Programme

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Wednesday 11th September 2024

Workshop on Beyond 1H: Xing up MRI/S

12:00 - 12:45	Registration and Lunch
12:45 - 15:00	Lectures (invited) on how to: • measure with hyperpolarised gases: **Jim Wild (Sheffield)** • make metabolic measurements with ^{13}C: **Damian Tyler (Oxford)** • get the best out of ^{31}P: **Chris Rodgers (Cambridge)** • use ^{23}Na: **Claudia Gandini Wheeler-Kingshott (UCL)** • exploit exotic nuclei: **Pete Thelwall (Newcastle)** *Chairs: Stephen Bawden and Sue Francis (Nottingham)*
15.00 -15:45	Refreshment Break: Posters
15:45 -17:15	Vendor Presentations and Discussion Arnaud Comment (GE), Matthew Clemence (Philips), Willy Gsell (Bruker), Robin Heidemann (Siemens Healthineers) *Chairs: Richard Bowtell and Galina Pavlovskaya (Nottingham)*
17.15 -18.00	Optional tour of the SPMIC
19:30 – 21:30	PubhD public engagement event, Barley Twist, Nottingham City Centre

Thursday 12th September 2024

09:00 - 09:30	Registration
09:30 - 09:45	Welcome
09:45 -10:15	**Invited Speaker: Nicolas Boulant (Neurospin)** *The Iseult 11.7T human MRI project: from first ideas to first in vivo images* *Chair: Richard Bowtell (Nottingham)*
10:15 – 10.40	**Power Pitch Session 1 - posters 1-20** *Chair: Olivier Mougin (Nottingham)*
10.40 - 11.15	Refreshment break, posters 1-20 & exhibits
11:15 - 12:15	**Proffered Talks Session 1** **High Field MR** *Chair: Sydney Williams (Glasgow)* 1. *Diffusion MRI acquisition methods for post-mortem imaging at 10.5 T.* Ben Tendler (University of Oxford). 2. *High resolution diffusion MRI tractography at 10.5T in the in-vivo & ex-vivo NHP brain.* Stam Sotiropoulos (University of Nottingham) 3. *The 7T implant problem: participant exclusion rates in ultra-high field MRI.* C. John Evans (Cardiff University) 4. *Deuterium Metabolic Imaging (DMI) results at 7T following [$^2H_2$] and [$^2H_7$] glucose ingestion.* Daniel Cocking (University of Nottingham) 5. *Investigating Magnetic Field Correlation (MFC) sensitivity to demyelination and axonal loss using numerical simulations.* Lewis Kitchingman (Cardiff University)
12:15 – 13:15	Lunch, posters & exhibits
13:15 – 13.45	**Invited Speaker: Eleftheria (Laura) Panagiotaki (UCL)** *Non-invasive prostate microstructure estimation with Diffusion MRI* *Chair: Steffi Thust (Nottingham)*
13:45 - 14:45	**Proffered Talks Session 2** **Preclinical and Cancer** *Chair: Steffi Thust (Nottingham)* 6. *Whole-brain imaging in rats using MRI and 3D microscopy: A cross-scale, multi-modal approach*. Jenna Hanmer (University of Nottingham) 7. *^1H MR spectroscopy to evaluate the effects of a glycolysis inhibitor and temozolomide treatment in a mouse model of glioblastoma.* Tareq Alrashidi (University of Liverpool) 8. *Multiparametric $^1H/^{23}Na$ MRI for analysing the ionic microenvironment within preclinical breast tumour models.* Alina Lavinia Capatina (University of York)

	9. *Lipid composition in the breasts of BRCA1/2 genetic mutation carriers via chemical shift-encoded imaging.* Sai Man Cheung , (University of Newcastle)
	10. *Investigating prostate cancer using QSM in vivo.* Laxmi Muralidharan (UCL)
14:45 - 15:10	**Power Pitch Session 2 - posters 21-41 below** *Chair: Charlotte Buchanan (Nottingham)*
15.10 - 15:40	Refreshment break, posters 21-41 & exhibits
15:45 - 16:45	**Proffered Talks Session 3** **Contrast and Microstructure** *Chair: Paul Morgan (Nottingham)*
	11. *Soma And Neurite Density Imaging (SANDI) is sensitive to changes in glial morphology induced by systemic inflammation.* Mara Cercignani (Cardiff University)
	12. *Cross-species standardised subcortical tractography.* Stephania Assimopoulos. (University of Nottingham)
	13. *The effects of maternal iron levels on the early development of white matter microstructure in the superior longitudinal fasciculus.* Katie Smith (Cardiff University).
	14. *Comparison of susceptibility source separation methods without R2.* Patrick Fuchs (UCL)
	15. *Constrained model-based relaxation parameter mapping using balanced steady state free precession.* Zimu Huo (University of Cambridge)
16:45 - 17:30	**Bill Moore Lecture: Derek Jones (Cardiff)** *From Meteorology to Tractology: Forecasting a New Path in Neuroscience* *Chair: Penny Gowland (Nottingham)*
19:30	Conference Dinner: Cavendish Hall

Friday 13th September 2024

09:00 -09:30	**Invited Speaker: Rhodri Cusack (TCD)** *Measuring Cognitive Neurodevelopment in Infants with Awake fMRI* *Chair: Gareth Barker (KCL)*
09:30 -10:30	**Proffered Talks Session 4** **Quantitative neuroimaging** *Chair: Gareth Barker (KCL)* 16. *Associations between Cerebrovascular Reactivity Delay and progression of Small Vessel Disease Features.* Keelin N. Ridge, (University of Edinburgh) 17. *Haematocrit-corrected QSM + qBOLD reveals globally elevated brain oxygen extraction fraction in sickle cell anaemia.* Mitchel Lee (UCL) 18. *Enhancing brain activity mapping through multi-modal data fusion and explainable machine learning.* Jiri Benacek (Cardiff University) 19. *Evidence for direct control of neurovascular function by circulating platelets in healthy older adults.* Gabriella Rossetti, (Manchester Metropolitan University) 20. *Age-trajectories of higher-order diffusion properties of major brain metabolites in cerebral and cerebellar gray matter using dMRS.* Eirini Messaritaki (Cardiff University)
10:30 -10:55	**Power Pitch Session 3 posters 42-62 below** *Chair: Nic Blockley (Nottingham)*
10:55 -11:30	Refreshment break, posters 42-62 & exhibits
11:30 -12:30	**Proffered Talks Session 5** **Respiratory and MSK** *Chair: Pete Thelwall (Newcastle)* 21. Investigating gravitational influence on normal lung function using PREFUL MRI on an open scanner. Arthur Harrison (University of Nottingham) 22. Quantification of gas trapping in cystic fibrosis using residual volume (RV) lung 1H-MRI. Amy V Simmons (University of Sheffield) 23. *Dynamic ^{19}F-MRI of pulmonary ventilation in lung transplant recipients with and without chronic lung allograft dysfunction.* Mary Neal (Newcastle University) 24. *Unlocking Muscle Fatigue: Insights from multi-parametric ^{1}H, ^{23}Na & ^{31}P MRI in exercise-induced muscle damage and inflammation.* Fabio Zambolin, (Manchester Metropolitan University) 25. *Shoulder MRI Arthrograms – Is saline an intra-articular option?* Charlotte Swain (Nottingham University Hospital)
12:30 -13:15	Lunch, posters & exhibits
13.15 -13.45	**BIC-ISMRM Annual General Meeting**

Time	Content
13:45 -14:15	**Invited Speaker: Mary Mclean (Cambridge)** *Metabolic Multinuclear MR* *Chair: Rob Dineen (Nottingham*
14:15 -14.55	**Gold Sponsor Presentations** *Chair: Adam Berrington (Nottingham)*
14:55 -15.20	**Power Pitch Session 4 posters 63-83 below** *Chair: Eleanor Cox (Nottingham)*
15.20 -15:55	Refreshment break, posters 63-83 & exhibits
15:55 - 16:55	**Proffered Talks Session 6** **Body MR** *Chair: Sue Francis* *(Nottingham)* 26. *Placental contractions in low, high and extremely high-risk pregnancies.* Amy Turnbull (University of Nottingham). 27. *Towards accurate, reproducible PDFF quantification using a 3D dual-echo Dixon body composition sequence.* Yifei Jin (Perspectum). 28. *Multiparametric MRI and MRS to study changes across the Surgical Journey in Bariatric Patients with Type 2 diabetes or Prediabetes.* Abi Spicer (University of Nottingham) 29. *Rapid 3D gastrointestinal motility imaging using a stack-of-spirals sequence and compressed sensing reconstruction.* Rebecca Baker (UCL) 30. The application of functional renal MRI to improve assessment of chronic kidney disease (AFiRM) Study. Charlotte Buchanan (University of Nottingham).
16:55 -17:00	**Awards and Close**

Posters – Session 1

1. Ultra-low field Magnetic Resonance Imaging of the human forearm in the Earth's Magnetic Field of Dublin, Ireland. Friedrich Wetterling. Trinity College, Dublin.

2. Tuneable Digital Phantoms for Grey Matter Modelling. Charlie Aird-Rossiter, Cardiff University.

3. Simultaneous Structural and Functional Susceptibility and Conductivity Mapping Using a Rapid High-Resolution Multi-Echo EPI Acquisition. Jierong Luo, University College, London

4. Adaptive Wavelet Noise Suppression. Teddy Zhao, University of Birmingham.

5. Magnetic Source Separation in the Head and Neck: Comparing Three Gradient Echo Methods. Matthew Cherukara, University College, London

6. ON-HARMONY 2.0: A comprehensive travelling-heads resource for multi-modal neuroimaging harmonisation. Andrea Torchi, University of Nottingham

7. Assessing the influence of heart rate on MOLLI T1 mapping in the UK Biobank. Margot Roeth, University of Nottingham

8. Optimization of a Silent ZTE Magnetization Transfer Ratio Sequence at 3T, Oliver Pinna. Kings College, London

9. Pharmacokinetic Modelling of DCE-MRI for Differentiation Between True Tumor Progression and Pseudoprogression of Glioblastoma. Gabriela Kostrzanowska, University of Liverpool.

10. Reproducibility of 3T MRI metrics across multisite, multivendor settings for a mild Traumatic Brain Injury study. Ruwan Wanni Arachchige, University of Nottingham

11. Are Physics Informed Neural Networks feasible for efficient spatiotemporal tracer kinetics? Eve Shalom, University of Sheffield.

12. Hierarchical-µGUIDE: Fast and Robust Bayesian Hierarchical Modelling using Deep Learning Simulation-Based Inference. Maëliss Jallais, Cardiff University

13. Automation of Small Bowel Water Content Evaluation using Machine Learning Image Segmentation Methods. Stephen Lloyd-Brown, University of Nottingham.

14. Assessment of Composite Pulses in Ultra-Low field MRI: application to TSE Imaging field MRI: application to TSE Imaging. Finn Aubrey Conboy, Brighton and Sussex Medical School.

15. Scalable spokes pTx pulses for 2D turbo-spin-echo imaging at 7T. Minghao Zhang, University of Cambridge.

16. B0 shimming using a multi-coil array for simultaneous regional and whole brain acquisition at 7T. Claire Lucas, University of Nottingham.

17. Investigation of Electromagnetic Interaction Between RF Coil & Graphene-based Electrophysiology Probes at 7 Tesla Preclinical MRI. Suchit Kumar, University College, London.

18. Multi-split ring surface coil for gradient free volume localised sodium spectroscopy at 0.5T. Galina Pavlovskaya, University of Nottingham.

19. Prospective 8Tx thoracic-lumbar spinal array at 7T MRI, Yiling Hu, University of Glasgow.

20. Developing AI-based methods for glioma segmentation across novel clinical contexts. Gabriela Flores Lopez, University of Manchester

Poster – Session 2

21. Developing an Open-Source Framework for the Simulation of MR Elastography Experiments. Mehmet Nebi YILDIRIM, Cardiff University

22. Validation of High Spatial Resolution 23Na Imaging of the Skin. Theodora Slater, University of Nottingham.

23. A Standardized MRI Phantom for Dissolved Phase 129Xe MRI. Max Filkins, University of Nottingham.

24. 7Li-MRI of the human brain following dietary supplementation with low-dose lithium. Mary Neal, Newcastle University.

25. Fitting for 7T Deuterium Metabolic Imaging (DMI). Masha Novoselova, University of Cambridge.

26. Measuring lipid turnover in human subjects using 2H magnetic resonance and heavy water loading. Daniel Cocking, University of Nottingham.

27. Mapping the amplitude and phase of dissolved 129Xe red blood cell signal oscillations with keyhole spectroscopic lung imaging. Jemima Pilgrim-Morris, University of Sheffield.

28. Using NORDIC with 23Na MRI to study dynamic changes in tissue sodium concentration. Ben Prestwich, University of Nottingham.

29. Reliability and repeatability of total creatine measurements in multiple human brain regions using 1H-MR spectroscopy. Jedd Pratt, Manchester Metropolitan University.

30. Evaluating the potential of PARAshift contrast agents to image biomarkers for acquired brain injury (ABI). Sakaorna Jeyanathan, University of Nottingham.

31. Preliminary Phase-Based EPT in Parkinson's Disease: Effects of Open-Ended Fringe Lines. Oriana Arsenov, University College London.

32. Optimising EPT to Assess Brain Conductivity in Sickle Cell Anaemia at 1.5T. Philippa Sha, University College London.

33. Comparing Novel Functional Electrical Properties Tomography (fEPT) with Simultaneous BOLD fMRI using Multi-Echo Echo-Planar Imaging. Jierong Luo, University College London.

34. Accelerated T2 mapping for clinical applications: a comparison with conventional methods in the NIST/ISMRM system phantom. Jack Allen, University College London.

35. Investigating The Impact Of Denoising Methods On Dti Estimates. Joshua Ametepe. Cardiff University.

36. Current UK perspectives on the challenges for clinical translation of quantitative MR imaging biomarkers. Penny Hubbard Cristinacce, University of Manchester.

37. Bayesian parameter estimation and non-linear least squares fitting for the multi-compartment analysis of T2 in breast cancer. Kangwa Alex Nkonde, Newcastle University.

38. Estimation of Apparent diffusion coefficients of the three major metabolites measured in the human brain at 3 T. Zoona Javed. Sheffield University.

39. Towards phase contrast MRI of stratified multiphase flows: a probe for rheology under combined shear and extension. Steven Reynolds, University of Sheffield

40. Magnetic Resonance Imaging (MRI) as a tool to characterize viscoelastic behaviours of syrup free vegan soft candies. Pelin Pocan, Nottingham Trent University.

41. A pipeline for quantitative histological analysis to validate microstructure imaging through diffusion MRI. Elise Gwyther, Cardiff University.

Posters – Session 3

42. Prediction of progressive disease in treated high grade glioma using DSC-derived oxygen extraction fraction and microvasculature biomarkers. Tamadur Alsulami, University College, London.

43. Automatic Segmentation of Pediatric Brain Tumours using Diffusion-weighted MRI: Downstream Performance in a Diagnostic Classifier. Daniel Griffiths-King, Aston University.

44. Automatic Segmentation of Pediatric Brain Tumours using Diffusion-weighted MRI: Transfer Learning and Multi-input Ensembling Approaches. Daniel Griffiths-King, Aston University.

45.   Enhancing subtle cortical lesion detection and tissue characterization via multi-dimensional MRI modelling and optimization. Eirini Messaritaki, Cardiff University.

46. Shining Light on Degeneracies and Uncertainties in the NEXI and SANDIX Models with μGUIDE. Maëliss Jallais, Cardiff University.

47. Simulation-based inference in diffusion MRI: From uncertainty mapping to probabilistic tractography. Jose Pedro Manzano Patron, University of Nottingham.

48. Comparing Deep Learning and Patch-based Denoising of Diffusion MRI. Francesco D'Antonio, University of Nottingham.

49. End-to-end Complex Reconstruction and Denoising Pipeline for GE Diffusion MRI Acquisitions. Francesco D'Antonio, University of Nottingham.

50. Towards quantifying Gray Matter "micro-connectivity": the measurable impact of dendritic spines on metabolite diffusion. Kadir Simsek, Cardiff University.

51. Diffusion in dendritic spines: impact on permeative exchange estimation with time-dependent diffusion-weighted MRI. Kadir Simsek, Cardiff University.

52. Subjective craving and brain response to drug-related cues in former drug addicts: An fMRI study. Elza Othman, University Sultan Zainal Abidin.

53. Fast (<100ms TR) 3T fMRI unravels the dynamics of visual perception: investigation of travelling waves in binocular rivalry. Rowan Huxley, University of Nottingham.

54. A Bio-engineered BOLD Alternative for High-Resolution Brain Function Mapping. Elizabeth Fear, University of Urbino Carlo Bo, UniUrb

55. fQSM versus fMRI: A Comparative Analysis of Activations in Veins. Jannette Nassar, University College, London.

56. Assessing somatotopic organisation of focal hand dystonia using 7T fMRI. Michael Asghar, University of Nottingham.

57. fMRI reveals pain-like responses in a patient with pain insensitivity due to rare genetic mutation of FAAH-out gene. Michael Asghar, University of Nottingham.

58. Abnormal Resting State Network Connectivity in Sickle Cell Anaemia. Mitchel Lee, University College, London.

59. Real-time quantification of brain metabolism during neuronal stimulation in healthy volunteers using hyperpolarised [1-13C] pyruvate MRI. Dr Sebastien Serres, University of Nottingham.

60. Structural Connectivity Differences In White Matter Tracts Of NGF Carriers with Pain Insensitivity. Arnas Tamasauskas, University of Liverpool.

61. Analytical and deep-learning models predict distinct alterations in brain structure-function relation in psychosis patients. Eirini Messaritaki, Cardiff University.

62. Altered cognitive and neurovascular profiling in Long Covid. Oliver James Mundell, Manchester Metropolitan University.

Posters – Session 4

63. Ghostbusting: Body motion correction at standing position in 0.5 T Upright scanner. Laura Bortolotti, University of Nottingham.

64. Measuring Quantitative Cortico-Medullary Gradients in Ex-Vivo Renal Tissue. Alexander J Daniel, University of Nottingham.

65. 3D Kidney Segmentation using Transformers on DIXON-MRI. Ajo Joseph Thomas, Sheffield University.

66. Measurement of in vivo T2* of inhaled perfluoropropane gas and its dependence on lung microstructure. Dominic Harrison, Newcastle University.

67. Monitoring diabetic kidney disease progression with DTI and tractography. Joao Periquito, University of Sheffield.

68. Lipid composition during neoadjuvant chemotherapy of breast cancer through chemical shift-encoded imaging. Sai Man Cheung, Newcastle University.

69. Investigating live human sperm metabolism during hyperactivation and the acrosome reaction using 13C-NMR. Steven Reynolds, Sheffield University.

70. Using Magnetisation Transfer Ratio, T1 and T2 to monitor the in-vitro gastric digestion of chicken and plant-based chicken analogues. May Alotaibi, University of Nottingham.

71. Co-ingestion of whey protein enhances liver glycogen repletion following ingestion of combined glucose and fructose in trained cyclists. Sophie Hannon, Manchester Metropolitan University.

72. Multi-organ quantitative abdominal MRI in paediatric patients with Cystic Fibrosis. Chris Bradley, University of Nottingham.

73. Novel MRI contrast agents and image analysis for studying kidney pathophysiology. Georgia Aspinall, University of Nottingham.

74. Visualisation of tablet dissolution in the human stomach using magnetic resonance imaging and manganese as a marker. Tejal Akbar, University of Nottingham.

75. Diffusion-Weighted Imaging in Intraoperative MRI: A Comparison between Echo Planar and Turbo Spin-Echo Techniques. James Thorpe. Nottingham University Hospitals NHS Trust.

76. Application of Magnetic Resonance Imaging and Spectroscopy Methods to Identify Fat Malabsorption in the Colon. Arantxa Recto, University of Nottingham.

77. Optimisation of Gradient Echo Protocols for Quantitative Assessment of Pulmonary Ventilation and Perfusion at 3 T. Zachary Peggs, University of Nottingham.

78. ICA-enabled oxygen-enhanced MRI (OE-MRI) correlates with pulmonary function tests in cystic fibrosis. Sarah Needleman, University College London.

79. How do b-Values in Diffusion-Weighted Imaging Affect Measures of Skeletal Muscle Architecture and Diffusivity? Zhenkai Zhao, Manchester Metropolitan University.

80. Quadrupolar Splittings in the Forearm and Lower Leg after Deuterium Oxide Loading. Robin Damion, University of Nottingham.

81. Optimized bone imaging protocol via IR-ZTE with long-T2 suppression. Diana Catargiu. King's College London.

82. Imaging choroid plexus diffusion characteristics using FLAIR-IVIM DW-MRI. Charith Perera. University College London.

83. Towards accurate, reproducible PDFF quantification using a 3D dual-echo Dixon body composition sequence. Yifei Jin. Perspectum.