

## STUDY GROUP SESSION

**Title: Hyperpolarized Media MR**

**Day:** Monday, 24 April

**Time:** 16:15 - 18:15

**Room #:** Rm 317AB

**Study Group** Chair, Matthew Merritt, Ph.D.; Vice Chair, Bastiaan Driehuys, Ph.D.; Secretary, Christoffer Laustsen, Ph.D.;  
**Committee:** Past Chair, Daniel B. Vigneron, Ph.D.; Trainee Representative, Angus Z. Lau, Ph.D.  
**2017-2018 Incoming Committee :** Secretary, Arnaud Comment, Ph.D.; Trainee Representative, Irene Marco-Rius, Ph.D.

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16:15	Introduction - Welcome & Business Meeting	Matthew Merritt, Ph.D. University of Florida, USA
16:25	Getting More With Less by Minimizing $^{13}\text{C}$ Polarization Losses	Arnaud Comment, Ph.D. General Electric Healthcare, UK
16:40	The $^{129}\text{Xe}$ MRI Clinical Trials Consortium: A Route for Multi-site Trials	Jason C. Woods, Ph.D. Cincinnati Children's Hospital Medical Center, USA
16:55	Understanding Kinetics Using Hyperpolarized Substrates	Peder E. Z. Larson, Ph.D. University of California at San Francisco, USA
17:10	Traditional & Electronic Poster Session	
18:10	Announcement of Poster Award Winners	Hyperpolarized Media SG Committee
18:15	Adjournment	

### Electronic Poster Presentations - Gas

<i>Assessment of Cinar Destruction in Idiopathic Pulmonary Fibrosis with Hyperpolarised <math>^3\text{He}</math> Gas Diffusion-Weighted MRI: Reproducibility of ADC Metrics &amp; Correlation with Physiological Parameters of Disease Severity.</i>	Nicholas Weatherley, MBChB, MRCP University of Sheffield, UK
<i>Regional Analysis of Gas-Uptake Parameters in the Lung Using Hyperpolarized <math>^{129}\text{Xe}</math> Chemical Shift Saturation Recovery Spectroscopy &amp; Dissolved-Phase Imaging: A Reproducibility Study</i>	Agilo L. Kern, M.Sc. Hannover Medical School, Germany
<i>A Pipeline for Quantifying <math>^{129}\text{Xe}</math> Gas Exchange MRI Across Pulmonary Disorders</i>	Ziyi Wang, B.Eng. Duke University, USA
<i>Using Hyperpolarized <math>^{129}\text{Xe}</math> in Human Participants to Perform Functional Magnetic Resonance Imaging (fMRI)</i>	Francis T. Hane, Ph.D. Lakehead University, Canada
<i>Hyperpolarized Xenon By d-DNP Using the Clinical GE SpinLab Polarizer System</i>	Christian Ø. Mariager, M.Sc. Aarhus University, Denmark
<i>Asthma Ventilation Abnormalities Measured Using Fourier-Decomposition Free-Breathing Pulmonary <math>^1\text{H}</math> MRI</i>	Dante P. I. Capaldi, B.Sc.(Hons) Robarts Research Institute, Canada
<i>Evaluation of <math>^{129}\text{Xe}</math>-RBC Signal Dynamics &amp; Chemical Shift in the Cardiopulmonary Circuit Using Hyperpolarized <math>^{129}\text{Xe}</math> NMR</i>	Graham Norquay, Ph.D. University of Sheffield, UK

### Electronic Poster Presentations - $^{13}\text{C}$

<i>Dynamic Nuclear Polarization Across the Barrier: A Focused Ultrasound Approach</i>	Tom Peeters, M.Sc. Radboud University Medical Center, The Netherlands
<i>Dynamic Shimming for Multi-Slice Hyperpolarized Metabolic Imaging of the Rat Heart at 9.4T</i>	Patrick Wespi, M.Sc. ETH Zurich, Switzerland
<i>A Referenceless Workflow for Hyperpolarized <math>^{13}\text{C}</math> EPI</i>	Jiazheng Wang, M.Sc. Cancer Research UK Cambridge Institute, UK
<i>High Spatiotemporal Resolution bSSFP Imaging of Hyperpolarized <math>^{13}\text{C}</math> Lactate &amp; Pyruvate Using Spectral Suppression of Alanine &amp; Pyruvate-Hydrate at 3T</i>	Eugene Milshteyn, B.Sc. University of California at San Francisco, USA
<i><math>^{13}\text{C}</math>-MR Hyperpolarization of Lactate using ParaHydrogen &amp; Metabolic Transformation In Vitro</i>	Eleonora Cavallari, Ph.D. University of Torino, Italy
<i>Improved Off-Resonance Robustness for Spectral-Spatial Excitation &amp; Echo-Planar Imaging of Hyperpolarized [<math>^{1-13}\text{C}</math>]Pyruvate &amp; Metabolites</i>	Justin Y.C. Lau, M.Sc. Sunnybrook Research Institute, Canada
<i>Hyperpolarized [<math>^{1-13}\text{C}</math>]Pyruvate MRI Identifies Metabolic Differences Pertaining</i>	Rasmus S. Tougaard, M.D.

*to the Fasted & Fed State in Porcine Cardiac Metabolism*

Aarhus University Hospital, Denmark

*Combined Hyperpolarized Pyruvate & Lactate as a Proxy for Hyperpolarized Urea to Measure Tissue Perfusion*

Christopher Walker, B.Sc.  
UT M.D. Anderson Cancer Center, USA

#### **Traditional Poster Presentations**

*Cyclodextrin-Based Pseudo-Rotaxanes as Conjugatable Molecular Imaging Biosensors for Hyperpolarized <sup>129</sup>Xe MRI*

Braedan R.J. Prete  
Lakehead University, Canada

*Human Lung Morphometry using Hyperpolarized <sup>129</sup>Xe Multi-b Diffusion MRI with Compressed Sensing*

Huiting Zhang, M.Sc.  
Huazhong University of Science & Technology, China

*Quantifying Changes in Time-Resolved Hyperpolarized <sup>129</sup>Xe Spectroscopy among Healthy & IPF Subjects*

Elianna Bier, B.Sc.  
Duke University Medical Center, USA

*Dissolved Phase Hyperpolarized Xenon-129 Pulmonary Imaging in the Presence of Gaseous Xenon Signal*

Jeffrey N. Kammerman, B.Sc.  
University of Wisconsin at Madison, USA

*Nanodiamond Imaging with Hyperpolarized <sup>13</sup>C MRI*

David E.J. Waddington, B.Sc.  
University of Sydney, Australia

*Spatio-Temporally Constrained Reconstruction for Hyperpolarized Carbon-13 MRI Using Kinetic Models*

John Maidens, M.Sc.  
University of California Berkeley, USA

*In-Vivo Imaging of Glutamine Metabolism to the Oncometabolite 2-Hydroxyglutarate in IDH1/2 Mutant Tumors*

Lucia Salamanca-Cardona, Ph.D.  
Memorial Sloan Kettering Cancer Center, USA

*Simulation of Hyperpolarized Perfusion MRI with a Segmented Snapshot Acquisition*

Keith A. Michel, B.Sc.  
UT M.D. Anderson Cancer Center, USA

*Resolving Spin-Spin Couplings in Hyperpolarized In Vivo Metabolic <sup>13</sup>C Spectroscopy at Low Magnetic Field Following Murine Tail-Vein Injection*

Aaron M. Coffey, Ph.D.  
Vanderbilt University Institute of Imaging, USA

*Study of the Tetracycline-Controlled Transcriptional Activation of c-Myc in Burkitt Lymphoma B-cell Line P493-6 Using Hyperpolarized [<sup>1-13</sup>C]pyruvate*

Eugen Kubala, M.Sc.  
Technische Universität München, Germany

*Identifying Immune-Related Metabolic Properties of Pancreatic Cancer via Hyperpolarized Pyruvate Spectroscopic Imaging & NMR Metabolomics*

Joseph Weygand, B.A.  
UT M.D. Anderson Cancer Center, USA

*Measuring Lactate Dehydrogenase Activity with Proton Detected <sup>13</sup>C Hyperpolarization*

Felix Kreis, M.Sc.  
University of Cambridge, UK

*Hyperpolarization of 2-Keto[<sup>1-13</sup>C]Isocaproate for In Vivo Studies with Photo-Induced Radicals*

Steffen F. Frank, M.Sc.  
École Polytechnique Fédérale de Lausanne, Switzerland

*Characterization & Flip Angle Calibration of <sup>13</sup>C Surface Coils for Hyperpolarization Studies*

Rie B. Hansen, M.Sc.Eng.  
Technical University of Denmark, Denmark

*Hyperpolarization of [<sup>4-13</sup>C]5-Aminolevulinic Acid*

Stephen J. DeVience, Ph.D.  
University of Maryland at Baltimore, USA

*Practical Considerations of Quantitative kPL Estimation in Hyperpolarized-<sup>13</sup>C Imaging in Response to Pulse Sequence Design & Parameters*

Hsin-Yu Chen, M.Sc.  
University of California at San Francisco, USA

*Hyperpolarized [<sup>6-13</sup>C, <sup>6-15</sup>N3]-Arginine as a Novel Probe to Interrogate Arginase Activity*

Andrew Cho, B.A.  
Memorial Sloan Kettering Cancer Center, USA

*Acute Renal Metabolic Effect of Metformin Treatment Assessed with Hyperpolarized Magnetic Resonance Imaging*

Haiyun Qi, M.D.  
Aarhus University, Denmark

*SQUID-Based Ultralow Field Nuclear Magnetic Resonance Spectroscopy Using the Para-H2 Based Hyperpolarization Technique SABRE*

Kai Buckenmaier, Ph.D.  
Max Planck Inst. for Biological Cybernetics, Germany

*Assessment of Lactate Dehydrogenase Activity in Renal Cell Carcinomas using Hyperpolarized <sup>13</sup>C Pyruvate MR*

Renuka Sriram, Ph.D.  
University of California at San Francisco, USA

*Measuring Perfusion in a Renal Ischemic/Reperfusion Rat Model Using Hyperpolarized  $\alpha$ -Trideuteromethyl [<sup>15</sup>N] Glutamine.*

Per M. Nielsen, M.Sc.  
Institute of Clinical Medicine, Denmark

*Maternal-Fetal Exchange & Metabolism Followed in Real-Time by Dynamic Hyperpolarized <sup>13</sup>C Imaging on Pregnant Rats*

Stefan Markovic, Dr.rer.nat.  
Weizmann Institute of Science, Israel

*Metabolism of Hyperpolarized Pyruvate Detects Knockout of Pyruvate Dehydrogenase Kinase*

Gaurav Sharma, Ph.D.  
UT Southwestern Medical Center, USA

*Evaluation of the In Vivo on-Target Effect of a Newly Developed LDH Inhibitor using Hyperpolarized <sup>13</sup>C Magnetic Resonance Spectroscopic Imaging*

Nobu Oshima, M.D., Ph.D.  
NIH, USA