

# “Driving the Next Generation of MRI”

Monday 24<sup>th</sup> September 2018

1:00pm-2:00pm: Registration

2:00pm-5:30pm: Pre-Meeting Workshop

## “Clinical Translation of Molecular/Metabolic Imaging”

2:00pm – 2:30pm *Invited Talk*

**“How to do a CEST MRI Experiment”**

*Simon Walker-Samuel, University College London*

2:30pm – 3:00pm *Invited Talk*

**“How to do a Hyperpolarized <sup>13</sup>C MRI Experiment”**

*Kerstin Timm, University of Oxford*

3:00pm - 3:30pm *Break*

3:30pm - 4:30pm *Hands on demonstration session - split into two groups*

- CEST MRI
- Hyperpolarized <sup>13</sup>C MRI

4:30pm – 5:00pm *Invited Talk*

**“Clinical Translation of CEST MRI”**

*Mina Kim, University College London*

5:00pm – 5:30pm *Invited Talk*

**“Clinical Translation of Hyperpolarized <sup>13</sup>C MRI”**

*Shonit Punwani, University College London*

5:30pm – Late: “Murder Mystery” Themed Treasure Trail Around Oxford

**Tuesday 25<sup>th</sup> September 2018**

8:30am-9:15am: Registration

9:15am-9:30am: Welcome – Damian Tyler, University of Oxford

**9:30am-11:10am: Session 1 – “New Horizons in MRI”**

*Moderators: Penny Gowland (University of Nottingham) & Justin Lau (University of Oxford)*

9:30am – 9:50am – *Invited Talk*

**“Oxygen Delivery Quantification Using Oxygen-Enhanced MRI”**

*Geoffrey Parker, Manchester University*

9:50am – 11:10am – *Submitted Abstracts (7min talks + 3min Q&A)*

9:50am – **O1: “Silent Myelin Imaging using Magnetization Prepared RUFIS”**

*Tobias Wood, King's College London*

10:00am – **O2: “Heavily Undersampled Radial Acquisition of Dynamic Vessel-Encoded Arterial Spin Labelling Angiograms Reconstructed in a Compressed Sensing Framework”** - *Sophie Schauman, University of Oxford*

10:10am – **O3: “Hybrid Acquisition for Water and Adipose tissue Imaging (HAWAII)”**  
*Andreas Wetscherek, The Institute of Cancer Research*

10:20am – **O4: “Comparison of Optimized Single-PLD, Sequential and Time-Encoded Multi-PLD PCASL Methods for CBF Accuracy and Reproducibility”**  
*Joseph Woods, University of Oxford*

10:30am – **O5: “Non-Invasive Imaging of CSF-Mediated Brain Clearance Pathways Via Assessment of Perivascular Fluid Movement with Diffusion Tensor MRI”**  
*Jack Wells, UCL*

10:40am – **O6: “A Whole-Body Transmit/Receive RF System for Hyperpolarized <sup>129</sup>Xe MRI”** - *Claudio Puddu, University of Sheffield*

10:50am – **O7: “Microporous Lung Phantoms for <sup>19</sup>F MRI of Inhaled Imaging Agents with Physiologically Representative Relaxation Times”**  
*Mary Neal, Newcastle University*

11:00am – **O8: “Looping Star – a Novel Silent Approach to Imaging Brain Function in Health and Disease”** - *Nikou Damestani, King's College London*

11:10am-11:40am: Break

**11:40am-1:00pm: Session 2 – “Machine Learning, Big Data & Novel Analysis Techniques”**

*Moderators: Karla Miller (University of Oxford) & Sean Fitzgibbon (University of Oxford)*

11:40am – 12:00pm – *Invited Talk*

**“Machine Learning for Cardiac MRI: Applications to Reconstruction, Super-Resolution and Analysis”**

*Daniel Rueckert, Imperial College London*

12:00pm – 1:00pm – *Submitted Abstracts (7min talks + 3min Q&A)*

12:00pm – **O9: “Correction of Intra-Volume Movement and Motion-by-Susceptibility Distortion in fMRI”** - *Sean Fitzgibbon, University of Oxford*

12:10pm – **O10: “Partial Volume Correction Affects Detection of Task Activation in Arterial Spin Labelling Data”** - *Flora Kennedy McConnell, University of Oxford*

12:20pm – **O11: “Automatic Classification of Benign and Malignant Prostate Lesions in VERDICT DWMRI Using Convolutional Encoder-Decoder Architectures”**  
*Eleni Chiou, University College London*

12:30pm – **O12: “Model-Based Super-Resolution Reconstruction of T2 Maps”**  
*Wajiha Bano, University of Edinburgh*

12:40pm – **O13: “Classification of Type-2 Diabetes vs. Healthy Volunteers Using Features Extracted from Cerebral Hemodynamic Signals”**  
*Maria-Eleni Dounavi, University of Sheffield*

12:50pm – **O14: “Fibre-to-Field Dependency of T1 Relaxation Time in Human White Matter at 3T”** - *Risto Kauppinen, University of Bristol*

1:00pm-2:15pm: Lunch (with Mentoring Event at 1:45pm)

**2:15pm-3:05pm: Session 3 – “Combining MRI with Other Technologies”**

*Moderators: Andrew Blamire (Newcastle University) & Po-Wah So (King’s College London)*

2:15pm – 2:35pm – *Invited Talk*

**“Imaging Tumour Redox Biochemistry”**

*Tim Witney, University College London*

2:35pm – 3:05pm – *Submitted Abstracts (7min talks + 3min Q&A)*

2:35pm – **O15: “Safety of Simultaneous Intracranial EEG-fMRI in Humans:**

**Histopathological Observations”** - *Hassan Hawsawi, University College London*

2:45pm – **O16: “Investigating How to Optimally Combine Multimodal MRI Data to Better**

**Identify Glioblastoma Infiltration”** - *Haitham Al-Mubarak, University of Glasgow*

2:55pm – **O17: “Joint Modelling of Diffusion MRI and Histology Indicates Variation in Axial and Radial Diffusivities Across the Brain”** - *Amy Howard, University of Oxford*

3:05pm-3:15pm: **Election of Post-Doc Representatives (2 X ~5 mins per speaker)**

3:15pm-3:45pm: **Poster Power Pitch Session 1 (12 X ~2-3 mins per speaker – 1 slide max)**

**PP1: Imaging pH in Glioblastoma Multiforme with CEST MRI (IMAGO Trial): Preliminary Findings** – *Paula Croal, University of Oxford*

**PP2: Routine Brain and Spine MRI protocols for patients with DBS equipment in situ consistent with B1+rms -limited MR Conditional product label** – *Annie Papadaki, UCLH*

**PP3: Motion Correction in MR Renography: reference versus model-target image registration**  
*Fotios Tagkalakis, University of Leeds*

**PP4: Noninvasive characterisation of a rat model of brain metastasis using MP-pCASL and APT MRI** – *Manon Simard, University of Oxford*

**PP5: Robust fMRI for language lateralisation: How do different threshold-independent methods compare?** – *Irene Brumer, King's College London*

**PP6: A Pipeline for ASL Quantification and Regional Statistical Analysis: Application to Young Onset Alzheimer’s Disease** – *Jack Highton, University College London*

**PP7: Toblerone: partial volume estimation on the cortical ribbon**  
*Thomas Kirk, University of Oxford*

**PP8: Two-component muscle T2 quantification by maximum-likelihood estimation using an extended-phase-graph signal model with locally evaluated Rician noise**  
*Nick Zafeiropoulos, University College London*

**PP9: Automatic Motion Detection in T2\* Abdomen MRI Maps: a Multi-Metric Proof of Concept Study** – *Gabriela Belsley, University of Oxford*

**PP10: Robust generation of cardiac gating and trigger signals in small animals**  
*Veerle Kersemans, University of Oxford*

**PP11: Towards the Perfect Quantitative MRI Machine**  
*Paul Tofts, Brighton and Sussex Medical School*

**PP12: ‘Star Shaped’ Multi-Loop Radio-Frequency Coil Design with Improved B1 Penetration For X-Nuclei Imaging** – *Tony Zhou, University of Oxford*

3:45pm-5:00pm: **Break followed by Poster Session 1**

5:00pm-6:00pm: **Bill Moore Lecture**

**“Oxford Knights - St. Louis Daze: MR Adventures of an Innocent Bystander”**

*Joseph Ackerman, Washington University in St Louis*

6:45pm: Drinks Reception @ Somerville College

7:30pm: Gala Dinner @ Somerville College

9:30pm: Nominated Pub (The Duke of Cambridge, Little Clarendon Street - <http://www.dukebar.com>)

**Wednesday 26<sup>th</sup> September 2018**

8:00am-9:00am: Registration

**9:00am-10:20am: Session 4 – “Fantastic Peaks and Where to Find Them”**

*Moderators: Gillian Tozer (University of Sheffield) & Ladislav Volkovic (University of Oxford)*

9:00am – 9:20am - Invited Talk

**“Multinuclear Spectroscopy in the Heart and Liver”**

*Chris Rodgers, Cambridge University*

9:20am – 10:20am – Submitted Abstracts (7min talks + 3min Q&A)

9:20am – **O18: Does Chemotherapy for Breast Cancer cause MRS detectable Oxidative Stress in the Brain? A 1HMEGA-PRESS glutathione pilot study at 3T**

*Ben Babourina-Brooks, University of Nottingham*

9:30am – **O19: A 3D Hybrid-Shot Spiral For Hyperpolarized 13C Imaging (3D-HYSS)**

*Andrew Tyler, University of Oxford*

9:40am – **O20: Imaging the healthy human brain with hyperpolarized 13C MRI**

*James Grist, University of Birmingham*

9:50am – **O21: Metabolic flux changes with hyperpolarized 13C MRS correlate with mitochondrial loss and impairment in a rat model of doxorubicin-induced cardiotoxicity**

*Kerstin Timm, University of Oxford*

10:00am – **O22: Combined ventilation and perfusion imaging using dynamic susceptibility contrast 19F-MRI of inhaled perfluoropropane – Benjamin Pippard, Newcastle University**

10:10am – **O23: Assessment of perfused ex vivo human livers by MRS and MRI**

*Liam Young, University of Oxford*

10:20am-10:50am: Break

**10:50am-12:50pm: Session 5 – “Using MRI to Provide a New Window on Biology”**

*Moderators: Ian Marshall (University of Edinburgh) & Kerstin Timm (University of Oxford)*

10:50am – 11:10am - Invited Talk

**“Ultra-High Resolution MRI: Mesoscopic, Mechanistic, Multidisciplinary”**

*Joziën Goense, University of Glasgow*

11:10am – 12:50pm – Submitted Abstracts (7min talks + 3min Q&A)

11:10am – **O24: Longitudinal functional MRI for animal studies of alterations in neurovascular coupling – Andrew Crofts, University of Leicester**

11:20am – **O25: Selective acidification of tumour extracellular pH using glucose measured by Amide Proton Transfer MRI – Juliane Peter, University of Oxford**

11:30am – **O26: Respiratory-resolved motion-compensated 3D Cartesian Coronary MR angiography – Teresa Correia, King's College London**

11:40am – **O27: Diffusion imaging of acute neuroinflammation in rats**

*Eugene Kim, King's College London*

11:50am – **O28: Effects of systemic iron and/or inflammation on mouse brain R2\***

*Azhaar Ashraf, King's College London*

12:00pm – **O29: MRI detection of human motor unit fasciculation in Amyotrophic Lateral Sclerosis – Andrew Blamire, Newcastle University**

12:10pm – **O30: Elevated Brain Iron Concentrations in Subjects with Sickle Cell Anaemia Measured using MRI Susceptibility Mapping – Russell Murdoch, University College London**

12:20pm – **O31: In vivo manganese-enhanced MRI of amyloid pathology in a mouse model of AD – Diana Cash, King's College London**

12:30pm – **O32: Glycogen and body hydration status are confounders of liver shMOLLI T1 measurements – Ferenc Mozes, University of Oxford**

12:40pm – **O33: Fast Field-Cycling MRI identifies ischaemic stroke at ultra-low magnetic field strength – James Ross, University of Aberdeen**

12:50pm-2:00pm: Lunch (with Annual General Meeting at 1:30pm)

**2:00pm-3:30pm: Session 6 – “High Field MRI & Safety”**

*Moderators: Susan Francis (University of Nottingham) & Aaron Hess (University of Oxford)*

2:00pm – 2:20pm – *Invited Talk*

**“7T - Beyond the Brain”**

*Johanna Vannesjo, Oxford University*

2:20pm – 2:50pm – *Submitted Abstracts (7min talks + 3min Q&A)*

2:20pm – **O34: Improving pseudo-continuous arterial spin labelling at ultra-high field using parallel transmission** – *Yan Tong, University of Oxford*

2:30pm – **O35: The relationship between cortical receptive field size and eccentricity in V1, V2, and V3 of healthy individuals** – *Melissa Emily Wright, Cardiff University*

2:40pm – **O36: The impact of temporal signal fluctuations and susceptibility-related echo time shifts on BOLD sensitivity: an assessment in patients with brain pathologies at 7 T**  
*Barbara Dymerska, University College London*

2:50pm-3:30pm: **Poster Power Pitch Session 2 (12 X ~2-3 mins per speaker – 1 slide max)**

**PP13: Simulating changes in external magnetic field due to head motion in a 7T scanner**  
*Laura Bortolotti, University of Nottingham*

**PP14: A Novel Automatic Quantitative Measurement of the Metabolites in Hippocampal Subfields by Combining 2D 1H-MRSI and 3D Volumetric MRI in Patients With AD**  
*Dadi Zhao, University of Birmingham*

**PP15: Improving MRS Classification of Children’s Brain Tumours Through Wavelet De-Noising** - *Dadi Zhao, University of Birmingham*

**PP16: Discriminative capacity of 1H MRS spectrum binning for preterm delivery-associated Lactobacilli-dominated vaginal microbiota** – *Emmanuel Amabebe, University of Sheffield*

**PP17: Accelerated 19F-MR Imaging of Inhaled Perfluoropropane for Assessment of Pulmonary Ventilation** – *Mary Neal, Newcastle University*

**PP18: Feasibility of regional glutathione measurement in healthy older individuals using 1H MEGA-PRESS MRS** – *Jodi Watt, University of Nottingham*

**PP19: Origin of Salivary Metabolites and their Role in Taste Perception**  
*Alexander Gardner, King's College London*

**PP20: Single voxel spectroscopy with cycled water-suppression in cardiac 1H MRS**  
*Belinda Ding, University of Oxford*

**PP21: MR and CT compatible electrical heating system for mouse imaging**  
*Veerle Kersemans, University of Oxford*

**PP22: Activated leukocyte cell adhesion molecule (ALCAM) as a potential MRI biomarker for detection of brain micrometastases** – *Niloufar Zarghami, University of Oxford*

**PP23: Registration of Histological Images to Post-Mortem MRI**  
*Istvan Huszar, University of Oxford*

**PP24: Stacked In-plane Histology for Quantitative assessment of MRI markers: Application to an Infiltrative Brain Tumour Model** – *Haitham Al-Mubarak, University of Glasgow*

3:30pm-4:00pm: Break

4:00pm-5:00pm: **Poster Session 2**

5:00pm-5:15pm: Awards and Close