aron Badin*, 1, 2 *Philippe Hantraye*, 1, 2 *Emmanuel Brouillet*, 1, 2 *Vincent Lebon*, 1, 2 *Julien Valette*, 1, 2
Electronic Poster

Computer 28 4616. Activity of Pentose Phosphate Pathway and Pyruvate Dehydrogenase Is Decreased in MPTP Model of Parkinson’s Disease: A 13C NMR Study

Puneet Bagga1, Komal Kumari Mandal1, Anant Bahadur Patel1

1NMR Microimaging and Spectroscopy, Centre for Cellular and Molecular Biology, Hyderabad, Andhra Pradesh, India

Computer 29 4617. Comparative 1H-MRS Study of IDH1 and IDH2 Mutated Gliomas in Rodent Brain at 9.4T

Hyeong Hun Lee1, 2, Sungjin Kim1, 2, Hye Rim Cho1, 2, Hwon Heo1, 2, Seung Hong Choi1, 2, Hyeonjin Kim1, 2

1Biomedical Sciences, Seoul National University, Seoul, Korea; 2Radiology, Seoul National University Hospital, Seoul, Korea

Computer 30 4618. In-Vivo 13C MRS Detects an Increase in Lactate Production Associated with PDH Down-Regulation in Genetically Engineered Mutant IDH1 Glioma Tumors

Jose Luis Izquierdo Garcia1, Marina Radoul1, Myriam M. Chaumeil1, Pia Eriksson1, Pavithra Luis Viswanath1, Sabrina M. Ronen1

1University California San Francisco, San Francisco, CA, United States

Computer 31 4619. Determination of Fatty Acid Profile of Intact Fish by Intermolecular Double-Quantum Coherence 1H-NMR Spectroscopy

Honghao Cai1, Liangjie Lin1, Xiaohong Cui1, Zhong Chen1

1Electronic Science Department, Xiamen University, Xiamen, Fujian, China

Computer 32 4620. Hippocampal Dependent Cognitive Dysfunction and Microstructural Changes During Early Delayed Phase After Whole Body Radiation Exposure

Mamta Aryabhushan Gupta1, Poonam Rana1, Richa Trivedi1, Seenu Haridas2, Kailash Manda1, B S Hemanth Kumar1, Subash Khushu1

1NMR Research Centre, INMAS,DRDO, Delhi, India; 2Division of Radiation Biosciences, INMAS,DRDO, Delhi, India

Computer 33 4621. Early Hepatic Lipid Changes in Fatty Liver Rat Model by In Vivo Short-TE 1H-MRS at 3T

Hyeon-Man Baek1, 2, Jooyun Kim1, Youngjae Jeon1, Mirim Bang1

1Laboratory of Molecular Imaging, Singapore Bioimaging Consortium, Singapore, Singapore; 1Inserm US27, CRC-MIRCen, Fontenay-aux-Roses, France

Computer 34 4622. Regional Cerebral Metabolic Activity in Genetic Mouse Model of Parkinson’s Disease: An NMR Investigation for Biomarkers

Puneet Bagga1, Anup N. Chugani1, Mavuri Suresh Kumar1, Anant Bahadur Patel1

1NMR Microimaging and Spectroscopy, Centre for Cellular and Molecular Biology, Hyderabad, Andhra Pradesh, India

Computer 35 4623. Liver Metabolites in Rat Model of Non-Alcoholic Fatty Liver Disease: Quantification of Choline-Containing Compounds and Lipid Content by Using In Vivo Proton Magnetic Resonance Spectroscopy

Kyu-Ho Song1, Hyeon-Man Baek2, Do-Wan Lee1, Bo-Young Choe1

1Department of Biomedical Engineering, and Research Institute of Biomedical Engineering, College of Medicine, The Catholic University of Korea, Seoul, Korea; 2Center for Magnetic Resonance Research, Korea Basic Science Institute, Chungbuk, Korea

Computer 36 4624. Investigation of Early Biochemical Changes in Liver Fibrosis Using an Experimental Mouse Model

Jadegoud Yaligad1, Swee Shean Lee1, Elma Faylon Ilanto1, Sanjay K. Verma1, Kanaga Sabapathy1, S Sendhil Velan1

1Laboratory of Molecular Imaging, Singapore Bioimaging Consortium, Singapore, Singapore; 2Laboratory of Molecular Carcinogenesis, National Cancer Center, Singapore, Singapore

Computer 37 4625. Argon Augments Hypothermic Neuroprotection in a Perinatal Asphyxia Piglet Model: Evaluation by 31P and 1H MRS

David Price1, Alan Bainbridge1, Kevin Broad1, Go Kawano1, Igor Fierens1, Mojgan Ezzati2, Magdalena Sokolska3, Aaron Oliver-Taylor1, Jamshid Rostami1, Robert Sanders1, Ernest Cady1, Xavier Golay1, Nicola Robertson1

1CEA-MIRCen, Fontenay-aux-Roses, France; 2CEA-CNRS URA 2210, Fontenay-aux-Roses, France; 3Inserm US27, CRC-MIRCen, Fontenay-aux-Roses, France
In this work we demonstrate for the first time in two experiments at nominal resolutions of 10/8 mm and for a temporal ... CMRO2 values of 1.59 ± 0.16 and 0.71 ± 0.07 [µmol/g*min] were found to be in good agreement with PET literature values.

Sodium triple-quantum-filtering (TQF) is challenging at ultra-high field due to the high specific absorption rate. In ... TQF images of the human brain could be acquired at 9.4 T within 20 min with an acceptable signal-to-noise ratio.

To our best knowledge, there is no study reporting fast (T2*f) and slow (T2*s) component of biexponential T2* relaxation  ... accurate quantification of sodium concentration in breast and could help to optimize sequences for sodium MRI of breast.

Total sodium concentration, measured using 23Na- MRI, is made up of intra- and extra-cellular compartments. Separating ... fractions, and combine this with sodium MRI to obtain intracellular and intraneurite sodium concentrations in vivo.

We propose a time-efficient modality for simultaneous B1 mapping and imaging. The phase-sensitive B1 mapping method, ... accurate tissue sodium quantification (TSC) and could allow for a better clinical applicability of TSC quantification.

Alzheimer’s disease (AD) is characterized by progressive dementia associated with β-amyloid plaque formation and intra- ... intervention. These data suggest that RS intervention has potential for the management of memory and metabolism in AD.
Reduced GABA levels were found in auditory regions of patients with presbycusis. Significant negative relations between GABA level and auditory function were found.

Chronic inflammation and immune system activation are believed to be at the basis of many neurological and behavioral disorders and provide valuable insight into the immunological basis of neuropsychiatric disorders for developing future treatments.

The relationship between measured GABA and BOLD activation is examined in 5 regions with 5 relevant tasks. We do not observe significant correlations. This appears to indicate additional complexity not shown in previous models or underlying confounds.

In this fMRS study with PRESS TE 30 ms at 3T, a block design alternating 30 sec rest (R) and 30 sec visual activation (A) is used. This design results in a slight increase of glutamate during activation, in agreement with previous studies.

We applied MR spectroscopy in 25 healthy volunteers measuring Glu and GABA to investigate potential metabolic changes associated with aging. These results suggest a close interrelation between functional neuronal networks and the excitatory and inhibitory neurotransmitters.

The new medical approach using theranostics therapy and diagnostic imaging, can be designed to offer targeted, safe, and efficient pharmacotherapy. In this approach, theranostics, defined as use of materials for both therapy and diagnostic imaging, are used to improve the efficiency of drug delivery and localization.

Interleaving 23Na and 1H reduces scan acquisition time. In this work we combine four scans: a 1H Dixon, a 1H T2*, and two 23Na scans. This results in a significant reduction of scan time from 39 minutes to 24 minutes, with improved sodium content quantification. Using interleaving reduces scan time for these four scans from 39 minutes to 24 minutes.

We propose to develop a method based on sodium MRI in vivo to estimate the (pseudo) intracellular sodium concentration. This project is to increase the specificity of breast cancer screening in order to reduce overdiagnosis and overtreatment.

Quantitative Sodium Breast MRI: A Pilot Study for Estimating (Pseudo) Intracellular Sodium Concentration and (Pseudo) Extracellular Volume Fraction In Vivo

Marianne Cleve1, Alexander Gussew1, Lisa Janetzki2, Constanze Borys2, Jürgen R. Reichenbach1, Fei Gao1, Bin Zhao1, Guangbin Wang1, Wen Ma2, Muwei Li3, Fuxin Ren1, Bo Liu1, Weibo Chen4, Richard A.E. Edden5, Miguel Martínez-Maestro1, Maria Guidi1, Laurentius Huber1, Jöran Lepsien1, Henrik Marschner1, Candace C. Fleischer1, 2, Xiaoping Hu1, 2, Andrew H. Miller3, 4, Ebrahim Haroon3, 4, Alexander Peter Lin1, Sai Krishna Merugumala1, 2, Vera Anastosie2, Stephanie Couchell1, Xi April Long1, Huijun Vicky Liao1, Susan Waisbren2

Electronic Poster

Human Brain MRS

Exhibition Hall Thursday 13:30-14:30


Guillaume Madelin1, Ryan Brown1, Linda Moy1
1Department of Radiology, New York University Langone Medical Center, New York, NY, United States

Computer 47 4635. Quadruple Interleaved 23Na and 1H Acquisition at 7T

Paul W. de Brain1, Maarten J. Versluijs1, Peter Koken1, Sebastian A. Aussenhofer1, Wouter den Hollander4, Ingrid Meulenbelt1, Peter Börnert1, 2, Andrew G. Webb1
1Radiology, Leiden University Medical Center, Leiden, Netherlands; 2Philips Healthcare, Eindhoven, Netherlands; 3Philips Research Hamburg, Germany; 4Medical Statistics and Bioinformatics, Molecular Epidemiology, Leiden University Medical Center, Netherlands

Computer 48 4636. Development of Theranostics Imaging Probe for MRI and EPR Imaging

Miho EMOTO1, Shingo Sato1, Hirotao G. Fujii1
1Center for Medical Education, Sapporo Medical University, Sapporo, Hokkaido, Japan; 2Graduate school of Science and Engineering, Yamagata University, Yamagata, Japan

Computer 49 4637. Interregional Associations Between Excitatory and Inhibitory Neurotransmitters in the Resting Human Brain

Marianne Cleve1, Alexander Gussew1, Lisa Janetzki2, Constanze Borys2, Jürgen R. Reichenbach1, Fei Gao1, Bin Zhao1, Guangbin Wang1, Wen Ma2, Muwei Li3, Fuxin Ren1, Bo Liu1, Weibo Chen4, Richard A.E. Edden5, Miguel Martínez-Maestro1, Maria Guidi1, Laurentius Huber1, Jöran Lepsien1, Henrik Marschner1, Candace C. Fleischer1, 2, Xiaoping Hu1, 2, Andrew H. Miller3, 4, Ebrahim Haroon3, 4, Alexander Peter Lin1, Sai Krishna Merugumala1, 2, Vera Anastosie2, Stephanie Couchell1, Xi April Long1, Huijun Vicky Liao1, Susan Waisbren2

Electronic Poster

Human Brain MRS

Exhibition Hall Thursday 13:30-14:30


Guillaume Madelin1, Ryan Brown1, Linda Moy1
1Department of Radiology, New York University Langone Medical Center, New York, NY, United States

Computer 47 4635. Quadruple Interleaved 23Na and 1H Acquisition at 7T

Paul W. de Brain1, Maarten J. Versluijs1, Peter Koken1, Sebastian A. Aussenhofer1, Wouter den Hollander4, Ingrid Meulenbelt1, Peter Börnert1, 2, Andrew G. Webb1
1Radiology, Leiden University Medical Center, Leiden, Netherlands; 2Philips Healthcare, Eindhoven, Netherlands; 3Philips Research Hamburg, Germany; 4Medical Statistics and Bioinformatics, Molecular Epidemiology, Leiden University Medical Center, Netherlands

Computer 48 4636. Development of Theranostics Imaging Probe for MRI and EPR Imaging

Miho EMOTO1, Shingo Sato1, Hirotao G. Fujii1
1Center for Medical Education, Sapporo Medical University, Sapporo, Hokkaido, Japan; 2Graduate school of Science and Engineering, Yamagata University, Yamagata, Japan

Computer 49 4637. Interregional Associations Between Excitatory and Inhibitory Neurotransmitters in the Resting Human Brain

Marianne Cleve1, Alexander Gussew1, Lisa Janetzki2, Constanze Borys2, Jürgen R. Reichenbach1, Fei Gao1, Bin Zhao1, Guangbin Wang1, Wen Ma2, Muwei Li3, Fuxin Ren1, Bo Liu1, Weibo Chen4, Richard A.E. Edden5, Miguel Martínez-Maestro1, Maria Guidi1, Laurentius Huber1, Jöran Lepsien1, Henrik Marschner1, Candace C. Fleischer1, 2, Xiaoping Hu1, 2, Andrew H. Miller3, 4, Ebrahim Haroon3, 4, Alexander Peter Lin1, Sai Krishna Merugumala1, 2, Vera Anastosie2, Stephanie Couchell1, Xi April Long1, Huijun Vicky Liao1, Susan Waisbren2

Electronic Poster

Human Brain MRS

Exhibition Hall Thursday 13:30-14:30


Guillaume Madelin1, Ryan Brown1, Linda Moy1
1Department of Radiology, New York University Langone Medical Center, New York, NY, United States

Computer 47 4635. Quadruple Interleaved 23Na and 1H Acquisition at 7T

Paul W. de Brain1, Maarten J. Versluijs1, Peter Koken1, Sebastian A. Aussenhofer1, Wouter den Hollander4, Ingrid Meulenbelt1, Peter Börnert1, 2, Andrew G. Webb1
1Radiology, Leiden University Medical Center, Leiden, Netherlands; 2Philips Healthcare, Eindhoven, Netherlands; 3Philips Research Hamburg, Germany; 4Medical Statistics and Bioinformatics, Molecular Epidemiology, Leiden University Medical Center, Netherlands

Computer 48 4636. Development of Theranostics Imaging Probe for MRI and EPR Imaging

Miho EMOTO1, Shingo Sato1, Hirotao G. Fujii1
1Center for Medical Education, Sapporo Medical University, Sapporo, Hokkaido, Japan; 2Graduate school of Science and Engineering, Yamagata University, Yamagata, Japan

Computer 49 4637. Interregional Associations Between Excitatory and Inhibitory Neurotransmitters in the Resting Human Brain

Marianne Cleve1, Alexander Gussew1, Lisa Janetzki2, Constanze Borys2, Jürgen R. Reichenbach1, Fei Gao1, Bin Zhao1, Guangbin Wang1, Wen Ma2, Muwei Li3, Fuxin Ren1, Bo Liu1, Weibo Chen4, Richard A.E. Edden5, Miguel Martínez-Maestro1, Maria Guidi1, Laurentius Huber1, Jöran Lepsien1, Henrik Marschner1, Candace C. Fleischer1, 2, Xiaoping Hu1, 2, Andrew H. Miller3, 4, Ebrahim Haroon3, 4, Alexander Peter Lin1, Sai Krishna Merugumala1, 2, Vera Anastosie2, Stephanie Couchell1, Xi April Long1, Huijun Vicky Liao1, Susan Waisbren2

Electronic Poster

Human Brain MRS

Exhibition Hall Thursday 13:30-14:30


Guillaume Madelin1, Ryan Brown1, Linda Moy1
1Department of Radiology, New York University Langone Medical Center, New York, NY, United States

Computer 47 4635. Quadruple Interleaved 23Na and 1H Acquisition at 7T

Paul W. de Brain1, Maarten J. Versluijs1, Peter Koken1, Sebastian A. Aussenhofer1, Wouter den Hollander4, Ingrid Meulenbelt1, Peter Börnert1, 2, Andrew G. Webb1
1Radiology, Leiden University Medical Center, Leiden, Netherlands; 2Philips Healthcare, Eindhoven, Netherlands; 3Philips Research Hamburg, Germany; 4Medical Statistics and Bioinformatics, Molecular Epidemiology, Leiden University Medical Center, Netherlands

Computer 48 4636. Development of Theranostics Imaging Probe for MRI and EPR Imaging

Miho EMOTO1, Shingo Sato1, Hirotao G. Fujii1
1Center for Medical Education, Sapporo Medical University, Sapporo, Hokkaido, Japan; 2Graduate school of Science and Engineeri...
Neurometabolite Alterations in Hippocampus in Hypothyroid Patients: An In-Vivo 1H MRS Study
Subash Khushu1, Sadhana Singh1, Poonam Rana1, Pawan Kumar1, L Ravi Shankar2, Jannie P. Wijnen1, 2, Ronald Zielman3, Gerrit L.J. Onderwater3, Andrew Webb2, Gisela M. Terwindt3, Michel Ferrari3, Bo Liu1, Bin Zhao1, Guangbin Wang1, Fei Gao1, Zhensong Wang1, Weibo Chen2, Nuttawadee Intachai1, Artit Rodkong1, Suwit Saekho1, 2, Napapon Sailsutth1, Apinun Aramrattanan1, Kanok Uttawichai2, Melkka Thomsonb, Bangorn Sirirojn1, 2, Daralak Thavornprasit1, Sineenart Taejaroenkul1, Kamolraweew Sintupat1, Victor Valcour4, Robert Paul1
1Department of Radiological Technology, Faculty of Associated Medical Sciences, Chiang Mai University, Chiang Mai, Thailand; 2Biomedical Engineering Center, Faculty of Engineering, Chiang Mai University, Chiang Mai, Thailand; 3Huntington Medical Research Institute, CA, United States; 4Department of Family Medicine, Faculty of Medicine, Chiang Mai University, Chiang Mai, Thailand; 5Thanyarak Hospital, Chiang Mai, Thailand; 6Westat, MD, United States; 7Research Institute for Health Sciences, Chiang Mai University, Chiang Mai, Thailand; 8Department of Neurology, University of California, San Francisco, CA, United States; 9Department of Psychology, Behavioral Neuroscience, University of Missouri-St.Louis, St. Louis, United States

Investigation of Brain GABA Levels in Hypothyroidism Patients by MEGA-Editing Proton MR Spectroscopy
Bo Liu1, Bin Zhao1, Guangbin Wang1, Fei Gao1, Zhensong Wang1, Weibo Chen3, 4
1Shandong Medical Imaging Research Institute, Shandong University, Jinan, Shandong, China; 3Philips Healthcare, Shanghai, China

The Relationship Between 1H MRS and Brain Morphology at the Corresponding Locations in Methamphetamine Users
Nuttawadee Intachai1, Artit Rodkong1, Suwit Saekho1, 2, Napapon Sailsutth1, Apinun Aramrattanan1, Kanok Uttawichai2, Melkka Thomsonb, Bangorn Sirirojn1, 2, Daralak Thavornprasit1, Sineenart Taejaroenkul1, Kamolraweew Sintupat1, Victor Valcour4, Robert Paul1
1Department of Radiological Technology, Faculty of Associated Medical Sciences, Chiang Mai University, Chiang Mai, Thailand; 2Biomedical Engineering Center, Faculty of Engineering, Chiang Mai University, Chiang Mai, Thailand; 3Huntington Medical Research Institute, CA, United States; 4Department of Family Medicine, Faculty of Medicine, Chiang Mai University, Chiang Mai, Thailand; 5Thanyarak Hospital, Chiang Mai, Thailand; 6Westat, MD, United States; 7Research Institute for Health Sciences, Chiang Mai University, Chiang Mai, Thailand; 8Department of Neurology, University of California, San Francisco, CA, United States; 9Department of Psychology, Behavioral Neuroscience, University of Missouri-St.Louis, St. Louis, United States

7T Brain MRS in HIV Infection: Effects of Serostatus and Cognitive Impairment
Mona A. Mohamed1, Peter B. Barker1, Richard L. Skolasky2, Heidi Vornbrock Roosa2, Ned Sacktor3
1Radiology, Johns Hopkins Medical Institutions, Baltimore, MD, United States; 2Orthopedic Surgery, Johns Hopkins Medical Institutions, MD, United States; 3Neurology, Johns Hopkins Medical Institutions, MD, United States

Diffusion Weighted Magnetic Resonance Spectroscopy in Different Stages of MELAS Patient
Dandan Zheng1, Bing Wu1, Huimao Zhang1, Jue Zhang3, Zhenyu Zhou2
1GE Healthcare China, Beijing, China; 2Radiology Department, The First Hospital of Jilin University, Changchun, Jilin, China; 3Peking University, Beijing, China

Elevated Glutamate Concentrations in the Visual Cortex of Migraine Without Aura Detected at 7 Tesla.
Jannie P. Wijnen1, 2, Ronald Zielman3, Gerrit L.J. Onderwater4, Andrew Webb5, Gisela M. Terwindt6, Michel Ferrari7, Hermien E. Kan8, Mark C. Kruij8
1University Medical Centre Utrecht, Utrecht, Netherlands; 2Radiology, Leiden University Medical Centre, Leiden, Zuid Holland, Netherlands; 3Neurology, Leiden University Medical Centre, Leiden, Zuid Holland, Netherlands

Investigating Metabolic and Functional Profiles of Mild and Moderate Cervical Spondylotic Myelopathy: A 1H MRS and fMRI Study
Izabela Aleksanderek1, 2, Todd K. Stevens2, Sandy Goncalves1, 2, Robert Bartha1, 2, Neil Duggal1, 2
1Medical Biophysics, Western University, London, Ontario, Canada; 2Robarts Research Institute, London, Ontario, Canada; 3Huntington Medical Research Institute, CA, United States; 4Department of Psychology, Behavioral Neuroscience, University of Missouri-St.Louis, St. Louis, United States

Increased GABA Levels in Manganese Neurotoxicity: Biochemical Effect or Mn-Induced Change of GABA T1 Relaxation Time?
Ruoyun Ma1, 2, Anne Lotz1, Ulrike Dy dak1, 2
1School of Health Sciences, Purdue University, West Lafayette, IN, United States; 2Department of Radiology and Imaging Sciences, Indiana University School of Medicine, Indianapolis, IN, United States; 3Center of Epidemiology, Institute for Prevention and Occupational Medicine of the DGUV, Institute of the Ruhr-Universitӓt&ltp;#1235; Bochum, Germany

Evidence of Altered High-Energy Phosphate and Membrane Phospholipid Metabolism in Pelizaeus-Merzbacher Patients with PLP1 Duplications Using 31P Magnetic Resonance Spectroscopy
Anirudha S. Rathnam1, Jasloveleen Sohi1, Dalal Khatib2, Jeremy J. Laukka2, John Kamholz5, Jeffrey Stanley1
1Center for Clinical Spectroscopy, Brigham and Women’s Hospital, Boston, MA, United States; 2Texas Tech University Health Sciences Center, Lubbock, TX, United States; 3Metabolism Research, Boston Children’s Hospital, Boston, MA, United States; 4Center of Epidemiology, Institute for Prevention and Occupational Medicine of the DGUV, Institute of the Ruhr-Universitӓt&ltp;#1235; Bochum, Germany

611
4652. **Quantitative Characterization of Tumor Microstructural Variations in Response to Chemotherapy Using Temporal Diffusion Spectroscopy**

Xiaoyu Jiang1, Hua Li1, Ping Zhao1, Jingping Xie1, Stephanie L. Barnes2, Thomas Yankeelov1, Junzong Xu1, John C. Gore1

1Institute of Imaging Science, vanderbilt university, nashville, TN, United States

4653. **Localized 1H-MRS of Brain Phenylalanine in Adults with Phenylketonuria**


1Department of Radiology, Academic Medical Center, Amsterdam, Netherlands; 2Department of Internal Medicine, Academic Medical Center, Amsterdam, Netherlands; 3Department of Nuclear Medicine, Academic Medical Center, Amsterdam, Netherlands; 4Department of Pediatrics, Academic Medical Center, Amsterdam, Netherlands; 5Department of Neurology, Academic Medical Center, Amsterdam, Netherlands; 6Department of Metabolic Diseases, University Medical Center Groningen, Groningen, Netherlands; 7Department of Psychiatry, Academic Medical Center, Amsterdam, Netherlands; 8Laboratory Genetic Metabolic Diseases, Academic Medical Center, Amsterdam, Netherlands

4654. **Ketone Bodies and Glucose in Human Brain during Ketogenic Diet and Fasting**

Florian Schubert1, Ralf Mekle1, Bernd Ittermann1, Markus Bock2

1Physikalisich-Technische Bundesanstalt, Berlin, Germany; 2ECRC, Charitii Universitiiatsmedizin, Berlin, Germany

4655. **Comparison of Healthy Young and Elderly: A Study Using Automated Whole-Brain N-Acetylaspartate Quantification**

William E. Wu1, Marc Sollberger2, Lidia Glodzik1, Andreas U. Monsch2, Achim Gass3, Oded Gonen4

1Radiology, New York University School of Medicine, New York, NY, United States; 2Neurology and Neuroradiology, University Hospital Basel, Basel, Switzerland; 3Psychiatry, New York University School of Medicine, New York, NY, United States; 4Neurology, University of Heidelberg, Mannheim, Germany

4656. **Reproducibility and Effect of Voxel Compartments on Cerebellar GABA MRS in an Elderly Population**

Zaiyang Long1, Jonathan P. Dyke2, Ruoyun Ma3, Chaorui C. Huang5, Elan D. Louis6, 7, Ulrike Dydak3, 4

1Department of Radiology, Mayo Clinic, Rochester, MN, United States; 2Department of Radiology, Weill Cornell Medical College, New York, NY, United States; 3School of Health Sciences, Purdue University, West Lafayette, IN, United States; 4Department of Radiology and Imaging Sciences, Indiana University School of Medicine, Indianapolis, IN, United States; 5Brain and Mind Research Institute, Weill Medical College of Cornell University, New York, NY, United States; 6College of Physicians and Surgeons, Columbia University, New York, NY, United States; 7Mailman School of Public Health, Columbia University, New York, NY, United States

4657. **Correlation of MRS Water Proton Resonance Frequency with ADC in Childhood Brain Tumours**

Ben Babourina-Brooks1, 2, Theodoros N. Arvanitis, 2, Andrew C. Peer1, 2, Nigel P. Davies1, 4

1School of Cancer Sciences, University of Birmingham, Birmingham, West Midlands, United Kingdom; 2Birmingham Children's Hospital NHS Foundation Trust, Birmingham, West Midlands, United Kingdom; 3Institute of Digital Healthcare, WMG, University of Warwick, Coventry, West Midlands, United Kingdom; 4Imaging & Medical Physics, University Hospitals Birmingham NHS Foundation Trust, West Midlands, United Kingdom

4658. **Altered Macromolecular Pattern in Aging Brain**

Malgorzata Marjanska1, J. Riley McCartney2, Laura S. Hemmy2, Melissa Terpstra1

1Center for Magnetic Resonance Research, University of Minnesota, Minneapolis, MN, United States; 2Minneapolis VA Medical Center, Geriatric Research and Clinical Center, Minneapolis, MN, United States

4659. **Reproducibility of Glutamate, GABA and Glycine in Human Brain, as Measured by Optimized 1H MRS at 7T**

Zhongxu An1, Sandeep Ganji1, Changho Choi1

1Advanced Imaging Research Center, University of Texas Southwestern Medical Center, Dallas, TX, United States
Towards Translation of Advanced MRS Methodology to Clinical Setting

Dinesh K. Deelchand, Kejal Kantarci, Lynn E. Eberly, Gulin Oz

1Center for Magnetic Resonance Research, University of Minnesota, Minneapolis, MN, United States; 2Department of Radiology, Mayo Clinic, Rochester, MN, United States; 3Division of Biostatistics, University of Minnesota, Minneapolis, MN, United States

Biodistribution of Lanthanide-Based MRI Contrast Agents Assessed by BIRDS

Yuegao Huang, Peter Herman, Daniel Coman, Samuel Maritit, Fahmeeed Hyder

1Diagnostic Radiology, Yale University, New Haven, CT, United States; 2Biomedical Engineering, Yale University, New Haven, CT, United States

Fe2O3/Agl Core/Shell Nanoparticles for Dual Modal Computed Tomography and Magnetic Resonance Imaging Applications.

Anamaria Orza, Xiangyang Tang, Yi Yang, Hui We, Run Lin, Liya Wang, Hui Mao

1Radiology and Imaging Sciences, Emory University, Atlanta, GA, United States; 2Radiology and Imaging Sciences, Emory University, Atlanta, GA, United States

Fast Relaxing Contrast Agent for Fluorine MRI

Vít Herynek, Andrea Gálisová, Jan Blahut, Jan Kotek, Milan Háječ

1Institute for Clinical and Experimental Medicine, Prague, Czech Republic; 2Faculty of Science, Charles University, Prague, Czech Republic

Physical Principles of Transient T1-Lengthening by Hemodilution: Applications to Perfusion MRI with Normal Saline Injections (NSI)

Hernan Jara, Osamu Sakai, Asim Z. Mian, Stephan Anderson, Jorge A. Soto, Alexander M. Norbash

1Boston University, Boston, MA, United States

Dual Functional Graphene Quantum Dots for Targeted Multimodal Imaging and Therapy

Shizhen Chen, Yuqi Yang, Qing Luo, Xin Zhou

1National Center for Magnetic Resonance in Wuhan, Wuhan Institute of Physics and Mathematics, Wuhan, Hubei, China

A Novel CEST-MRI Ratiometric Approach for In Vivo PH Imaging

Dario Livio Longo, Philip Zhe Sun, Lorena Consolin, Filippo Michelotti, Fulvio Uggeri, Silvio Aime

1Institute of Biostructure and Bioimaging, CNR, Torino, Italy; 2MGH and Harvard Medical School, Athinoula A. Martinos Center for Biomedical Imaging, Charlestown, MA, United States; 3Department of Molecular Biotechnology and Health Sciences, University of Torino, Torino, Italy; 4Molecular Imaging Center, University of Torino, Torino, Italy; 5Department of Preclinical Imaging and Radiopharmacy, University of Tubingen, Tubingen, Germany; 6Bracco Imaging SpA, Milano, Italy

Imaging Developing Neural Structures in Chick Embryo Using Novel Gd2O3 Contrast Agent

Gary R. Stinnett, Nasim Taheri, Stacey M. Glasgow, Benjamin Deneen, Vicki L. Colvin, Robia G. Pautler

1Baylor College of Medicine, Houston, TX, United States; 2Chemistry, Rice University, Houston, TX, United States; 3Ctr Stem& Regen, Baylor College of Medicine, Houston, TX, United States; 4Neuroscience, Baylor College of Medicine, Houston, TX, United States; 5Molecular Physiology and Biophysics, Baylor College of Medicine, Houston, TX, United States

Developing Hyperpolarized Silicon Micro and Nanoparticles for Targeted Molecular Imaging of Ovarian Cancer

Nicholas Whiting, Jingzhe Hu, Niki Zacharias Millward, Rajesha Rupaimooole, David Gorenstein, Anil Sood, Pratip Bhattacharya

1Cancer Systems Imaging, The University of Texas MD Anderson Cancer Center, Houston, TX, United States; 2Department of Bioengineering, Rice University, Houston, TX, United States; 3Gynecologic Oncology and Reproductive Medicine, The University of Texas MD Anderson Cancer Center, Houston, TX, United States; 4Nanomedicine and Biomedical Engineering, The University of Texas Health Science Center at Houston, Houston, TX, United States
Electronic Poster

Computer 9 4669. Motexafin Gadolinium (MGd)-Enhanced Molecular MR and Optical Imaging of Rat Gliomas for Potential Intraoperative Determination of Tumor Margins
Longhina Qu1,2, Feng Zhang1, Yaoping Shi1, Zhibin Bai1, Jianfeng Wang1, Donghoon Lee1, Xiaoyuan Feng2, Xiaoming Yang1
1Image-Guided Biomolecular Intervention Research, Department of Radiology, University of Washington School of Medicine, Seattle, WA, United States; 2Department of Radiology, Huashan Hospital, Fudan University, Shanghai, China

Computer 10 4670. MRI of Liver Fibrosis with a Fibrin-Specific Probe
Iliyana Atanasova1, Lan Wei2, Helen Day1, Boris Keil1, Francesco Blasi1, Bryan C. Fuchs2, Peter Caravan1
1Madrid-MIT MVision Consortium, MIT, Cambridge, MA, United States; 2Division of Surgical Oncology, Massachusetts General Hospital, Boston, MA, United States; 1A. A. Martinos Center for Biomedical Imaging, Massachusetts General Hospital, Charlestown, MA, United States

Chao Li1,2, Zhangjie Su1, Ka-Loh Li1, Alex Gerhard1, Gerard Thompson1, Xiaoping Zhu1, Rainer Hinz1, Federico Roncaroli1, Karl Herholz1, Alan Jackson1
1Wolfson Molecular Imaging Centre, The University of Manchester, Manchester, United Kingdom; 2Department of Neurosurgery, Shanghai First People's Hospital, Shanghai, China; 1John Fulcher” Neuro-Oncology Lab, Imperial College London, London, United Kingdom

Computer 12 4672. Magnetic Brain Cell Stimulation Using an MRI Contrast Agent: Superparamagnetic Iron Oxide Nanoparticles (SPIONs)
Yichao Yu1, Chris Payne1, Vitaliy Kasymov2, Bernard Siow1, Quentin Pankhurst1, Alexander Gourine2, Mark F. Lythgoe1
1Centre for Advanced Biomedical Imaging, University College London, London, United Kingdom; 2Neuroscience, Physiology and Pharmacology, University College London, London, United Kingdom; 1Institute of Biomedical Engineering, University College London, London, United Kingdom

Eliana Gianolio1, Francesca Arena1, Enza Di Gregorio1, Roberto Pagliarin1, Martina Delbianco1, Gabriella Baio1, Silvio Aime1
1Molecular Biotecnologies and Health Sciences, University of Torino, Torino, Italy, Italy; 1Chemistry, University of Milano, Milano, Italy, Italy; 1Aberdeen Biomedical Imaging Centre, University of Aberdeen, Aberdeen, Scotland, United Kingdom

Computer 14 4674. Manganese-Enhanced MRI (MEMRI) Enables Measurement of Regional Myocardial Viability and to Evaluate the Regenerative Effects by Human Induced Pluripotent Stem Cell Derived Cardiomyocytes (ICMs)
Atsushi Tachibana1, Morteza Mahmoudi1, Yuka Matsuur1, Rajesh Dash1, Eric Rulifson1, Phillip Yang1
1Cardiovascular Medicine, Stanford University School of Medicine, Stanford, CA, United States

Computer 15 4675. Functional Imaging of Brown Fat in Mouse
Hussein SROUR1, Kai Hsiang CHUANG1
1Singapore Biomaging Consortium, Singapore, Singapore

Computer 16 4676. Evaluation of PET/DWI Registration Quality in PET/MR Hybrid Scanner: Zoomed DWI Vs. Conventional DWI
Koji Sagiyama1, Yuji Watanabe2, Ryotaro Kamei1, Shingo Babel1, Takuro Isod1, Osamu Togao1, Michinobu Nagao2, Satoshi Kawamura1, Akihito Nishie1, Hiroshi Honda1
1Department of Clinical Radiology, Graduate School of Medical Sciences, Kyushu University, Higashi-ku, Fukuoka, Japan; 2Department of Molecular Imaging and Diagnosis, Graduate School of Medical Sciences, Kyushu University, Higashi-ku, Fukuoka, Japan

Computer 17 4677. Metabolic Imaging to Differentiate Aggressive Versus Indolent Prostate Cancer
Niki Zacharias Millward1, Christopher McCullough1, Youngbok Lee2, Jingzhe Hu1,3, Prasanta Dutta1, David Piwnica-Worms1, Pratip Bhattacharya1
Electronic Poster

Computer 18 4678. Monitoring the Pancreatic Islets Implantation in the Subcutaneous Polymeric Scaffolds by DCE-MRI and Optical Imaging

Andrea Gálisová1, Daniel Jirák1, Eva Fábyrová2, Vít Herynek1, Lucie Kosionová1, Jan K&##345;i2, Milan Hájek1
1MR Unit, Department of Diagnostic and Interventional Radiology, Institute for Clinical and Experimental Medicine, Prague, Czech Republic; 2Center of Experimental Medicine, Institute for Clinical and Experimental Medicine, Prague, Czech Republic

Computer 19 4679. Improvements of Quantitative Oxygenation Levels in Venous Blood (Y,) Measurements Based on QUIXOTIC

Klaus Möllenhoff1, Nadim Jon Shah1, 2
1Institute of Neuroscience and Medicine - 4, Forschungszentrum Jülich GmbH, Jülich, NRW, Germany; 2Faculty of Medicine, Department of Neurology, JARA, RWTH Aachen University, Aachen, NRW, Germany

Computer 20 4680. Optimization of Pulsed CEST Imaging Using Genetic Algorithm

Eriko Yoshimara1, Edward Randtke1, Mark D. Pagel1, Julio Cárdenas-Rodríguez1
1Biomedical Engineering, University of Arizona, Tucson, AZ, United States

Computer 21 4681. Tri-Modal In Vivo Imaging of the Rodent Pancreatic Islets Transplanted in the Subcutaneous Site

Sayuan Liang1, Karim Louchami1, 2, Bryan Holvoet1, Rein Verbeke1, Bella Manshian1, Willy J Malaisse1, Abdullah Sener1, Ine Lentacker3, Uwe Himmelreich1
1Department of Imaging & Pathology, KU Leuven, Leuven, Flemish Brabant, Belgium; 2Laboratory of Experimental Hormonology, Université Libre de Bruxelles, Brussels, Belgium; 3Laboratory for General Biochemistry and Physical Pharmacy, Ghent University, Ghent, East Flanders, Belgium


Hernan Jara1, Asim Z. Mian1, Osamu Sakai1, Stephan Anderson1, Jorge A. Soto1, Alexander M. Norbash1
1Boston University, Boston, MA, United States

Electronic Poster
SV MRS Acquisition Methods
Exhibition Hall Thursday 14:30-15:30

Computer 25 4683. Comparison of MEGA-PRESS and A-PRESS for the Measurements for GABA Concentration in the Brain of Healthy Volunteers

Zhengsong Wang1, 2, Caroline Rae3, Guangqiang Geng4, Weibo Chen5, Fei Gao1, Bo Liu1, Jie Gan2, Xue Bai6, Bin Zhao1, Guangbin Wang1
1Shandong Medical Imaging Research Institute, Shandong University, Jinan, Shandong, China; 2Second Affiliated Hospital of Shandong university of Traditional Chinese Medicine, Jinan, Shandong, China; 3Neuroscience Research Australia, UNSW, Sydney, Australia; 4Philips Healthcare MR R&D, Suzhou, Jiangsu, China; 5Philips Healthcare, Shanghai, China; 6Qilu Hospital, Shandong University, Jinan, Shandong, China

Computer 26 4684. Non Uniform Sampling for Sparse 2D Correlated MRS: A Quantitative Point of View

Dimitri Martel1, Dany Merhoj2, Remy Prost1, Denis Frébould1, Helene Ratiney1
1CREATIS; CNRS UMR 5220; INSERM U1044; Université Lyon 1; INSA Lyon, Villeurbanne, France; 2ISAE CNAM, Beirut, Lebanon

Computer 27 4685. Line Broadening Interference for High-Resolution MRS Under Inhomogeneous Magnetic Fields

Zhiliang Wei1, Zhong Chen1
1Department of Electronic Science, Xiamen University, Xiamen, Fujian, China

Computer 28 4686. Heteronuclear Single Quantum Coherence (HSQC) MRS in Humans at 7 T

Robin A. de Graaf1, Henk M. De Feyter1, Douglas L. Rothman1
1MRRC, Yale University, New Haven, CT, United States
Electronic Poster

Computer 29. 4687. J-Difference Editing of GABA with Extended Echo-Times
Jamie Near, Chahkura Kumaramagama
1Department of Psychiatry, McGill University, Montreal, Quebec, Canada; 2Centre d'Imagerie Cérébrale, Douglas Institute, Montreal, Quebec, Canada; 3Department of Biomedical Engineering, McGill University, Montreal, Quebec, Canada

Computer 30. 4688. Sparse Reconstruction of Localized Correlated Spectroscopy: From Sub-Sampled Priors to Fast Acquisition
Mohammad Abdi-Shektaei, Abbas Nasirae Moghaddam, Rajakumar Nagarajan, M. Albert Thomas
1BME, Amirkabir University of Technology (Tehran Polytechnic), Tehran, Iran; 2School of Cognitive Sciences, Institute for Research in Fundamental Sciences (IPM), Tehran, Iran; 3Radiological Sciences, UCLA School of Medicine, Los Angeles, CA, United States

Computer 31. 4689. Average Weighted Acquisition for Faster Acquisition of In Vivo Localized Two Dimensional Correlation Spectroscopy of the Brain
Gaurav Verma, Michael Albert Thomas, Harish Poptani
1Radiology, University of Pennsylvania, Philadelphia, PA, United States; 2Radiology, University of California at Los Angeles, Los Angeles, CA, United States

Computer 32. 4690. An Optimized PRESS Sequence for the Detection of Glycine at 9.4 T
Brennen J. Dobberthien, Anthony G. Tessier, B. Gino Fallone, Atiyah Yahya
1Department of Oncology, University of Alberta, Edmonton, Alberta, Canada; 2Department of Medical Physics, Cross Cancer Institute, Edmonton, Alberta, Canada

Computer 33. 4691. Accurate Compressive Sensing of 1H MR Spectroscopic Imaging in Brain Tumors
Mohammad Abdi-Shektaei, Felix Raschke, Franklyn A. Howe, Abbas Nasirae Moghaddam
1BME, Amirkabir University of Technology (Tehran Polytechnic), Tehran, Iran; 2Radiological Sciences, Division of Clinical Neuroscience, University of Nottingham, Nottingham, United Kingdom; 3Cardiovascular and Cell Sciences Research Institute, St George's, University of London, London, United Kingdom; 4School of Cognitive Sciences, Institute for Research in Fundamental Sciences (IPM), Tehran, Iran

Computer 34. 4692. Macromolecule Suppressed GABA Editing with Single Spin-Echo and Out-Of-Voxel Artifact Suppression
Meng Gu, Ralph Hurd, Ralph Noeske, Ariel Rokem, Laima Baltusis, Daniel Spielman
1Radiology, Stanford University, Stanford, CA, United States; 2GE Healthcare, Menlo Park, CA, United States; 3MR Application & Workflow Development, GE Healthcare, Berlin, Germany; 4Psychology, Stanford University, Stanford, CA, United States; 5Center for Cognitive and Neurobiological Imaging, Stanford University, Stanford, CA, United States

Computer 35. 4693. In Vivo Detection of Lactate at 7T Using Long TE SLASER and MEGA-SLASER
Chen Chen, Peter Morris, Susan Francis, Penny Gowland
1Sir Peter Mansfield Imaging Centre (SPMIC), University of Nottingham, Nottingham, Nottinghamshire, United Kingdom

Computer 36. 4694. Optimization of MEGA-PRESS for the Simultaneous Detection of Glutamate and Glutamine, and GABA
Karim Snoussi, Sabechya Pradhan, Ashley D. Harris, Richard A.E. Edden, Peter B. Barker
1Russel H. Morgan Department of Radiology and Radiological Science, Johns Hopkins University School of Medicine, Baltimore, MD, United States; 2Kennedy Krieger Institute, Johns Hopkins University, Baltimore, MD, United States

Computer 37. 4695. Improving Robustness for Voxel Based Transmit Gain Calibration Using Bloch-Siegert Shift Method for MR Spectroscopy at 7T
Alessandra Toncelli, Ralph Noeske, Mauro Costagli, Michela Tosetti
1INFN and Department of Physics, University of Pisa, Pisa, Italy; 2GE Healthcare, Berlin, Germany; 3Fondazione Imago, Italy; 4Stella Maris Scientific Institute, Italy

Computer 38. 4696. Metabolite Cycled Single Voxel 1H Spectroscopy at 9.4T
Ioannis Angelos Giapitzakis, Sahar Nassirpour, Nikolai Avdievich, Roland Kreis, Anke Henning
1Max Planck Institute for Biological Cybernetics, Tuebingen, Baden-Wuerttemberg, Germany; 2Departments of Radiology and Clinical Research, University of Bern, Bern, Switzerland; 3Institute for Biomedical Engineering, UZH and ETH Zurich, Zurich, Switzerland
Multi-Echo Echo-Planar J-Resolved Spectroscopy of Human Brain Using Semi-LASER Pulses
Manoj Kumar Sarma¹, Rajakumar Nagarajana¹, Paul Michael Macey¹, M. Albert Thomas¹
¹Radiological Sciences, UCLA School of Medicine, Los Angeles, CA, United States; ²School of Nursing, UCLA School of Medicine, Los Angeles, CA, United States

High-Resolution Spatially Encoded Intermolecular Double-Quantum Coherence NMR Spectroscopy for Biological Systems
Kaiyu Wang¹, Hao Chen¹, Zhiyong Zhang¹, Yuqing Huang¹, Zhong Chen¹
¹Electronic Science, Xiamen University, Xiamen, Fujian, China

Volumetric Navigated MEGA-SPECIAL for Real-Time Motion Corrected GABA MRS
Muhammad Gulamabbaes Saleh¹, A. Alhamud¹, Lindie Du Plessis¹, André J.W. van der Kooiwe³, Jamie Near³, Ernesta M. Meintjes¹
¹Department of Human Biology, MRC/UCT Medical Imaging Research Unit, University of Cape Town, Cape Town, Western Cape, South Africa; ²Massachusetts General Hospital, Charlestown, MA, United States; ³Douglas Mental Health University Institute and Department of Psychiatry, McGill University, Montreal, Canada

The Effects of Gadolinium on the Hyperpolarization of [1-13C]pyruvate at 3.35 T and 5 T
Michael S. Dodd¹, Jack J. Miller¹, ², Damian J. Tyler¹
¹Department of Physiology, Anatomy and Genetics, University of Oxford, Oxford, United Kingdom; ²Department of Physics, University of Oxford, Oxford, United Kingdom

13C Signal Enhancement in Human Brain at 7T by NOE and Stochastic Proton Decoupling
Shizhe S. Li¹, Li An¹, Maria Ferraris Araneta¹, Christopher Johnson¹, Jun Shen¹
¹NIMH, National Institutes of Health, Bethesda, MD, United States

MR Spectroscopy of Very Small Volumes (~0.4 µl) of 13C-Labelled Metabolites Using Microcoil Detection: Application to Online Measurements of Cerebral Microdialysate
Silvia Rizzitelli², Alan Wong³, Guillaume Radecki³, Luisa Ciobanu³, Gerard Raffard³, Stephane Sanchez³, Veronique Bouchaud³, Leslie Mazuel¹, Anne-Karine Bouzier-Sore⁴, Yannick Crémillieux³
²CRSMB, University of Bordeaux, Bordeaux, France, France; ³NIMBE/LSDRM, CEA-Saclay, Gif-sur-Yvette, France, France; ⁴CEA I2BM NeuroSpin, Gif-sur-Yvette, France, France

Reproducibility of Dynamic Phosphorus MRS of Planar Flexion: Influence of Ergometer Design, Magnetic Field Strength, and RF-Coil Design
Petr Sedivy¹, Monika Christina Kipfelsberger², Miloslav Drobny², Martin Krššák², ³, Jan Rydlo¹, Marek Chmelík², Marjeta Tušek Jelenc³, Milan Hájek¹, Siegfried Trauttm², Monika Dezortová³, Ladislav Valkovic², ³
¹MR-Unit, Department of Diagnostic and Interventional Radiology, Institute for Clinical and Experimental Medicine, Prague, Czech Republic; ²High Field MR Centre, Department of Biomedical Imaging and Image-guided Therapy, Medical University of Vienna, Vienna, Austria; ³Division of Endocrinology and Metabolism, Department of Internal Medicine III, Medical University of Vienna, Vienna, Austria; ⁴Department of Imaging Methods, Institute of Measurement Science, Slovak Academy of Sciences, Bratislava, Slovakia

Feasibility and Repeatability of the Localized 31P MRS Four-Angle Saturation Transfer (FAST) of the Human Gastrocnemius Muscle Using Surface Coil at 7T
Marjeta Tušek Jelenc³, Marek Chmelík¹, Wolfgang Bogner¹, Martin Krššák², ³, Siegfried Trauttm², Ladislav Valkovic², ³
¹High Field MR Centre, Department of Biomedical Imaging and Image-guided Therapy, Medical University of Vienna, Vienna, Austria; ²Division of Endocrinology and Metabolism, Department of Internal Medicine III, Medical University of Vienna, Vienna, Austria; ³Department of Imaging Methods, Institute of Measurement Science, Slovak Academy of Sciences, Bratislava, Slovakia

Proton Magnetic Resonance Spectroscopy Techniques to Measure the Lipid Olefinic Resonance In Vivo
Atiyah Yahya³, ²
¹Department of Oncology, University of Alberta, Edmonton, Alberta, Canada; ²Department of Medical Physics, Cross Cancer Institute, Edmonton, Alberta, Canada
Electronic Poster

MRS Data Processing Quantitation of MRSI Acquisition Method

Exhibition Hall Thursday 14:30-15:30

Computer 48 4706. Potential Effects of Superficial Fat on Metabolite Concentrations Determined by Water Referencing Studied with Various Acquisition Settings
Sreenath Pruthviraj Kyathanahally1, Nicole D Fichtner1, Victor J Adalid1, Roland Kreis1
1Depts. Radiology and Clinical Research, University Bern, Bern, Switzerland

Computer 49 4707. A Pilot Validation of Accelerated Multi-Echo Based Echo-Planar Correlated Spectroscopic Imaging in Human Calf Muscles
Manoj Kumar Sarma1, Zohaib Iqbal1, Brian Burns1, Rajakumar Nagarajan1, Cathy C. Lee1, M. Albert Thomas1
1Radiological Sciences, UCLA School of Medicine, Los angeles, CA, United States; 2Geriatrics, VA Greater Los Angeles Healthcare System, Los angeles, CA, United States

Computer 50 4708. Spectral-Spatial-Spiral MRSI: Fast Prostate MR Spectroscopic Imaging with Low SAR on 7T
Bart Philips1, Miriam W. van de Stadt-Lagemaat1, Mark J. van Uden1, Eline K. Vos1, Borgen Gagosti2, Adam B. Kerr3, Marnix C. Maas1, Tom W.J. Scheenen1
1Radiology and Nuclear Medicine, Radboud University Medical Centre, Nijmegen, Gelderland, Netherlands; 2Fetal-Neonatal Neuroimaging & Developmental Science Center, Boston Children's Hospital, Harvard Medical School, Boston, MA, United States; 3Magnetic Resonance Systems Research Lab, Electrical Engineering, Stanford University, Stanford, CA, United States

Computer 51 4709. Compressed Sensing of Non-Uniformly Undersampled 3D EPSI of Healthy Brain
Rajakumar Nagarajan1, Zohaib Iqbal1, Manoj K. Sarma1, M.Albert Thomas1
1Radiological Sciences, UCLA School of Medicine, Los angeles, CA, United States

Computer 52 4710. Fast and Simple Water Signal Acquisition Sequence for Quantification of 1H Metabolites in the Brain
Michal Bittsansky1, Petra Hnilicova1, Dusan Dobrota1
1Jessenius Faculty of Medicine, Comenius University, Martin, Slovakia, Slovakia

Computer 53 4711. Accelerated Multi-Slice 1H FID-MRSI in the Human Brain at 9.4 T
Sahar Nassirpour1, Thomas Kirchner1, Ioannis Angelos Giapitzakis1, Anke Henning,12
1Max Planck Institute for Biological Cybernetics, Tübingen, Germany; 2Institute for Biomedical Engineering, UZH and ETH Zürich, Zürich, Switzerland

Computer 54 4712. GRAPPA Accelerated CSI and Its Impacts for Metabolites Quantifications
Tiejun Zhao1, Julie W. Pan1, Hoby P. Hetherington1
1Siemens Medical Solutions USA, Inc., Pittsburgh, PA, United States; 2Department of Radiology, Pittsburgh, PA, United States

Computer 55 4713. To NOE or Not to NOE? - A Study About the Use of the Nuclear Overhauser Effect in 31P MRSI of the Brain at 7T
Miriam W. van de Stadt-Lagemaat1, Bart L. van de Bank1, Marnix C. Maas1, Tom WJ Scheenen1, 2
1Radiology and Nuclear Medicine, Radboud University Medical Center, Nijmegen, Netherlands; 2Erwin L. Hahn Institute for Magnetic Resonance Imaging, Essen, Germany

Computer 56 4714. Fast 31P Chemical Shift Imaging Using Multi-Spiral Acquisition at 9.4T
Yuchi Liu1, Yun Jiang1, Charlie Yi Wang1, Mark Alan Griswold1, 2, Xin Yu1, 2
1Biomedical Engineering, Case Western Reserve University, Cleveland, OH, United States; 2Radiology, Case Western Reserve University, Cleveland, OH, United States

Computer 57 4715. Implementation and Comparison of LASER- And Semi-LASER-Based MRSI Pulse Sequences at 9.4T
Sungjin Kim1, 2, Hyeonjin Kim1, 2
1Radiology, Seoul National University Hospital, Seoul, Korea; 2Biomedical Sciences, Seoul National University, Seoul, Korea
A Surface Crusher Coil for Human Cardiac Phosphorus ($^{31}$P) MR Spectroscopic Imaging Study at 7 Tesla
Benoit Schaller$^1$, William Clarke$^1$, Stefan Neubauer$^1$, Matthew Robson$^1$, Christopher Rodgers$^2$
$^1$Cardiovascular Department, Oxford Centre for Clinical Magnetic Resonance Research, Oxford, Oxfordshire, United Kingdom

Correction for Off-Resonance-Induced Displacement in Spectrally Undersampled Hyperpolarized 13C Echo-Planar Spectroscopic Imaging
Peng Cao$^1$, Hsin-Yu Chen$^1$, Jeremy Gordon$^1$, Peter Shin$^1$, Wenwen Jiang$^1$, Peder Larson$^1$
$^1$University of California, San Francisco, San Francisco, CA, United States

Segmentation from High Resolution Volumetric MRI Using Compressed Sensing
Chuanshuai Tian$^3$, Kun Wang$^3$, Haiping Yu$^3$, Weibo Chen$^4$, Bin Zhu$^3$, Suiren Wan$^*$,$^1$, Yun Xu$^*$,$^2$, Bing Zhang$^*$,$^3$

Imaging of Tumor Glycolysis with 2D Heteronuclear Multiple Quantum Coherence: Accelerated Acquisitions Using Compressed Sensing
Hirohiko Imai$^2$, Kei Sano$^1$, Shota Momma$^1$, Toshiyuki Tanaka$^1$, Tetsuya Matsuda$^1$
$^1$Department of Systems Science, Graduate School of Informatics, Kyoto University, Sakyo-ku, Kyoto, Japan

Performance Optimized Lipid Artifact Removal (POLAR) with BASE-SLIM of Full FOV Human Brain 1H MRS
Peter Adany$^1$, In-Young Choi$^1$, $^2$, Phil Lee$^1$, $^3$
$^1$Hoglund Brain Imaging Center, University of Kansas Medical Center, Kansas City, KS, United States; $^2$Neurology, University of Kansas Medical Center, Kansas City, KS, United States; $^3$Molecular and Integrative Physiology, University of Kansas Medical Center, Kansas City, KS, United States

Human Brain 1H MRS of GM and WM: A Comparison of BASE-SLIM and CSI Regression
Peter Adany$^1$, Phil Lee$^1$, $^2$, In-Young Choi$^1$, $^3$
$^1$Hoglund Brain Imaging Center, University of Kansas Medical Center, Kansas City, KS, United States; $^2$Molecular and Integrative Physiology, University of Kansas Medical Center, Kansas City, KS, United States; $^3$Neurology, University of Kansas Medical Center, Kansas City, KS, United States

A Pilot Study on Measurement of Metabolites in the Hippocampal Subfields: Based on Multivoxel 1HMRS and Segmentation from High Resolution Volumetric MRI
Wenqing Liao $^*$, Wenbo Wu $^*$, Yu Sun $^*$, Renyuan Liu $^*$, Zhenyu Yin $^*$, Huiting Wang $^*$, Xin Zhang $^*$, Ming Li $^*$, Chuanshuai Tian $^*$, Kun Wang $^*$, Haiping Yu $^*$, Weibo Chen $^*$, Bin Zhu $^*$, Suiren Wan $^*$, Yun Xu $^*$, Bing Zhang $^*$
$^*$The Laboratory for Medical Electronics, School of Biological Sciences and Medical Engineering, Southeast University, Nanjing, China; $^1$Department of Neurology, The Affiliated Drum Tower Hospital of Nanjing Medical University, Nanjing, China; $^2$Department of Radiology, The Affiliated Drum Tower Hospital of Nanjing University Medical School, Nanjing, China; $^3$Philips Healthcare, Shanghai, China

Lineshape Compensation Methods for Modeling of 2DJ Spectra
Victor Javier Adalid$^1$, Chris Boesch$^1$, Christine S. Bolliger$^1$, Roland Kreis$^1$
$^1$Depts. Radiology and Clinical Research, University Bern, Bern, Switzerland
Computer 67 4725. Automated Pipeline for Processing and Analyzing MR Spectroscopic Imaging and Segmentation Data of Human Brain
Victor E. Yushmanov¹, Yoojin Lee¹, Claudiu Schirda¹, Hoby P. Hetherington¹, Jullie W. Pan¹, ²
¹Department of Radiology, University of Pittsburgh, Pittsburgh, PA, United States; ²Department of Neurology, University of Pittsburgh, Pittsburgh, PA, United States

Computer 68 4726. FID-A: an Open-Source, MATLAB-Based Toolbox for Magnetic Resonance Spectroscopy Simulation and Data Processing
Jamie Near¹, ², Gabriel A. Devenyi³, Robin Simpson¹
¹Department of Psychiatry, McGill University, Montreal, Quebec, Canada; ²Centre d’Imagerie Cérébrale, Douglas Institute, Montreal, Quebec, Canada; ³Centre d’Imagerie Cérébrale, Douglas Institute, Montréal, Quebec, Canada; ⁴Department of Medical Physics, Freiburg University, Freiburg, Germany

Computer 69 4727. Spectral Registration: a Simple New Method for Frequency and Phase Drift Correction of Magnetic Resonance Spectroscopy Data
Jamie Near¹, ², Richard Edden³, John Evans⁴, Raphael Paquin⁵, Ashley Harris³, Peter Jezzard⁵
¹Department of Psychiatry, McGill University, Montreal, Quebec, Canada; ²Centre d’Imagerie Cérébrale, Douglas Institute, Montreal, Quebec, Canada; ³Kennedy Krieger Institute, Johns Hopkins University, Baltimore, MD, United States; ⁴Cardiff University, Cardiff, Wales, United Kingdom; ⁵Healthcare, Siemens Canada Limited, Montreal, Quebec, Canada; ⁶FMRIB Centre, University of Oxford, Oxford, Oxfordshire, United Kingdom

Computer 70 4728. Multi-Channel Reconstruction in Single Voxel Spectroscopy
Carlos E. Garrido Salmon¹, ², Emma Louise Hall¹, Carolina Fernandes¹, Chen Chen¹, Peter G. Morris¹
¹Sir Peter Mansfield Magnetic Resonance Centre, Nottingham, Nottinghamshire, United Kingdom; ²Department of Physics, University of Sao Paulo, Ribeirao Preto, Sao Paulo, Brazil

Computer 71 4729. Spectral Fitting Using Basis Set Distorted by Measured B0 Field Distribution
Ningzhi Li¹, Li An¹, Shizhe S. Li¹, Jun Shen¹
¹National Institute of Mental Health, National Institutes of Health, Bethesda, MD, United States

Computer 72 4730. Phasing and Curve Fitting of Highly Resolved 2D Constant Time PRESS Spectra for Quantitation of Glutamate, GABA and Glutamine
Hidehiro Watanabe¹, Nobuhiro Takaya¹, Fumiyuki Mitsumori¹
¹Center for Environmental Measurement and Analysis, National Institute for Environmental Studies, Tsukuba, Ibaraki, Japan