

British Chapter of the International Society for Magnetic Resonance in Medicine

BC-ISMRM, 18th Annual Scientific Meeting
Churchill College, Cambridge, 11th – 13th September 2012

Scientific Programme

Tuesday 11th September

09:30 - 18:00 Registration open

PET/MR Workshop

11:00 - 11:15 **Prof. Paul Marsden**, King's College London and St. Thomas' Hospital.
Translating PET technology into the MR environment or is it the other way around?

11:15 - 11:30 **Dr. Richard Ansorge**, Department of Physics, University of Cambridge.
Translating a MR-PET prototype into pre-clinical research.

11:30 - 11:45 **Prof. Kevin Brindle**, Department of Biochemistry, University of Cambridge, and Cancer Research UK Cambridge Research Institute. How can PET imaging inform and complement pre-clinical MRI: Let's talk about ¹³C.

11:45 - 12:00 Discussion

12:00 - 12:15 **Dr. Asim Afaq**, Institute of Nuclear Medicine, UCL Hospitals. Translating functional MRI into PET-MR protocols for research in oncology.

12:15 - 12:30 **Dr. Leon Menezes**, Institute of Nuclear Medicine, UCL Hospitals. Translating PET-MR research protocols into clinical practice.

12:30 - 12:35 **Dr. Anna Barnes**, Institute of Nuclear Medicine, UCL Hospitals. Translating Nuclear Medicine legislation into an MR environment and MR Safety into a nuclear medicine environment: Staff training.

12:35 - 13:00 Lunch/Discussion

Metabolism Workshop

- 13:30 - 14:15 **Prof. Ulrich Guenther**
University of Birmingham
Metabolic flux analysis reveals TCA cycle reprogramming in AML cells
- 14:15 - 15:00 **Prof. Graham Kemp,**
University of Liverpool
Magnetic resonance spectroscopy approaches to quantifying muscle metabolism *in vivo*
- 15:00 - 15:30 Coffee break
- 15:30 - 16:15 **Prof. Kieran Clarke**
University of Oxford
Hypoxia and the heart: Why not to eat fish and chips on Mt Everest
- 16:15 - 17:00 **Prof. Roy Taylor**
University of Newcastle
Probing the inner secrets of the hungry liver
- 17:30 - 19:00 Drinks reception.
- 17:45 – 19:15 Self-Service dinner, in the Dining Hall, for residential delegates staying at Churchill College only.

Wednesday 12th September

08:30 - 18:00 Registration open

09:00 - 09:15 Official opening of the BC-ISMRM
Prof. Kevin Brindle

Bill Moore Lecture

09:15 - 09:55 **Prof. Martin Leach**
The Institute of Cancer Research
Beyond the Rainbow: Composition, Structure and Function

Oral session 1: Cancer

09:55 01 Evaluating the Metabolic Profile of Human Prostate Cancer Cells using NMR
Mithun Kailavasan¹, Ishtiaq Rehman², Steven Reynolds¹, Adriana Bucur¹, Gillian Tozer³, Martyn Paley¹
¹Academic Radiology, University of Sheffield, Sheffield. ²Dept. Human Metabolism, The Medical School, University of Sheffield, Sheffield S10 2RX. ³CR-UK/YCR Sheffield Cancer Research Centre, The Medical School, University of Sheffield

10:07 02 Investigating the relationship between tumour interstitial fluid velocity and perfusion with convectionMRI
Simon Walker-Samuel¹, Jake Burrell², Rajiv Ramasawmy¹, Jack Wells¹, Bernard Siow¹, Peter Johnson³, Simon P. Robinson², Barbara Pedley³, Mark F. Lythgoe¹
¹UCL Centre for Advanced Biomedical Imaging, Department of Medicine and Institute of Child Health, University College London, ²The Institute of Cancer Research, Sutton, Surrey, ³UCL Cancer Institute, University College London

10:19 03 Diffusion weighted signal intensity, apparent diffusion coefficient and water/ fat content of malignant bone marrow
Ashik Amlani¹, Deep Ghosh-Ray¹, Katherine van Ree¹, Andreas Makris², Shirley D'Sa², Anwar Padhani¹
¹Paul Strickland Scanner Centre, ²Mount Vernon Cancer Centre, Mount Vernon Hospital, Rickmansworth Road, Northwood, Middlesex

10:31 04 The functional diffusion map (fDM) in diffuse intrinsic pontine gliomas (DIPG)
M. Grech-Sollars¹, D. Saunders², K. Phipps³, J. D. Clayden¹, and C. A. Clark¹
¹Imaging and Biophysics Unit, UCL Institute of Child Health, London, United Kingdom, ²Department of Radiology, Great Ormond Street Hospital for Children, London, United Kingdom, ³Department of Neuro-oncology, Great Ormond Street Hospital for Children, London, United Kingdom

10:45 - 11:10 Coffee Break

Invited Speaker

11:10 - 11:40 **Prof. Jo Hajnal**

King's College London

Parallel Transmit - a new dimension for MRI

Oral session 2: Novel Methods and Hardware

11:40 05 Automated high-throughput morphometric phenotyping of mouse brains and embryos

N.M. Powell^{1,2}, M. Modat¹, M.J. Cardoso¹, D. Ma^{1,2}, H. Holmes², F. Norris², M.F. Lythgoe², S. Ourselin¹.

¹Centre for Medical Image Computing, University College London, UK,

²Centre for Advanced Biomedical Imaging, UCL, UK

11:52 06 Small bowel motility assessment of 3D MR time series data via Robust Principal Component Analysis

P. Ferry, ¹A. Menys, ²F. Odille, ³A. Emmanuel, ¹S. A. Taylor and ¹D. Atkinson

¹Centre for Medical Imaging and Centre for Medical Image Computing, UCL,

²INSERM U94, Nancy University, France, ³Department of Gastroenterology and Nutrition, UCH

12:04 07 Multi-Parameter quantitation of coincident fat and water skeletal muscle pathology

CDJ Sinclair^{1,2}, JM Morrow¹, RL Janiczek,⁵ MG Hanna¹, MM Reilly¹, TA Yousry^{1,2}, RS Samson³, N Weiskopf,⁴ A Lutti⁴, DL Thomas², X Golay², JS Thornton^{1,2}

¹MRC Centre for Neuromuscular Disease; ²Department of Brain Repair and Rehabilitation; ³Department of Neuroinflammation; ⁴Wellcome Trust Centre for Neuroimaging; UCL Institute of Neurology, Queen Square, London WC1N 3BG, ⁵GlaxoSmithKline, London, United Kingdom

12:16 08 A bulk biomimetic phantom for the validation of diffusion MRI – sensitivity to microstructure

P. L. Hubbard^{1,2}, F. Zhou^{1,3}, and G. J. M. Parker^{1,2}

¹Centre of Imaging Science, The University of Manchester, ²Biomedical Imaging Institute, The University of Manchester, ³Materials Science Centre, School of Materials, The University of Manchester

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

Invited Speaker

14:30 – 15:00 **Prof. Alan Jackson**

University of Manchester

Can MRI show us the causes of “microvascular” brain disease?

Oral session 3: Neuroimaging and spectroscopy A

- 15:00 09 Investigating the development of corticofugal axon tracts by diffusion tensor MRI and immunohistochemistry in early foetal human brain.
John Colville¹, Gavin Clowry², Pete Thelwall^{1,3}
¹Newcastle Magnetic Resonance Centre, Newcastle University. ²Institute of Neuroscience, Newcastle University. ³Institute of Cellular Medicine, Newcastle University
- 15:12 010 Optimised oscillating gradient diffusion MRI for the estimation of axon radius in an ex-vivo rat brain
Bernard Siow^{1,2}, Ivana Drobnjak¹, Andrada Ianus¹, Isabel N Christie², Mark F Lythgoe², Daniel C Alexander¹
¹Centre for Medical Image Computing, UCL. ²Centre for Advanced Biomedical Imaging, UCL
- 15:24 011 Multi-atlas structural parcellation for in vivo quantitation of mouse brain anatomy
D. Ma^{1,2}, M.J. Cardoso¹, M. Modat, N. Powell^{1,2}, H. Holmes², M.F. Lythgoe², and S. Ourselin^{1,3}
¹Centre for Medical Imaging Computing, ²Centre for Advanced Biomedical Imaging, ³Dementia Research Centre, University College London, UK
- 15:36 012 Tractography in the living mouse: application of spherical deconvolution Methods
J. Steventon¹, A. Rosser², R. Trueman³, D.K. Jones¹
¹CUBRIC, School of Psychology, Cardiff University, ²Brain Repair Group, School of Biosciences, Cardiff University, ³School of Biomedical Sciences, Nottingham University
- 15:50 - 16:10 Coffee break

Invited Speaker

- 16:10 - 16:40 **Prof. Jeff Bulte**
John Hopkins University
Clinical MRI Cell Tracking: The First 7 Years

Oral session 4: Neuroimaging and spectroscopy B

- 16:40 013 Automatic detection and quantification of progressive brain atrophy in dementia
A. Gruslys¹, J. Acosta-Cabronero², P. J. Nestor², G. B. Williams³, R. Ansorge¹
¹Physics Department, University of Cambridge, UK ²Department of Clinical Neurosciences, University of Cambridge, UK ³Wolfson Brain Imaging Centre, University of Cambridge, UK
- 16:52 014 Widespread White Matter Abnormalities in High-Functioning Adults with Autism Spectrum Disorder Correlate with Symptom Severity
C. R. Gibbard¹, J. Ren², K. K. Seunarine¹, J. D. Clayden¹, D. H. Skuse², and C. A. Clark¹
¹Imaging and Biophysics Unit, Institute of Child Health, University College London ²Behavioural and Brain Sciences Unit, Institute of Child Health, University College London
- 17:04 015 MRSI Reveals Acute Alteration of Metabolites in the Occipital Cortex Following Traumatic Brain Injury with Relationship to Neuropsychology Test Scores

R.A. Fowkes, C.J.A. Cowie⁺, J. He, B.S. Aribisala^{*}, A. Peel, J. Wood, P. Mitchell⁺, D. Mendelow⁺, F.E. Smith, **A.M. Blamire**
*Institute of Cellular Medicine & Newcastle MR Centre, Newcastle University, + Dept. Neurosurgery, Newcastle upon Tyne Hospitals NHS Foundation Trust, Newcastle upon Tyne, * Brain Research Imaging Centre, University of Edinburgh*
- 17:16 016 Subcortical Volumes Correlate with IQ in Children with Sickle Cell Disease
J. M. Kawadler¹, F. J. Kirkham², and C. A. Clark¹
¹Imaging and Biophysics Unit, Institute of Child Health, University College London, United Kingdom ²Neurosciences Unit, Institute of Child Health, University College London, United Kingdom
- 17:30 - 18:00 British Chapter ISMRM Annual General Meeting
Chair – Prof. Andrew Blamire
- 19:00 Conference Dinner at Churchill College.

Thursday 13th September

08:30 – 17:00 Registration open

Invited Speaker:

09:00 – 09:30 **Prof. David Buckley**

University of Leeds

Measuring perfusion and microvascular function using dynamic contrast-enhanced MRI

Oral session 5: Flow and Perfusion

- 09:30 017 Multi-Slice Look-Locker FAIR for Hepatic Arterial Spin Labelling
R. Ramasawmy^{1,2*}, A. Campbell¹, S.P. Johnson², J. Wells¹, R.B. Pedley², S. Walker-Samuel¹, M.F. Lythgoe¹
¹*UCL Centre for Advanced Biomedical Imaging, London, UK* ²*UCL Cancer Institute, London, UK*
- 09:42 018 MRI derived input functions for kinetic modelling in preclinical simultaneous PET-MR imaging
E. Evans¹, S. J. Sawiak^{1, 2}, and T. A. Carpenter²
¹*Wolfson Brain Imaging Centre, University of Cambridge*, ²*Behavioural and Clinical Neuroscience Institute, University of Cambridge*
- 09:54 019 Bayesian pharmacokinetic model with prior noise estimation in DCE imaging
N. Dikaïos¹, and D. Atkinson¹
¹*University College London, Centre for Medical Imaging*
- 10:06 020 Non-Contrast-Enhanced MR Subtraction Angiography and Venography using Flow-dependent Preparation
A. N. Priest, I. Joubert, A. P. Winterbottom, T. C. See, M. J. Graves, and D. J. Lomas
Department of Radiology, Addenbrooke's Hospital and University of Cambridge, Cambridge, United Kingdom.

10:20: - 10:45 Coffee Break

Invited Speaker

10:45 – 11:15 **Prof. Peter Jezzard**

University of Oxford

Novel Methods for Assessing Cerebrovascular Disease

Oral session 6: FMRI

- 11:15 021 Compressed Sensing Reconstruction Improves Sensitivity of Variable Density Spiral fMRI
D.J. Holland¹, C. Liu², X. Song², E.L. Mazerolle^{2,3}, M.T. Stevens^{2,4}, A.J. Sederman¹, L.F. Gladden¹, R.C.N. D'Arcy^{2,3,5}, C.V. Bowen^{2,4,6} & S.D. Beyea^{2,4,6}
¹Department of Chemical Engineering & Biotechnology, University of Cambridge, Cambridge, United Kingdom ²Institute for Biodiagnostics (Atlantic), National Research Council Canada, Halifax, Nova Scotia, Canada ³Department of Psychology & Neuroscience, ⁴Department of Physics, ⁵Department of Radiology, ⁶School of Biomedical Engineering, Dalhousie University, Halifax, Nova Scotia, Canada
- 11:27 022 Characterising the fMRI signal responses to direct light delivery in naïve rats: implications for the design and interpretation of fMRI studies.
Isabel N Christie^{1,2}, Jack A Wells², Paul Sounthern⁴, Nephtali Marina¹, Sergey Kasparov³, Alexander V Gourine¹, and Mark F Lythgoe²
¹Neuroscience, Physiology and Pharmacology, University College London, London, United Kingdom, ²UCL Centre for Advanced Biomedical Imaging, Division of Medicine and Institute of Child Health, University College London, London, United Kingdom, ³School of Physiology and Pharmacology, University of Bristol ⁴Royal Institute of Great Britain, Davy-Faraday Research Laboratories, London, United Kingdom (IC& JW joint first authors, SK,AG,ML joint senior authors)
- 11:39 023 Detecting stimulus-induced changes in absolute CMRO₂ using combined hypercapnia and hyperoxia based calibration of FMRI
Alan J Stone, Ashley D Harris, Kevin Murphy, Richard G Wise
Cardiff University Brain Research Imaging Centre (CUBRIC), School of Psychology, Cardiff University
- 11:51 024 Measuring the calibrated BOLD scaling factor M without administering gases from R₂' in the baseline state
N.P. Blockley^{1,2} and R.B. Buxton²
¹FMRI, University of Oxford, UK, ²CFMRI, University of California San Diego, USA

12:05 – 14:00 Lunch, Posters and Technical Exhibition

Invited Speaker

- 14:00 – 14:30 **Prof. Xavier Golay**
UCL
Can MRI image Glucose in vivo?

Oral session 7: Novel Contrast

- 14:30 025 GlucoCEST of tumour xenografts provides equivalent information to [18F]FDG autoradiography
Simon Walker-Samuel¹, Rajiv Ramasawmy¹, Francisco Torrealdea², Marilena Rega², S. Peter Johnson³, Vineeth Rajkumar³, Simon Richardson¹, Miguel Gonçalves¹, Dave Thomas², R. Barbara Pedley³, Erik Arstad⁴, Harry Parkes⁵, Mark F. Lythgoe^{1*}, Xavier Golay^{2*}
¹UCL Centre for Advanced Biomedical Imaging, Department of Medicine and Institute of Child Health, University College London, ²Institute of Neurology, University College London, ³UCL Cancer Institute, University College London, ⁴UCL Department of Chemistry, ⁵The Institute of Cancer Research, Sutton, UK
- 14:42 026 A method for measuring interstitial albumin using gadofosveset
O. C. Richardson¹, M. L. J. Scott², S. F. Tanner¹, J. C. Waterton², and D. L. Buckley¹
¹Division of Medical Physics, University of Leeds; ²Personalised Healthcare and Biomarkers, AstraZeneca
- 14:54 027 Exploring the feasibility of ultra short TE MRI as a biomarker of invasive pulmonary aspergillosis in a neutropenic murine model
T. A. Wilkinson^{1,2}, L. Gregson⁴, A. D. Sharp⁴, J. Livermore⁴, J. Ulloa³, S. R. Williams², P. A. Warn¹
¹Respiratory Medicine Group, University of Manchester, ²ISBE, University of Manchester, ³Personalised Healthcare and Biomarkers, R&D, AstraZeneca, Macclesfield, ⁴Antimicrobial Pharmacodynamics & Therapeutics Group, University of Liverpool
- 15:06 028 Creatine loss from the heart: serial assessment and functional consequences in
AGAT-KO mice using 1H-MRS and cine-MRI
K.M.E Faller¹, C.A. Lygate¹, C.U. Choe², D. Isbrandt², S. Neubauer¹ and J.E. Schneider¹
¹Cardiovascular medicine, University of Oxford, UK ²Center for Molecular Neurobiology, University Medical Center Hamburg-Eppendorf, Hamburg, Germany

15:20 – 15:45 Coffee Break

Invited Speaker

- 15:45 – 16:15 **Dr Dirk Mayer**
Stanford University
Hyperpolarized Metabolic Imaging of Rat C6 Glioma: Looking Beyond Lactate

Oral session 8: Multi-nuclear Spectroscopy

- 16:15 029 Comparison of an arterial input function with local tumour perfusion using hyperpolarised ^{13}C urea
Adriana Bucur¹, Steven Reynolds¹, Tooba Alizadeh², Samira Kazan², Becky Bibby², Vincent Cunningham³, Gillian Tozer² and Martyn Paley¹
¹Academic Unit of Radiology, Medical School, University of Sheffield. ²Tumour Microcirculation Group, Department of Oncology, CR-UK/YCR Cancer Research Centre, University of Sheffield. ³Aberdeen Biomedical Imaging Centre, School of Medical Sciences, University of Aberdeen
- 16:27 030 Assessment of the reproducibility of ^{13}C magnetic resonance spectroscopy using hyperpolarized [1- ^{13}C]pyruvate: a step further towards the clinic
Eva Serrao^{1,2}, Tiago Rodrigues^{1,2}, Mikko Kettunen^{1,2}, Ferdia Gallagher^{1,2}, Brett Kennedy^{1,2}, De en Hu^{1,2}, Keith Burling³, Joan Boren^{1,2}, Helen Sladen^{1,2}, Kevin Brindle^{1,2} (kmb1001@cam.ac.uk)
¹Department of Biochemistry, university of Cambridge; ²Cambridge Research Institute, Cambridge; ³Clinical Biochemistry, Addenbrook's Hospital, Cambridge, UK
- 16:39 031 Cardiac ^{23}Na MRI in rats *in vivo*
Urte Kägebein¹, Ian Marshall^{1,2}, Gillian A. Gray², Friedrich Wetterling³ and **Maurits A. Jansen**^{1,2}
¹Edinburgh Preclinical Imaging, ²University and BHF Centre for Cardiovascular Science, University of Edinburgh, UK, ³Faculty of Engineering, Trinity College Dublin, Ireland
- 16:51 032 Development of In Vivo Lithium Multinuclear Magnetic Resonance Imaging at 3T
L.A. Jelen¹, F.E. Smith², A.M. Blamire² and D.A. Cousins¹
¹Academic Psychiatry, Newcastle University, Newcastle Upon Tyne, United Kingdom, ²Newcastle MR Centre & Institute of Cellular Medicine, Newcastle University, Newcastle Upon Tyne, United Kingdom
- 17:05 - 17:30 Awards of Mansfield and British Chapter MRI prize
- 17:30 Close

All timings, speakers, title and session topics are subject to change without notice in order to maintain thematic consistency of the proceedings.