

Programme Overview

Wednesday 7th September

- 11:00 – 13:00 **IPEM MG-SIG/ BC-ISMRM Joint Workshop** – Gradients and their behaviour
Prof. Iain Wilkinson, Prof. Richard Bowtell, Dr Jennifer Macfarlane, Prof. Martin Leach and Dr Paul Harvey
- 13:30 – 17:00 **CANCER MRI Workshop** – Standardisation across sites
Prof. Martin Leach, Prof. John Waterton, Dr Andrew Peet and Dr Dominick McIntyre
- 18:30 – 20:00 Drinks reception at the Manchester Museum

Thursday 8th September

- 09:00 – 09:15 Opening – Prof. Geoff Parker
- 09:15 – 09:55 **Bill Moore Lecture – Dr Roy Gordon**
- 09:55 – 10:45 Oral Session 1: Lung Imaging
- 10:45 – 11:10 *Coffee break*
- 11:10 – 11:40 Invited speaker – **Dr Richard Edden**
- 11:40 – 12:30 Oral Session 2: Molecular Imaging
- 12:30 – 14:30 *Lunch, Posters and Technical Exhibition*
- 14:30 – 15:00 Invited speaker – **Prof. David Norris**
- 15:00 – 15:50 Oral Session 3: Novel Hardware and Methods
- 15:50 – 16:10 *Coffee break*
- 16:10 – 16:40 Invited speaker – **Prof. Mara Cercignani**
- 16:40 – 17:30 Oral Session 4: Neuroimaging 1
- 17:30 – 18:00 British Chapter ISMRM Annual General Meeting
- 19:30 Drinks Reception and Dinner at Manchester Town Hall

Friday 9th September

- 09:00 – 09:30 Invited speaker – **Prof. Rene Botnar**
- 09:30 – 10:20 Oral Session 5: Cardiac Imaging
- 10:20 – 10:45 *Coffee break*
- 10:45 – 11:15 Invited speaker – **Dr Richard Hodgson**
- 11:15 – 12:10 Oral Session 6: Body Imaging
- 12:10 – 14:00 *Lunch, Posters and Technical Exhibition*
- 14:00 – 14:30 Invited speaker – **Prof. Martin Leach**
- 14:30 – 15:20 Oral Session 7: Cancer
- 15:20 – 15:45 *Coffee break*
- 15:45 – 16:15 Invited speaker – **Dr Tim Behrens**
- 16:15 – 17:05 Oral Session 8: Neuroimaging 2
- 17:05 – 17:30 Awards of AstraZeneca and Mansfield Prizes
- 17:30 *Close*

British Chapter of the ISMRM

17th Annual Scientific Meeting

MANCHESTER

7–9th September

Welcome to the 17th Annual Scientific Meeting of the British Chapter of the ISMRM. It is a pleasure to host the meeting once more in Manchester. Doing so in 2011 gives us an excuse to capitalise on one of our great past scientists. Ernest Rutherford worked at the University of Manchester between 1907–1919 and in 1911, 100 years ago, he published a paper postulating that atoms contain a very small positively charged nucleus. This insight was built upon experimental work involving firing alpha particles at gold foil, performed under his direction two years earlier by Hans Geiger and Ernest Marsden, also in Manchester. Without Rutherford and his team we would not have our current understanding of the atomic nucleus and therefore we would not have NMR, let alone a British Chapter of the ISMRM. Hence our meeting strapline – *Watching nuclei for 100 years*.

Along with Rutherford, you may spot other past eminent Manchester scientists in background slides for the meeting. Our scientific past is impressive and we continue into the modern day with the 2010 Nobel Prize for Physics being shared between two Manchester scientists, Andre Geim and Konstantin Novoselov, "for groundbreaking experiments regarding the two-dimensional material graphene." The University of Manchester now has more Nobel Laureates on its staff than any other British Institution. Manchester itself is a city that has a unique past as the leading centre of the industrial revolution and a flourishing present, with a reputation for industry, education, arts and sport. We hope that you will find the time to explore and enjoy our city.

We have an impressive line-up of speakers for this year's meeting. The opening Bill Moore Lecture will be delivered by Dr Roy Gordon of Bruker Biospin. We are also happy that Dr Richard Edden, Prof. David Norris, Prof. Mara Cercignani, Prof. Rene Botnar, Dr Richard Hodgson, Prof. Martin Leach and Dr Tim Behrens have accepted our invitation to deliver talks. In addition, the membership of the British Chapter of the ISMRM have submitted papers that will be presented in eight oral sessions and two poster sessions.

We are very grateful to our sponsors, who allow us to offer a number of student stipends. Please do visit their stands!

Meeting Information

All oral sessions will be held in the Martin Harris Centre for Music and Drama – it is a performing space situated at the heart of the oldest part of the University. We will be treated to the comfort of the Cosmo Rodewald Concert Hall, an acoustically-designed auditorium which seats an audience of up to 350 people.

Coffee/tea and lunch will also be held in the Martin Harris Centre, as will the poster sessions and sponsors' technical exhibition. Accommodation will be in the Westin Halls, a 15 minute walk from the main venue. There will be plenty of people around during the conference to point you in the right direction and free bus tickets in case you don't feel like walking.

The conference drinks reception will be held at the Manchester Museum in the newly refurbished Mammals Gallery. The conference dinner will take place in Manchester Town Hall. Both venues are striking examples of Victorian architecture and well worth exploring in between eating and drinking.

We hope you enjoy your time in the city of Manchester and wish you a pleasant stay.

Local Organising Committee

Geoff Parker
Steve Williams
John Waterton
Jo Naish
Laura Parkes
Ross Little
Alan Jackson

Administrative Team

Shelagh Stedman
Jane Kear
Cath Wright
Hannah Mansell

Special Thanks to:

Penny Hubbard
Caleb Roberts
Chris Rose
Chris Miller
David Morris
Gio Buonaccorsi
Rishma Vidyasagar

**British Chapter of the
International Society for
Magnetic Resonance in Medicine**
17th Annual Scientific Meeting
7 – 9th September 2011

Scientific Programme

Wednesday 7th September

09:30 – 18:00 Registration open

IPEM MG-SIG/ BC-ISMRM Joint Workshop

GRADIENTS AND THEIR BEHAVIOUR

11:00 – 11:05 Introduction – **Prof. Iain Wilkinson** *University of Sheffield*

11:05 – 11:35 Overview of gradient technology – **Prof. Richard Bowtell** *University of Nottingham*

11:35 – 11:55 Gradient performance assessment: test-objects – **Dr Jennifer Macfarlane** *Ninewells Hospital, Dundee*

11:55 – 12:15 Radiotherapy treatment planning and gradients – **Prof. Martin Leach** *Institute of Cancer Research*

12:15 – 12:45 Gradient manufacture: tolerance and calibration – **Dr Paul Harvey** *Philips Healthcare, Best*

12:45 – 13:00 Discussion

13:00 – 13:30 *Lunch*

Cancer MRI Workshop

STANDARDISATION ACROSS SITES

13:30 – 14:15 **Prof. Martin Leach**
Institute of Cancer Research

Advanced MRI in clinical cancer studies: Current status and problems with generalisation across centres

14:15 – 15:00 **Prof. John Waterton**
AstraZeneca

Role of MRI in cancer drug development

15:00 – 15:30 *Coffee Break*

- 15:30 – 16:15 **Dr Andrew Peet**
University of Birmingham
 MR imaging of brain tumours in a paediatric population: Barriers to success, current status, progress and opportunities
- 16:15 – 17:00 **Dr Dominick McIntyre**
University of Cambridge
 Advanced MRI techniques in cancer imaging, developments in preclinical models and opportunities for clinical translation
- 17:00 *Close*
- 18:30 – 20:00 **Drinks reception at the Manchester Museum**

Thursday 8th September

- 08:30 – 18:00 Registration open
- 09:00 – 09:15 Official opening of the BC-ISMRM
 Prof. Geoff Parker

Bill Moore Lecture

- 09:15 – 09:55 **Dr Roy Gordon**
Bruker Biospin
 From in vivo NMR to pre-clinical imaging

Roy Gordon has worked in MRI since its earliest days. He did a PhD in Aberdeen University working on ¹H spin relaxation times in normal and diseased excised biological tissues. After a post-doctoral fellowship at Kent University he joined the development group at Oxford Instruments in 1979 and thereafter became one of the founding employees of Oxford Research Systems working on the first dedicated systems for localized spectroscopy in animals. His work there included the first human tumour spectrum, novel methods for spectroscopic localization (eg topical magnetic resonance, Depth Pulses, PRESS, ISIS etc) and the development of MRI instruments for small animal imaging. In 1983 ORS was taken over by Bruker where he has remained ever since as part of the division developing in vivo systems. He has had important scientific collaborations with many of the world's luminary in vivo NMR groups, notably Oxford, Yale and Johns Hopkins and is a valued friend and colleague of many of the leading lights in applications of MRI and MRS in animal models. He has an almost unique perspective of the breadth and reach of NMR in vivo. Currently he is a Vice President of Bruker Biospin Corporation.

Oral Session 1: Lung Imaging

- 09:55 O1 Direct visualisation of collateral ventilation in COPD with hyperpolarised gas MRI
Helen Marshall¹, M.H. Deppe¹, J. Parra-Robles¹, S. Hillis², S. Miller³, J. Watson³, D. A. Lipson³, R. Lawson² and J. M. Wild¹
¹*Academic Radiology, University of Sheffield*, ²*Respiratory Medicine, Sheffield Teaching Hospitals NHS Trust*, ³*GlaxoSmithKline, King of Prussia, PA*
- 10:07 O2 Physiological modelling of a dynamic contrast-enhanced MRI extended time series in COPD
Penny L. Hubbard^{1,2}, G. J. Parker^{1,2}, D. Singh³, E. Bondesson⁴, L. E. Olsson⁴, L. Wigström⁴, S. S. Young⁵ and J. H. Naish^{1,2}
Imaging Science, School of Cancer and Enabling Sciences, The University of Manchester, ²*The Biomedical Imaging Institute, The University of Manchester*, ³*University Hospital of South Manchester Foundation Trust*, ⁴*AstraZeneca R & D, Sweden*, ⁵*AstraZeneca R & D, UK*

- 10:19 O3 Correlation between dynamic oxygen-enhanced MRI and quantitative CT in evaluation of chronic obstructive pulmonary disease: preliminary findings
Weijuan Zhang^{1,2}, P. L. Hubbard^{1,2}, E. Bondesson³, L. Wigström³, S. S. Young⁴, D. Singh⁵, G. J. Parker^{1,2} and J. H. Naish^{1,2}
¹*Imaging Science, School of Cancer and Enabling Sciences, The University of Manchester,* ²*The Biomedical Imaging Institute, The University of Manchester,* ³*AstraZeneca R&D, Sweden,* ⁴*AstraZeneca R&D, UK,* ⁵*University Hospital of South Manchester Foundation Trust*
- 10:31 O4 Imaging of dual ¹⁹F tracer gases for measurement of lung ventilation properties
Peter Thelwall^{1,2}, C. Fox², H. Walden³ and A. Fisher²
¹*Newcastle Magnetic Resonance Centre, Newcastle University,* ²*Institute of Cellular Medicine, Newcastle University,* ³*Cellular and Molecular Sciences, Northumbria University*
- 10:45 – 11.10 *Coffee break*

Invited Speaker

- 11:10 – 11:40 **Dr Richard Edden**
John Hopkins University
 Edited MRS of GABA: Inhibition in sensory processing

Richard Edden is Assistant Professor in the Russell H. Morgan Department of Radiology and Radiological Science, The Johns Hopkins University School of Medicine, where he also did a postdoctoral fellowship from 2005 to 2007. From 2007 to 2009, he was RCUK Academic Fellow in the Schools of Chemistry and Biosciences at Cardiff University. Both as a graduate and undergraduate, Dr Edden studied at Cambridge University in the Department of Chemistry (PhD research on small-molecule high-resolution NMR under Dr James Keeler).

Oral Session 2: Molecular Imaging

- 11:40 O5 pH mapping using exogenous CEST contrast agents: in vitro feasibility assessment
Fotios Savvopoulos^{1,2}, R. Bendell¹, R. Grundy², D. Auer¹ and H. Faas¹
¹*Department of Radiological and Imaging Sciences, School of Clinical Sciences,* ²*Children's Brain Tumour Research Centre, Queen's Medical Centre, University of Nottingham*
- 11:52 O6 A comparison of UTE k-space sampling techniques for the *in vivo* detection of total sodium at 3T
Frank Riemer¹, B. S. Solanky¹, M. Clemence², D. Miller¹, X. Golay³ and C. A. M. Wheeler-Kingshott¹
¹*NMR Unit, Department of Neuroinflammation, UCL Institute of Neurology, London,* ²*Philips Clinical Science Group, Philips Healthcare, Guildford, UK,* ³*Department of Brain Repair and Rehabilitation, UCL Institute of Neurology, London*
- 12:04 O7 Evolution of Na signal changes in the acute phase of stroke
Friedrich Wetterling^{1,2}, I. M. Macrae³, L. Gallagher³ and A. J. Fagan^{1,4}
¹*School of Physics, Trinity College, University of Dublin, Ireland,* ²*Computer Assisted Clinical Medicine, Medical Faculty Mannheim, University of Heidelberg, Germany,* ³*Glasgow Experimental MRI Centre, Division of Clinical Neuroscience, Faculty of Medicine, University of Glasgow, UK,* ⁴*Centre for Advanced Medical Imaging, St. James's Hospital / Trinity College Dublin, Ireland*

12:16 O8 Quantification of regional ventilation with ^3He washout MRI in human subjects
Martin H. Deppe¹ and J. M. Wild¹
¹*Academic Unit of Radiology, University of Sheffield, Sheffield, UK*

12:30 – 14:30 *Lunch, Posters and Technical Exhibition*

Invited Speaker

14:30 – 15:00 **Prof. David Norris**
University of Nijmegen
fMRI at 7 T, what are the limits?

David Norris is a director of the Donders Centre for Cognitive Neuroimaging at the Radboud University in Nijmegen and of the Erwin L Hahn Institute for MRI at the University of Duisburg-Essen. He obtained his PhD from the University of Aberdeen and subsequently worked at the University of Bremen, and the Max-Planck-Institute for Human Cognitive and Brain Sciences in Leipzig, before taking up his current position in 2001. His research group concentrates on methods development for cognitive brain imaging, including high resolution fMRI, BOLD contrast mechanisms, pulse sequence development, and connectivity measures. He is a past president of ISMRM, and has chaired the annual program committee for both ISMRM and ESMRMB. He is one of the representatives of the European MR community to the European Union with respect to safety issues. He is a fellow of the Institute of Physics, ISMRM and ESMRMB.

Oral Session 3: Novel Hardware and Methods

- 15:00 O9 A travelling wave antenna with matched waveguide for head imaging at 7 T: Simulation results
Daniel J. Lee¹ and P.M. Glover¹
¹*SPMMRC, University of Nottingham*
- 15:12 O10 Generation of highly polarised materials for magnetic resonance using brute-force and low-field thermal mixing
D. G Gadian¹, K. S Panesar², A. J Perez Linde³, A. J Horsewill², W. Köckenberger³ and **John R. Owers-Bradley**²
¹*Institute of Child Health, University College London, London*, ²*School of Physics & Astronomy, University of Nottingham, Nottingham*, ³*Sir Peter Mansfield MR Centre, School of Physics & Astronomy, University of Nottingham, Nottingham*
- 15:24 O11 Steady-state motion-induced contrast using DANTE pulse trains: A novel approach to fast multi-slice 2D and multi-slab 3D black blood imaging
Linqing Li¹ and P. Jezzard¹
¹*FMRIB Centre, Nuffield Department of Clinical Neurosciences, University of Oxford, Oxford*
- 15:36 O12 Decomposition of dynamic MR images with low-rank and sparse matrix separation
Benjamin Trémouhéac¹, P. G. Batchelor², A. Menys³ and D. Atkinson³
¹*Centre for Medical Image Computing, University College London*, ²*Imaging Sciences and Biomedical Engineering, King's College London*, ³*Centre for Medical Imaging, UCL Division of Medicine*
- 15:50 – 16:10 *Coffee break*

Invited Speaker

16:10 –16:40 **Prof. Mara Cercignani**
University of Brighton
Quantitative magnetization transfer and its applications

Mara Cercignani is the Chair in Medical Physics at Brighton and Sussex Medical School. She obtained an MPhil at Leicester University in 1999, and a PhD at University College London in 2006. Before moving to Brighton and Sussex Medical School, she worked at San Raffaele Hospital in Milan, at the Institute of Neurology, in London, and at Santa Lucia Foundation, in Rome. Her research is focused on quantitative MRI techniques, such as relaxometry, diffusion MRI, magnetization transfer, and other emerging methods. She is currently Secretary of the Italian Chapter of the International Society for Magnetic Resonance in Medicine.

Oral Session 4: Neuroimaging 1

- 16:40 O13 Understanding neuro-vascular coupling: Are you BOLD enough?
Aneurin J. Kennerley¹, S. Harris¹, M. Bruyns-Haylett¹, L. Boorman¹, Y. Zheng¹, M. Jones¹ and J. Berwick¹
¹*SPiNSN, University of Sheffield, Sheffield, UK*
- 16:52 O14 pHMRI reveals an unusual effect of the antibiotic minocycline on cerebral haemodynamics
Duncan J. Hodkinson¹, D.Cash², S. C. R. Williams², J. F. W.Deakin³ and S. R. Williams¹
¹*Imaging Science, Proteomics and Genomics Research Group, University of Manchester,*
²*Neuroimaging Research Group, Institute of Psychiatry, King's College London,* ³*Neuroscience & Psychiatry Unit, University of Manchester*
- 17:04 O15 Measuring bi-exponential transverse relaxation of the ASL signal at 9.4T to estimate arterial oxygen saturation and the time of exchange of labelled blood water into cortical brain tissue
Jack A. Wells¹, B. M. Siow¹, M. F. Lythgoe^{1*} and D. L. Thomas^{2*} *joint senior author
¹*UCL Centre for Advanced Biomedical Imaging, Division of Medicine and Institute of Child Health, University College London, UK,* ²*Department of Brain Repair and Rehabilitation, UCL Institute of Neurology, Queen Square, London*
- 17:16 O16 Increased muscle pH at rest is related to decreased cerebral blood flow (CBF) in patients with chronic fatigue syndrome
Jiabao He¹, K. G. Hollingsworth¹, J. L. Newton^{2*} and A. M. Blamire^{1*} *joint senior author
¹*Newcastle Magnetic Resonance Centre,* ²*Institute for Ageing and Health, Newcastle University, Newcastle upon Tyne*
- 17:30 – 18:00 **British Chapter ISMRM Annual General Meeting**
Chair – Prof. David Gadian
Institute of Child Health and British Chapter Management Committee
- 19:30 Drinks Reception and Dinner at Manchester Town Hall

Friday 9th September

08:30 – 17:30 Registration open

Invited Speaker

09:00 – 09:30 **Prof. Rene Botnar**

Kings College London

MRI of coronary atherosclerosis: from mouse to man

Rene Botnar received his PhD from the ETH Zurich. From 1996-97 he was a Research Associate in the Department of Radiology at the University Zurich. In 1997, he joined the Cardiac MR Center at the Beth Israel Deaconess Medical Center and Harvard Medical School. In 2003, Prof. Botnar became the Scientific Director of the Cardiac MR Center at the Beth Israel Deaconess Medical Center and was appointed to Assistant Professor of Medicine at Harvard Medical School, Boston, USA. In 2005, Prof. Botnar accepted a Professorship of Biomedical Imaging at the Technische Universität München where he set up a cardiac MR program with a special focus on pre-clinical and translational multi modality imaging. His work was funded by the German Ministry of Research and Education, by the German Excellence Program, and by industry. At the end of 2007, he joined the Imaging Sciences Division at King's College London where he is currently Chair of Cardiovascular Imaging. Prof. Botnar is a member of the International Society of Magnetic Resonance Imaging in Medicine and the Society for Cardiovascular Magnetic Resonance; he was a board member of Society for Cardiovascular Magnetic Resonance from 2008–2011 and is on the scientific advisory board of the High Risk Plaque initiative. He has authored more than 130 peer-reviewed original papers, 15 review articles and 20 book chapters in the field of CMR. He also holds 4 patents and is an editor of a CMR textbook on Cardiovascular Magnetic Resonance Imaging.

Oral Session 5: Cardiac Imaging

- 09:30 O17 Left ventricular torsion, energetics and diastolic function in normal human ageing
Kieren G. Hollingsworth¹, A. M. Blamire¹, B. D. Keavney² and G. A. MacGowan²
¹Newcastle Magnetic Resonance Centre, Newcastle University, ²Institute of Genetic Medicine, Newcastle University
- 09:42 O18 Equilibrium contrast MR as a sensitive marker of amyloidosis
Adrienne Campbell^{1,2}, A. N. Price³, S. Ellmerich⁴, J. P. Simons⁴, R. Al-Shawi⁴, P. N. Hawkins⁴, R. J. Ordidge², M. B. Pepys⁴, J. C. Moon⁵ and M. F. Lythgoe¹
¹Centre for Advanced Biomedical Imaging (CABI), University College London, ²Department of Medical Physics and Bioengineering, University College London, ³Robert Steiner MRI Unit, Imaging Sciences Department, Hammersmith Hospital, Imperial College London, ⁴Center for Amyloidosis and Acute Phase Proteins, Division of Medicine, University College London, ⁵Heart Hospital and Division of Medicine, University College London
- 09:54 O19 Optimisation of murine cardiac hyperpolarized magnetic resonance spectroscopy with application in a novel cardiac specific fumarate hydratase knockout mouse
Michael S. Dodd^{1,2}, V. Ball¹, B. Schuler¹, D. Ball¹, H. Ashrafian², H. Watkins², K. Clarke¹ and D. J. Tyler¹
¹Cardiac Metabolism Research Group, ²Cardiovascular Medicine, University of Oxford, Oxford, UK
- 10:06 O20 Assessment of PDK inhibition in the isolated perfused heart using hyperpolarized pyruvate
Lydia Le Page¹, D. Ball¹, M. Dodd¹, V. Ball¹, H. H. B. Jones², E. Johansson³ and D. Tyler¹
¹Department of Physiology, Anatomy and Genetics, Oxford University, Oxford, ²AstraZeneca, Alderley Park, UK, ³AstraZeneca, Mölndal, Sweden
- 10:20 – 10:45 Coffee break

Invited Speaker

10:45 – 11:15 **Dr Richard Hodgson**
University of Leeds
Ultrashort echo time MRI of musculoskeletal tissues

Oral Session 6: Body Imaging

- 11:15 O21 Can MR provide biomarkers of disease progression in a weight-bearing joint in rheumatoid arthritis?
Mike A. Bowes³, G. R. Vincent³, C. Wolstenholme³, J. C. Waterton^{1,2}, R. A. Maciewicz², C. J. Taylor¹ and C. E. Hutchinson^{1*}
¹*The University of Manchester*, ²*AstraZeneca*, ³*Imorphics*
**current address: University of Warwick*
- 11:27 O22 Quantification of ductus arteriosus shunt volume in preterm infants using phase contrast CMR
Kathryn M. Broadhouse¹, A. N. Price¹, G. Durighel¹, D. J. Cox¹, A. D. Edwards¹, J. V. Hajnal¹ and A. M. Groves¹
¹*Imaging Sciences Department, MRC Clinical Sciences Centre, Imperial College, Hammersmith Hospital, London*
- 11:39 O23 Oxygen-enhanced MRI in the human placenta
Isaac Huen^{1,2}, D. M. Morris^{1,2}, C. Wright³, C. P. Sibley³, E. Johnstone³ and J. H. Naish^{1,2}
¹*Imaging Sciences and Biomedical Engineering, School of Cancer and Enabling Sciences, University of Manchester*, ²*The Biomedical Imaging Institute, University of Manchester*, ³*Maternal & Fetal Health Research Centre, University of Manchester*
- 11:51 O24 An investigation into the effect of a 100% oxygen gas challenge on renal blood flow
Katherine F. Holliday^{1,2}, G. J. M. Parker^{1,2}, M. S. Dobbs^{1,2} and J. H. Naish^{1,2}
¹*Imaging Sciences and Biomedical Engineering, School of Cancer and Enabling Sciences, University of Manchester, Manchester*, ²*The Biomedical Imaging Institute, The University of Manchester*
- 12:05 – 14:00 *Lunch, Posters and Technical Exhibition*

Invited Speaker

14:00 – 14:30 **Prof. Martin Leach**

CRUK and EPSRC Cancer Imaging Centre Institute of Cancer Research and Royal Marsden NHS Foundation Trust

Modulating the cancer metabolome to postpone cell death

Martin Leach is Co Director of the CR-UK and EPSRC Cancer Imaging Centre at the Institute of Cancer Research and the Royal Marsden Hospital (University of London), Joint Chairman of the Section of Magnetic Resonance and Professor of Physics as Applied to Medicine. He joined the Institute of Cancer Research and the Royal Marsden in 1978 after PhD research in Physics at Birmingham. Since 1986 he has developed a programme of translational research and supported the MR Service to the Royal Marsden. Current areas of interest include development and application of dynamic nuclear polarisation, identification of MR biomarkers of drug action in preclinical and clinical studies, methods of assessing vascular function in trials using MR, using MRI to screen for breast cancer. He is a Fellow of the Academy of Medical Sciences, Fellow of the ISMRM and is a National Institute of Health Research (NIHR) Senior Investigator. He is currently Chair of the ECMC Imaging Steering Committee.

Oral Session 7: Cancer

- 14:30 O25 ADC change following radiotherapy in LoVo tumour xenografts reflects significant changes in necrosis, not apoptosis
Daniel Burke¹, K. J. Williams², J. C. Waterton¹, M. Babur² and J. P. B. O'Connor¹
¹*Imaging Sciences, Manchester Academic Health Sciences Centre, The University of Manchester*, ²*School of Pharmacy, The University of Manchester*
- 14:42 O26 Investigating tumour interstitial convection currents using extra-vascular convection (EVAC) MRI
Simon Walker-Samuel¹, R. Ramasawmy¹, J. Wells¹, B. Siow¹, P. Johnson², B. Pedley² and M. F. Lythgoe¹
¹*UCL Centre for Advanced Biomedical Imaging, Department of Medicine and Institute of Child Health, University College London, London*, ²*Institute of Cancer, University College London, London*
- 14:54 O27 ¹H magnetic resonance spectroscopy for characterising medulloblastomas in children
Simrandip K. Gill^{1,2}, M. Wilson^{1,2}, N. P. Davies^{1,2,3}, Y. Sun^{1,2}, K. Natarajan^{1,2,3}, L. MacPherson^{1,2}, T. N. Arvanitis^{2,4} and A. C. Peet^{1,2}
¹*Cancer Sciences, University of Birmingham, Birmingham*, ²*Birmingham Children's Hospital, Birmingham*, ³*Medical Imaging and Physics, University Hospital Birmingham*, ⁴*Electrical, Electronic and Computer Engineering, University of Birmingham*
- 15:06 O28 Native T₁ is a generic imaging biomarker of response to chemotherapy in neuroblastoma
Yann Jamin¹, E. R. Cullis², L. Vaughan², H. Webber², J. K. R. Bould¹, L. C. Baker¹, D.-M. Koh¹, L. Chesler² and S. P. Robinson¹
¹*CRUK and EPSRC Cancer Imaging Centre*, ²*Paediatric Oncology, The Institute of Cancer Research and Royal Marsden NHS Trust*
- 15:20 – 15:45 *Coffee break*

Invited Speaker

15:45 – 16:15 **Dr Tim Behrens**

University of Oxford

Connections and connectomes in the human brain

Tim Behrens is a Wellcome Fellow at the FMRIB centre in Oxford. He works on brain connectivity and the relation between brain connectivity and regional brain function, with a specific interest in regions that support value-guided decision-making. He is a member of two recent high profile projects - The European Connect project, and the NIH Human Connectome Project, that aim to advance diffusion imaging techniques to enable comprehensive mapping of human brain connections at the macro-scale.

Oral Session 8: Neuroimaging 2

- 16:15 O29 Assessing high frequency functional connectivity networks
Thomas W. Allan¹, M. J. Brookes¹, S. T. Francis¹ and P. A. Gowland¹
¹*Sir Peter Mansfield Magnetic Resonance Centre, School of Physics and Astronomy, University of Nottingham*
- 16:27 O30 Association between brain atrophy and white matter lesions in older people – a case study of The Lothian Birth Cohort 1936
Benjamin S. Arabisala¹, M. C. Valdés Hernández¹, N. A. Royle¹, S. M. Maniega¹, M. E. Bastin¹, I. J. Deary² and J. M. Wardlaw¹
¹*Brain Research Imaging Centre, University of Edinburgh*, ²*Department of Psychology, University of Edinburgh*
- 16:39 O31 Investigating ncMRI in the human arm using transcutaneous electrical nerve stimulation
Heather Hilliard¹, S. Anwar², S. Reynolds¹, G. Cook² and M. Paley¹
¹*Academic Radiology*, ²*Communications Research Group, University of Sheffield*
- 16:51 O32 Propagation of probabilistic tractography of the optic radiation for neuronavigation in epilepsy surgery
Gavin P. Winston¹, P. Daga², J. Stretton¹, M. Modat², M. R. Symms¹, A. W. McEvoy³, S. Ourselin² and J. S. Duncan¹
¹*Epilepsy Society MRI Unit & Department of Clinical and Experimental Epilepsy, UCL Institute of Neurology*, ²*UCL Centre for Medical Image Computing*, ³*Department of Neurosurgery, National Hospital for Neurology and Neurosurgery*
- 17:05 – 17:30 Awards of AstraZeneca and Mansfield Prizes
- 17:30 *Close*