SCIENTIFIC PROGRAMME
The availability of clinical, genomic, proteomic and neuroimaging data sets combined with recent advances in ICT, data mining and computational modelling makes it possible to uncover unique biological signatures of disease from multi-level descriptions of the brain. Medicine of the future will capitalise on these biological signatures of diseases for faster diagnosis, more accurate prognosis and leverage the discovery of mechanistic pathways for new types of drugs, novel treatments and ultimately personalised medicine.

The programme of the 5th HBP School combines lectures and practical sessions. In small groups, students will be working on a week-long project. Throughout the school, participants are encouraged to introduce new ideas and suggest original experimental techniques. Speakers will be available throughout the week to go into details of concepts, provide deeper insights, answer questions or help with specific group requests.

**Monday 27 November**

- **Arrival day**
  - 16:00 - 18:30
    - Registration
  - 18:30 - 19:00
    - Welcome reception
  - 19:00 - 20:30
    - Dinner
  - 20:30 - 22:00
    - Welcome address and introduction
    - Ferath Kherif (CHUV)

**Tuesday 28 November**

- 08:00 - 09:15
  - Alzheimer’s Disease biomarkers
  - Alberto Redolfi (FBF)
- 09:15 - 10:30
  - Therapeutic approaches for stroke and Alzheimer using largescale brain network models
  - Ana Solodkin (UCI)
- 10:30 - 11:00
  - Coffee
- 11:00 - 12:15
  - Data-driven disease progression modelling
  - Alexandra Young (UCL)

**Wednesday 29 November**

- 08:00 - 09:15
  - Structural and functional connectivity-based macroscopic modelling in epilepsy
  - Peter Taylor (NCL)
- 09:15 - 10:30
  - Excitation - Inhibition interplay in the modelling of epileptic seizures
  - Alain Destexhe (CNRS)
- 10:30 - 11:00
  - Coffee

**Thursday 30 November**

- 08:00 - 09:15
  - Models of interacting brain regions at cellular resolution
  - Sacha van Albada (JUELICH)
- 09:15 - 10:30
  - Rehabilitation-induced cortical plasticity after stroke
  - Francesco Resta (LENS)
10:30 - 11:00
Coffee

11:00 - 15:30
Lunch break

15:30 - 16:00
Coffee

16:00 - 16:45
Hands-on session: Tools and software - SPM with new features
Ferath Kherif (CHUV)

16:45 - 19:00
Project session

19:00 - 20:30
Dinner

20:30 - 22:00
Student Lightning Talks and Poster Session III

Friday
1 December

08:00 - 09:15
Stimulation in large-scale connectome-based network models
Andreas Spiegler (AMU)

09:15 - 10:30
Pathological sleep-like activity in brain-injured patients
Mario Rosanova (UNIMI)

10:30 - 11:00
Coffee

11:00 - 12:15
Modelling stroke and rehabilitation in mice using large-scale brain networks
Spase Petkoski (AMU)

12:15 - 15:30
Lunch break

15:30 - 16:00
Coffee

16:00 - 16:45
Hands-on session: Modelling - Spiking neural network models
Sacha van Albada (JUELICH)

16:45 - 19:00
Project session

19:00 - 20:30
Dinner

Saturday
2 December

08:00 - 10:30
Conclusion and presentation of group projects

08:00 - 10:30
Coffee

10:30 - 11:00
Coffee

11:00 - 12:15
Conclusion and presentation of group projects ctd.

12:15 - 15:30
Lunch break

15:30 - 16:00
Coffee

16:00 - 19:00
Conclusion and presentation of group projects ctd.

19:00 - 20:30
Dinner

20:30
Farewell

Sunday
3 December
Departure day

Organisers:
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For further information visit:
education.humanbrainproject.eu/web/5th-school

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