

## Advanced fMRI Course

### Organizers:

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fMRI acquisition and analysis is a rapidly advancing field. Analysis techniques are becoming increasingly specialized, which has given rise to the development of sub-fields like "resting-state analysis", "connectomics", "graph theory", "simultaneous multi-slice imaging", "machine learning", "pattern information", "processing pipelines", "translational neuroscience", and others. There are substantial concerns about reproducibility, power and effect size, and best practices in neuroimaging analysis and beyond. While a deep dive into any one of these particular topics is a worthy venture, this course provides something complementary: A broad update of the latest thinking and most important concepts across all of these areas. We feel that this is an essential component of OHBM's educational mission.

### Course Schedule:

8:00-8:35

#### **MRI and fMRI physics: From basic principles to the current state of the art**

*Lawrence Wald, Ph.D., Athinoula A. Martinos Center for Biomedical Imaging, Massachusetts General Hospital, Boston, MA*

8:35-9:10

#### **The Physiology and Spatial Specificity of fMRI: Implication for High-Resolution fMRI and fMRI-Based Decoding**

*Amir Shmuel, MNI, McGill University, Montreal, Canada*

9:10-9:45

#### **Neuromodulation during fMRI**

*Gary Glover, Stanford University, Palo Alto, CA, United States*

9:45-10:20

#### **Classics and Trendy**

*Robert Cox, National Institute of Mental Health, NIH, Bethesda, MD, United States*

10:20-10:50

**Break**

10:50-11:25

**Best practices in data analyses and sharing, the COBIDAS document: Tips for application with examples from a large population-based study**

*Tonya White, MD, PhD, Erasmus MC - Sophia Children's Hospital, Rotterdam, The Netherlands*

11:25-12:00

**Question and Answer**

12:00-13:00

**Lunch**

13:00-13:35

**Establishing causal relationships in neuroimaging: Pitfalls and promises**

*Martin Lindquist, Ph.D., Johns Hopkins, Baltimore, MD, United States*

13:35-14:10

**Theoretical and Statistical Interpretation of fMRI Multivariate Pattern Analysis**

*Mike Pratt, Mississippi State University, Starkville, MS, United States*

14:10-14:50

**Stimulus-locked network dynamics**

*Chris Honey, Johns Hopkins University, Baltimore, MD, United States*

14:50-15:00

**Break**

15:00-15:35

**Reproducibility, Effect size, and Generalizability in Neuroimaging**

*Tor Wager, Department of Psychology and Neuroscience, University of Colorado at Boulder, Boulder, CO, United States*

15:35-16:10

**Translational fMRI: Data-Driven Modeling of Brain-Behavior Associations in Neuropsychiatric Disorders**

*Conor Liston, MD, PhD, Cornell University, New York, NY, United States*

16:10-16:30

**Question and Answer**