

The course consists of four sessions that connect classical and cutting-edge neuroanatomy methods. The first session will provide detailed discussion of the functional anatomy of an example brain system - the frontal lobe, incorporating evidence from classical and neuroimaging techniques. Session two will consist of methodological talks on classical neuroanatomical techniques. Session three will include methods talks on imaging methods for neuroanatomy, with a focus on whether or not imaging can tell us anything like what we learn from classical neuroanatomy. Finally, session 4 will provide an overview of applications of anatomical neuroimaging techniques to clinical and healthy populations.

Learning Objectives: Having completed this course, participants will be able to:

- list classical and imaging methods for neuroanatomy
- illustrate diverse examples of these methods in practice.

Target Audience: It is aimed at a multidisciplinary audience, and will provide some basic introduction to all methods discussed, as well as a discussion of their advantages, disadvantages and potential pitfalls.

Course Schedule

8:00-8:15 *Introduction and Rationale*
Heidi Johansen-Berg, University of Oxford, Oxford, UK

Neuroanatomy in Practice

8:15-9:00 *Anatomy of the Frontal Lobe*
Michael Petrides, Montreal Neurological Institute, Montreal, Canada

Classical Methods for Neuroanatomy

9:00-9:30 *Tract Tracing*
R.J. Morecraft, University of South Dakota School of Medicine, Vermillion, SD, USA

9:30-10:00 *Cytoarchitecture, Cortical Parcellation and Cortical Thickness*
Katrin Amunts, Institute of Medicine, Research Centre Jülich, Germany

10:00-10:30 *Receptor Architectonics*
Karl Zilles, Institute of Medicine, Research Centre Jülich, Germany

10:30-11:00 Break

Imaging Methods for Neuroanatomy

11:00-11:30 *Grey Matter: Quantitative Mapping*
Bruce Fischl, Harvard Medical School, MIT CSAIL and Martinos Centre for Biomedical Imaging, Massachusetts General Hospital, Boston, MA, USA

11:30-12:00 *Grey Matter: Morphology*
Jean-Francois Mangin, Neurospin, CEA, St Aubin, France

12:00-13:00 Lunch on your own

13:00-13:30 *White Matter: Quantitative Mapping*
Christian Beaulieu, University of Alberta, Edmonton, AB, Canada

13:30-14:00 *White Matter: Diffusion Tractography*
Tim Behrens, University of Oxford, Oxford, UK

14:00-14:30 Break

Applications of Neuroanatomy in Imaging

- 14:30-15:00 *Variation in Cortical Structure in Development and Disease*
David Van Essen, Washington University School of Medicine, St Louis, MO, USA
- 15:00-15:30 *Anatomical Correlates of Genetic Variation*
Andreas Meyer-Lindenberg, National Institutes of Health, Bethesda, MD, USA
- 15:30-16:00 *Neuroanatomy of Individual Differences*
Christiana Leonard, McKnight Brain Institute of the University of Florida, Gainesville, FL, USA
- 16:00-16:30 *Comparative Brain Anatomy: Inter-Species Studies of Brain Connectivity*
Matthew Rushworth, University of Oxford, Oxford, UK
- 16:30-17:30 *Q&A panel discussion with all speakers*