Tools to Parcellate the Brain and Its Relation to Function

Organizers:
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Over the past century and an half, human brain mapping consisted in pinning small functionally responsive areas within the brain. However the real extent of these areas and their eventual overlap remains unknown.

The challenge now facing neuroscience is to define boundaries for functionally responsive areas at the group and the individual level. Many approaches parcellating the brain in areas with different features became recently available including post-mortem and in vivo architectonics, tractography-based connectivity, functional coactivation, and resting state functional connectivity. However, what these methods really measure and what conclusion can be drawn, are not yet fully clear to the scientific community. This course addresses this need and is intended for a large audience of research scientist (e.g. from beginner to advanced level).

Course Schedule:

8:00-8:45
PART I Parcellate the brain using anatomical features: Histological and neurochemical architecture
Claudia Eickhoff, Institute of Clinical Neuroscience and Medical Psychology, Heinrich Heine University, Duesseldorf, Germany

8:45-9:30
PART I Parcellate the brain using anatomical features: Tractography based subdivision
Michel Thiebaut de Schotten, Brain and Spine Institute, Paris, France

9:30-10:15
PART II Parcellate the brain using functional features: Functional MRI coactivation parcellation
Danilo Bzdok, Research Center Jülich, Jülich Germany

10:15-10:30
Break

10:30-11:15
PART II Parcellate the brain using functional features: Resting state functional connectivity subdivision
Carl Hacker, Washington University School of Medicine, St. Louis, MO, United States

11:15-12:00
PART III Multi-modal parcellation of the human cerebral cortex
Matthew Glasser, Washington University of St. Louis, St. Louis, MO, United States