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# MRS Workshop 2018

## Metabolic Imaging

### Wednesday Oct 3<sup>rd</sup>

#### Session 2 – MRSI / fast metabolic imaging techniques

Moderators: Peter Barker | Fan Lam

##### Accelerated MRSI and reconstruction

Bernard Strasser, PhD, Martinos Centre, Boston, USA



##### Consensus discussion MRSI

Andrew Maudsley, PhD, University of Miami, Miami, USA



#### Session 3 – Quality of MRS/MRSI

Moderators: Gulin Oz | Anke Henning

##### Quality of MRS/MRSI

Ivan Tkac, PhD, CMRR University of Minnesota, Minneapolis, USA



##### Cycled water-suppression single voxel spectroscopy in cardiac 1H MRS

Belinda Ding, University of Oxford, Oxford, UK



##### Full Brain High Resolution 3D-MRSI at 7 Tesla within 30 Minutes via 3D-CONCEPT

Philipp Moser, High Field MR Centre, Department of Biomedical Imaging and Image-guided Therapy, Medical University of Vienna, Austria



##### Whole Brain High Resolution Metabolite Mapping Using 1H FID MRSI with Dynamic

Bo Shimming at 9.4T

Sahar Nassirpour, Max Planck Institute for Biological Cybernetics, Tuebingen, Germany



##### Density-Weighted Concentric Ring Trajectory using simultaneous multi-slice (SMS)

acceleration: 3D Metabolite-cycled Magnetic Resonance Spectroscopy Imaging at 3 T

Uzay Emir, Purdue University, West Lafayette, USA



##### Consensus discussion MRS quality

Roland Kreis, PhD, University and Inselspital Bern, Bern, Switzerland



### Thursday Oct 4<sup>th</sup>

#### Session 4 – Spectral Fitting and Quantitation

Moderators: Cristina Cudalbu | Nuno Barros

##### Preprocessing

Jamie Near, PhD, McGill University, Montreal, Canada



##### Parametric fitting

Brian Soher, PhD, Duke University School of Medicine, Durham, USA



##### Machine learning

Diana Sima, PhD, University of Leuven, Leuven, Belgium



#### Papers presentations

Moderators: Cristina Cudalbu | Nuno Barros

##### Simultaneous fitting of the individual spectra recorded by multichannel receive arrays in 1H MRS investigations of global brain pathology

Maike Hoefemann, Departments of Radiology and Biomedical Research, University of Bern, Bern, Switzerland



##### Reliability of Quantifying Small Resonances in Single Voxel Short Echo Time Human Brain MRS: Concentrations Measured at 3 T and 7 T

Melissa Terpstra, University of Minnesota, Minneapolis, USA



##### How do voxel size and shape in whole-brain MRSI affect spectral quality? A simulation study on 1.5T, 3T, 7T and 9.4T

Stanislav Motyka, High Field MR Centre, Department of Biomedical Imaging and Image-guided Therapy, Medical University of Vienna, Vienna, Austria



##### Spectral fitting challenge results (update from 2016) + consensus discussion

Gosia Marjanska, PhD, CMRR University of Minnesota, Minneapolis, USA



#### Session 5 – Applications MRS

Moderators: Alexander Lin | Joseph Cousins

##### Clinical applications

Petra Pouwels, PhD, Amsterdam UMC, Amsterdam the Netherlands



##### Pre-clinical application

Jeanine Prompers, PhD, University Medical Centre Utrecht, Utrecht, the Netherlands



##### Clinical applications for Cancer

Ovidiu Andronesi, PhD, Martinos Centre, Boston, USA



## Papers presentations

Moderators: Alexander Lin | Joseph Cousins

### Deletion of CRTc1 is associated with strong neuroenergetic dysfunctions in a mouse model of mood disorders

Antoine Cherix, Laboratory for Functional and Metabolic Imaging (LIFMET), Ecole Polytechnique Fédérale de Lausanne, Lausanne, Switzerland



### In vivo longitudinal <sup>1</sup>H MRS Study of hippocampal, cerebral and striatal metabolic changes in BDL rats

Dunja Simicic, LIFMET, CIBM, Ecole Polytechnique Fédérale de Lausanne, Lausanne, Switzerland



### The utility of ultra-high resolution MRSI on detectability of neurochemical changes in multiple sclerosis-related brain lesions

Eva Heckova, High Field MR Centre, Department of Biomedical Imaging and Image-guided Therapy, Medical University in Vienna, Vienna, Austria



### Early and profound neurometabolic changes in pup rat with cholestatic liver disease compared to changes in adult rats, <sup>1</sup>H MRS study

Veronika Rackayova, LIFMET, CIBM, Ecole Polytechnique Fédérale de Lausanne, Lausanne, Switzerland



## Session 6 – MRS outside the brain

Moderators: Chris Rodgers | Eva Ratai

### Technical challenges of body MRS

Martin Meyerspeer, PhD, Medical University of Vienna, Vienna, Austria



### Cardiac MRS

Ladislav Valkovic, PhD, University of Oxford, Oxford, UK



### Muscle and Liver

Martin Krssak, PhD, MedUni Vienna, Vienna, Austria



### Breast and Prostate

Tom Scheenen, Radboud University Medical Centre, Nijmegen, the Netherlands



## Papers presentations

Moderators: Chris Rodgers | Eva Ratai

### Assessment of perfused ex vivo human livers by MRS and MRI

Liam Young, OCMR, University of Oxford, Oxford, UK



### Sexual dimorphism and maturation effects in skeletal muscle metabolites: a proton MRS study

Lievens Eline, Ghent University, Ghent, Belgium



### Myocardial metabolism in amyloidosis quantified by proton MR spectroscopy

Mareike Gastl, Institute for Biomedical Engineering, University and ETH Zurich, Zurich, Switzerland



## Session 7 – Multinuclear MRS/MRI

Moderators: Wolfgang Bogner | Chloe Najac

### Multi nuclear MRS/MRSI Technical

Pierre-Gilles Henry, PhD, CMRR University of Minnesota, Minneapolis, USA



### Multi nuclear MRS/MRSI Applications

Fei Du, PhD, Harvard University, Boston, USA



## Friday Oct 5<sup>th</sup>

## Session 8 – MRS in neuroscience and emerging technologies

Moderators: Ben Babourina-Brooks | Rolf Gruetter

### DWS

Itamar Ronen, PhD, Leiden University Medical Centre, Leiden, the Netherlands



### fMRS

Peter Morris, PhD, University of Nottingham, Nottingham, UK



### PET and MRS

Bernard Lanz, PhD, University of Nottingham, Nottingham, UK

LIFMET, CIBM, Ecole Polytechnique Fédérale de Lausanne, Lausanne, Switzerland



## Proffered papers presentations

Moderators: Ben Babourina-Brooks | Rolf Gruetter

### Integrated Imaging of [<sup>11</sup>C]-PBR28 PET, MR Diffusion and Magnetic Resonance Spectroscopy in Amyotrophic Lateral Sclerosis

Eva-Maria Ratai, Martinos Center for Biomedical Imaging, Department of Radiology, Massachusetts General Hospital, Charlestown, USA



### Deuterium Metabolic Imaging (DMI), a novel method for in vivo mapping of glucose metabolism in brain and liver

Henk De Feyter, Yale University, New Haven, USA



### In-vivo <sup>1</sup>H MRS and ex-vivo ESR spectroscopy of Oxidative Stress in a rat model of Chronic Hepatic Encephalopathy

Katarzyna Pierzchala, LIFMET, CIBM, Ecole Polytechnique Fédérale de Lausanne, Lausanne, Switzerland



### Both oxygen supply and phosphocreatine recovery rate show proximo-distal gradients along the human tibialis anterior after exercise

Linda Heskamp, Department of Radiology, Radboud University Medical Center, Nijmegen, Netherlands



### MRS and the Physiome project In silico models seeking in vivo numbers.

Jeroen Jeneson, PhD, University of Groningen, Groningen, the Netherlands



## Session 9 – Consensus Discussion

Moderator: Veronika Rackayova

### NMR in biomedicine special issue on Consensus in MRS

In-Young Choi, PhD, University of Kansas Medical Centre, Kansas City, USA

