



Human Brain Project
Education Programme

HBP SCHOOL **THE HUMAN BRAIN ATLAS:** **NEUROSCIENTIFIC BASIS, TOOLS AND APPLICATIONS**

3-7 SEPTEMBER 2018
DÜSSELDORF/JÜLICH, GERMANY
MAASTRICHT, NETHERLANDS

SCIENTIFIC PROGRAMME



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HBP Education



HBP Education Programme



[humanbrainproject.eu/
education/](http://humanbrainproject.eu/education/)

SCIENTIFIC PROGRAMME

This HBP School will teach neuroanatomy and cognitive function of the human brain, including hands-on dissection courses, and give an overview about selected methodologies used in the Human Brain Project (HBP) to investigate the structural and functional organisation of the human brain. Students will receive hands-on training on the handling and usability of the Human Brain Atlas, part of the HBP Neuroinformatics Platform and an introduction to the services of the HBP High Performance Analytics and Computing Platform. The school programme also includes lectures on ethical implications and EU funding possibilities.

Scientific Chair:

Katrin Amunts | Forschungszentrum Jülich,
Heinrich Heine University Düsseldorf

Organisers:

Sabine Bradler | Forschungszentrum Jülich
Viktoria Tipotsch | Medical University Innsbruck

Contact:

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MONDAY 3 SEPTEMBER 2018

Neuroanatomy of functional systems, cytoarchitectonic mapping, receptor autoradiography and hands-on dissection courses

Venue: Heinrich Heine University Düsseldorf, Universitätsstraße 1, 40225 Düsseldorf

- 08:30 - 09:00** **Registration**
Building 22.01: in front of Hörsaal 2C
- 09:00 - 09:30** **Welcome and introduction by the Scientific Chair**
Katrin Amunts | JUELICH/UDUS
Building 22.01: Hörsaal 2C
- 09:30 - 10:30** **Neuroanatomy and functional systems**
Svenja Caspers | JUELICH/UDUS
Building 22.01: Hörsaal 2C
- 10:30 - 10:45** **Coffee break**
- 10:45 - 13:00** **Hands-on dissection (course in 4 groups - part I)**
Svenja Caspers, Nicola Palomero-Gallagher, Christiane Jockwitz, Sabine Bradler, Andrea Brandstetter | JUELICH
Building 22.02: Floor 00, Room 71
- 13:00 - 14:00** **Lunch break**
- 14:00 - 15:00** **Hands-on dissection (course in 4 groups - part II) - Functional systems**
Svenja Caspers, Nicola Palomero-Gallagher, Christiane Jockwitz, Sabine Bradler, Andrea Brandstetter | JUELICH
Building 22.02: Floor 00, Room 71

- 15:00 - 15:45 **Hands-on digital dissection**
Svenja Caspers | JUELICH/UDUS
Building 22.01: Hörsaal 2C
- 15:45 - 16:45 **Cytoarchitectonic mapping and JuBrain Atlas**
Svenja Caspers | JUELICH/UDUS
Building 22.01: Hörsaal 2C
- 16:45 - 17:00 **Coffee break**
- 17:00 - 18:00 **Neurotransmitter systems in brain function**
Nicola Palomero-Gallagher | JUELICH
Building 22.01: Hörsaal 2C

TUESDAY 4 SEPTEMBER 2018

Ethics in neuroscience and EU funding opportunities for young researchers

Venue: Heinrich Heine University Düsseldorf, Universitätsstraße 1, 40225 Düsseldorf

- 09:30 - 10:45 **Ethics in the neurosciences - Part I**
Dieter Sturma | JUELICH/University of Bonn
Building 22.01: Hörsaal 2C
- 10:45 - 11:15 **Coffee break**
- 11:15 - 13:15 **Ethics in the neurosciences - Part II**
Bert Heinrichs | JUELICH/University of Bonn
Building 22.01: Hörsaal 2C

- 13:15 - 15:00** **Lunch & Poster Session**
Building 22.01
- 15:00 - 16:00** **EU research funding: Horizon 2020 political background, funding opportunities and how to set thematic priorities - Part I**
Claudia Häfner | JUELICH
Building 22.01: Hörsaal 2C
- 16:00 - 16:30** **Coffee break**
- 16:30 - 18:00** **EU research funding: Horizon 2020 political background, funding opportunities and how to set thematic priorities - Part II**
Ursula Stangel | JUELICH
Building 22.01: Hörsaal 2C
- 18:45 - 20:45** **City tour Düsseldorf**
Meeting point: Tourist Information Oldtown/Altstadt
Marktstraße 6d

WEDNESDAY 5 SEPTEMBER 2018

Brain connectivity and introduction to the High Performance Analytics and Computing Platform

Venue: Forschungszentrum Jülich GmbH, 52425 Jülich

- 08:00 - 09:30** **Bus transfer from hotel to Forschungszentrum Jülich**
Meeting point: Hotel Flora, Auf'm Hennekamp 37, 40225 Düsseldorf
- 09:30 - 10:30** **Fibre architecture of the human brain (3D polarized light imaging)**
Markus Axer | JUELICH
Institute for Neuroscience and Medicine 1
Building 15.9: Second floor, Room 4001b

- 10:30 - 12:30** **Lab visit – Brain slicing, light microscopy of brain slices and high throughput microscopy, polarized light imaging set up (3 groups, rotation every 30 minutes)**
Markus Axer, Sabine Bradler, Sebastian Bludau, Sabrina Buller, Andrea Brandstetter | JUELICH
Institute for Neuroscience and Medicine 1
- 12:30 - 13:30** **Lunch break**
Seecasino
- 13:30 - 14:30** **Variability of the cortical folding pattern and mapping of U-fiber bundles of white matter**
Jean-François Mangin | CEA
Institute for Neuroscience and Medicine 1
Building 15.9: Second floor, Room 4001b
- 14:30 - 15:30** **Diffusion-weighted MRI and aging (1000BRAINS)**
Svenja Caspers | JUELICH/UDUS
Institute for Neuroscience and Medicine 1
Building 15.9: Second floor, Room 4001b
- 15:30 - 15:45** **Coffee break**
- 15:45 - 16:45** **Functional MRI and functional connectivity modelling**
Simon Eickhoff | JUELICH/UDUS
Institute for Neuroscience and Medicine 1
Building 15.9: Second floor, Room 4001b
- 16:45 - 18:15** **Introduction to the High Performance Analytics and Computing Platform and visit of Jülich supercomputers**
Anna Lührs | JUELICH
Jülich Supercomputing Center
Building 16.3: Room 222
Building 16.4: Foyer
- 18:15 - 19:15** **Bus transfer from Forschungszentrum Jülich to hotel**

THURSDAY 6 SEPTEMBER 2018

Ultra-high field human brain imaging

Venue: Maastricht University, Oxfordlaan 55, 6229 EV Maastricht

- 08:00 - 10:30** **Bus transfer from hotel to Maastricht University**
- 10:30 - 11:30** **Resolving activity in cortical columns and cortical layers in the human brain with ultra-high field fMRI**
Rainer Goebel | UM
Auditorium
- 11:30 - 12:30** **Multiscale imaging of the human brain with ultra-high field MRI and light sheet microscopy**
Alard Roebroek | UM
Auditorium
- 12:30 - 13:30** **Lunch break**
- 13:30 - 14:30** **Co-Design Project 4 - From cognitive neuroscience to robotic applications**
Mario Senden | UM
Auditorium
- 14:30 - 16:00** **MRI scanner visit - 7 & 9.4 Tesla**
Alard Roebroek | UM
Scanner room
- 16:00 - 16:30** **Coffee break**
- 16:30 - 17:30** **Bridging the gap between mice and humans - Comparative research in the Human Brain Project**
Wim Vanduffel | KU Leuven
Auditorium

- 17:30 - 18:00 **Bus transfer from Maastricht University to restaurant**
- 18:00 - 20:00 **Dinner**
Restaurant Petit Bonheur, Achter de Molens 2, 6211 JC Maastricht
- 20:00 - 21:30 **Bus transfer from Maastricht city to hotel**

FRIDAY 7 SEPTEMBER 2018

Neuroinformatics and the HBP Human Brain Atlas

Venue: Forschungszentrum Jülich GmbH, 52425 Jülich

- 08:00 - 09:30 **Bus transfer from hotel to Forschungszentrum Jülich**
- 09:30 - 10:30 **The Human Brain Atlas as a part of the Human Brain Project's Neuroinformatics Platform**
Timo Dickscheid | JUELICH
Institute for Neuroscience and Medicine 1
Building 15.9: Second floor, Room 4001b
- 10:30 - 11:00 **Hands-on: Browsing reference atlases online**
Sebastian Bludau | JUELICH
Institute for Neuroscience and Medicine 1
Building 15.9: Second floor, Room 4001b
- 11:00 - 12:00 **Tutorial: Bringing data to the HBP Atlas I - Metadata organisation and semantic data integration**
Lyuba Zehl, Sara Zafarnia, Stefan Köhnen | JUELICH
Institute for Neuroscience and Medicine 1
Building 15.9: Second floor, Room 4001b
- 12:00 - 13:00 **Lunch break**

- 13:00 – 14:00** **Tutorial: Bringing data to the HBP Atlas II - Spatial anchoring of neuroscience data to atlases**
Yann Leprince, Stefan Köhnen | JUELICH
Institute for Neuroscience and Medicine 1
Building 15.9: Second floor, Room 4001b
- 14:00 – 14:30** **Big Data Analytics for cellular-level brain mapping**
Timo Dickscheid | JUELICH
Institute for Neuroscience and Medicine 1
Building 15.9: Second floor, Room 4001b
- 14:30 – 15:00** **Coffee break**
- 15:00 – 16:00** **Tutorial: Using the Neuroinformatics Platform to analyse data – Feature extraction from images using interactive machine learning**
Timo Dickscheid, Anna Kreshuk | JUELICH/UHEI
Institute for Neuroscience and Medicine 1
Building 15.9: Second floor, Room 4001b
- 16:00 – 17:00** **Bus transfer from Forschungszentrum Jülich to hotel**



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