Human Brain Project
Education Programme

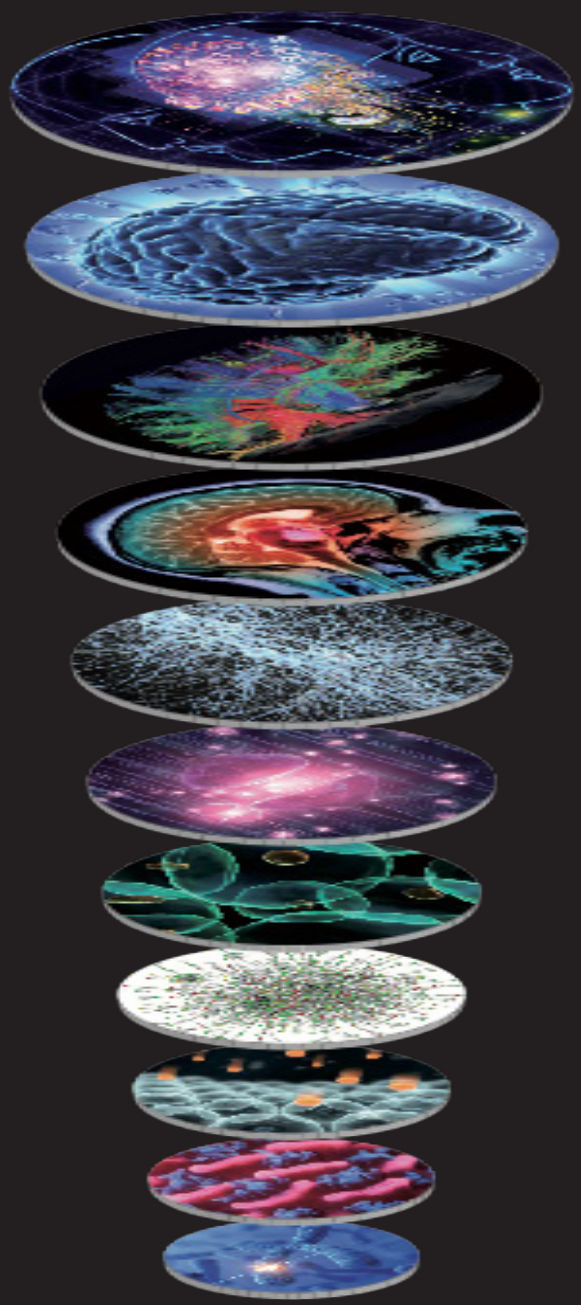
ÉCOLE POLYTECHNIQUE
FÉDÉRALE DE LAUSANNE

HOW TO STUDY THE MULTI-SCALE BRAIN

HBP MOOC ON edX

Understanding the brain requires an integrated understanding of different scales of organisation of the brain. This means studying the role that genes, channels, cells, microcircuits, and even whole brain regions have in different types of behaviour: From perception to action, while asleep or when being awake.

This Massive Open Online Course (MOOC) will take the you through the latest data, models and techniques for investigating the different levels of the brain. We will show how we can put the pieces together and attain new insights and derive new theories. With contributions from more than 15 international neuroscientists from 10 different research institutions, the MOOC gives a broad overview of the latest tools and techniques for neuroinformatics, analysis, modelling and simulation.
At the same time, several different tutorials on available data and data tools, such as those from the Allen Institute for Brain Science, provide you with in-depth knowledge on brain atlases, gene expression data and modeling neurons. These tutorials will be followed by exercises that give you the opportunity to acquire the necessary skills to use the tools and data for your own research.



Registration opens: 21 November 2017

@HBP_Education

@hbpeducation

HBP Education Programme

Contact:
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For more information visit:
https://education.humanbrainproject.eu/web/hbp-education-portal/hbp-curriculum

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With lectures from the following neuroscientists:

Vilas Menon (AI, Janelia)
Using whole-brain and single-cell gene expression to identify and characterise cell types

Trygve Bakken (AI)
Genetic dissection of neural circuits

Werner van Geit (EPFL), Elisabetta Iavarone (EPFL)
Cell types data and modelling

Qingming Luo (HUST)
Brain-wide single cell reconstructions

Forrest Collman (AI)
Synaptic mapping

Francesco Pavone (LENS)
Whole brain morphofunctional imaging

Alain Destexhe (CNRS)
Multiscale modelling

Jack Waters (AI)
Mesoscale mapping

Huib Mansvelder (VU)
Human cellular morphology and electrophysiology

Ferath Kherif (CHUV)
Defi ning disease signatures

Sean Hill (EPFL)
The Blue Brain Project

Danilo Bzdok (RWTH Aachen)
Human brain atlasing

Csaba Eroe (EPFL)
Mouse whole brain modelling

Michael Reimann (EPFL)
Modelling microcircuits

Armando Romani (EPFL)
Modelling brain regions

Saskia de Vries (AI)
Functional physiology of the mouse visual cortex

Terri Gilbert
Data, tools and atlases of the Allen Institute of Brain Sciences

And many tutorials on data sets & reserach tools:

From the Allen Institute for brain science:
- Brain observatory
- The mouse gene expression data

- The human gene expression data
- The connectivity atlas

HBP tools:
- The collaboratory
- Neuron

ALLEN INSTITUTE for BRAIN SCIENCE

ÉCOLE POLYTECHNIQUE FÉDÉRALE DE LAUSANNE

MEDIZINISCHE UNIVERSITÄT INNSBRUCK

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This MOOC was made possible with a donation from
Patrick & Lina Drahi Foundation

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For more information and application visit:
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Co-funded by the European Union