

SYMPOSIUM:
**FROM CORTICAL MICROCIRCUITS
TO CONSCIOUSNESS**

11–13 April 2022
Institut Catholique de Paris, France

**SCIENTIFIC
PROGRAMME**



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UNIVERSITÄT
BERN



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PARIS-SACLAY

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université



European Institute for Theoretical Neuroscience

Tampere University



National Research Council of Italy



LITHUANIAN UNIVERSITY
OF HEALTH SCIENCES

ABOUT THE EVENT

The Symposium: From Cortical Microcircuits to Consciousness aims at bringing together the Human Brain Project's neuroscientists and invited guests to present their latest achievements in understanding neurocircuit dynamics at microscales, meso- and macro-scales, including the emergence of consciousness. Theories of consciousness will be reviewed and challenged by new findings from brain circuits and behavior. The involvement of neuronal and neuroglial cells in brain functioning, memory, learning, cognition and consciousness in health and disease will be discussed from the experimental and theoretical perspective.

The Symposium will offer a hands-on session on The Virtual Brain, the platform of EBRAINS for constructing and simulating personalised brain network models. EBRAINS is the European research infrastructure for gathering, processing and simulating brain data.

Finally, the Symposium will address the recent advances in neuroethics and neurophilosophy in neuroscience research and society.

VENUE

Institut Catholique de Paris
21 Rue d'Assas
75006 Paris
France

Scientific Committee:

Chairs:

Walter Senn | University of Bern

Alain Destexhe | Centre National de la Recherche Scientifique

Viktor Jirsa | Aix-Marseille University

Marja-Leena Linne | Tampere University

Michele Migliore | Italian National Research Council

Aušra Saudargienė | Lithuanian University of Health Sciences

Contact:

training-support@humanbrainproject.eu

Further information & registration:

<https://www.humanbrainproject.eu/en/education/corticon>

Organised by:



Human Brain Project
Education Programme

Monday 11 April 2022

Please note that all times are in CEST (=GMT/UTC+2)

This programme is subject to change.

- 08:00 – 9:00** **Registration & get to know**
- 09:00 – 9:40** **Welcome & Introduction**
Alain Destexhe | Centre National de la Recherche Scientifique
Walter Senn | University of Bern
- Human Brain Project: Challenges and Achievements**
Katrin Amunts | Human Brain Project Scientific Research Director
- Session I - EBRAINS and cortical connectome
Chair: Katrin Amunts | Forschungszentrum Jülich
- 09:40 – 10:20** **EBRAINS for modelling neurons, networks and synaptic plasticity**
Michele Migliore | Italian National Research Council
- 10:20 – 10:40** **Hippocampal learning and Alzheimer's disease**
Ausra Saudargiene | Lithuanian University of Health Sciences
- 10:40 – 11:10** **Coffee break**
- 11:10 – 11:40** **Multiscale models of basal ganglia in learning and conscious processing**
Jeanette Hellgren-Kotaleski | KTH Royal Institute of Technology
- 11:40 – 12:20** **Modeling conscious neurons**
Panayiota Poirazi | FORTH Institute of Molecular Biology & Biotechnology
- 12:20 – 14:20** **Lunch break (Posters up to be consulted, without presenters)**
- Session II - Neural basis of learning, cognition and perceptual awareness
Chair: Michele Migliore | Italian National Research Council
- 14:20 – 15:00** **Perceptual awareness and top-down control**
Matthew Larkum | Humboldt University Berlin
- 15:00 – 15:30** **Coffee break**
- 15:30 – 16:10** **Plasticity on behavioural time scales**
Wulfram Gerstner | EPFL

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- 16:10 – 16:50 **Virtual Lecture: Structure and function of claustrum neurons**
Christof Koch | Allen Institute for Brain Sciences
- 16:50 – 17:20 **Coffee break**
- 17:20 – 18:00 **Virtual Lecture: The reconstruction of a cortical column**
Clay Reid | Allen Institute for Brain Sciences
- 19:00 – 22:30 **Live Jazz Welcome Reception at the Tour Montparnasse**

Tuesday 12 April 2022

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- 08:30 – 09:00 **Coffee**
- Session III - Neural correlates of perception and generative networks
Chair: Alain Destexhe | Centre National de la Recherche Scientifique
- 09:00 – 09:40 **Multimodal sensory integration and awareness**
Cyriel Pennartz | University of Amsterdam
- 09:40 – 10:20 **Measures of consciousness**
Johan Storm | University of Oslo
- 10:20 – 10:50 **Coffee break**
- 10:50 – 11:30 **Cortical feedback signals**
Lars Muckli | University of Glasgow
- 11:30 – 12:10 **Creative sleep, adversarial dreams, and the need of awareness**
Walter Senn | University of Bern

Tuesday 12 April 2022

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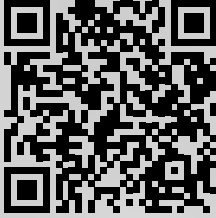
- 12:10 – 13:20** **Lunch break (Posters up to be consulted, without presenters)**
- Session IV - Awareness & consciousness
Chair: Viktor Jirsa | Aix-Marseille University
- 13:20 – 14:00** **Learning to uncover structure: insights from intracranial EEG**
Lucia Melloni | Max Planck Institute for Empirical Aesthetics
- 14:00 – 14:40** **On the conscious and unconscious representation of sequences:
the local/global test and beyond**
Stanislas Dehaene | Collège de France
- 14:40 – 15:10** **Coffee break**
- 15:10 – 15:50** **On the neural correlates of consciousness**
Melanie Boly | University of Wisconsin
- 15:50 – 16:30** **Virtual Lecture: From arousal to awareness and consciousness**
Jitka Annen, Steven Laureys | University of Liège
- 16:30 – 17:00** **Coffee break**
- 17:00 – 18:00** **Public Keynote Evening Lecture**
**The Importance of Being Conscious. Three forms of dissociation that
have shaped our views on consciousness**
Kathinka Evers | Uppsala University
- 18:00 – 19:00** **Panel Discussion:**
Ethics and Consciousness Research
Chair: Cyriel Pennartz | University of Amsterdam
Melanie Boly | University of Wisconsin
Kathinka Evers | Uppsala University
Matthew Larkum | Humboldt University Berlin
Marcello Massimini | University of Milan
Lucia Melloni | Max Planck Institute for Empirical Aesthetics

Wednesday 13 April 2022

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- 08:30 – 09:00** **Coffee**
- Session V - From sensations to the neural correlates of consciousness
Chair: Walter Senn | University of Bern
- 09:00 – 09:40** **Visual cortical prosthesis to restore vision**
Pieter Roelfsema | Netherlands Institute for Neuroscience
- 09:40 – 10:20** **Bottom-up construction of brain models for sensory processing and perception**
Alain Destexhe | Paris-Saclay University, NeuroPSI, EITN
- 10:20 – 10:50** **Coffee break**
- 10:50 – 11:30** **Neural correlates of consciousness in the prefrontal cortex**
Theofanis I. Panagiotaropoulos | Paris-Saclay University, NeuroSpin
- 11:30 – 12:30** **Cortical mechanisms of loss and recovery of consciousness**
Marcello Massimini | University of Milan
- 12:30 – 13:30** **Lunch break (Posters up to be consulted, without presenters)**
- Parallel sessions:
- 13:30 – 15:00** **Poster session (with presenters)**
- 13:30 – 15:00** **Hands on The Virtual Brain. Workflows of The Virtual Brain for brain network simulations and data integration**
Marmaduke Woodman | Aix-Marseille University
- Session VI - Healing the diseased brain
Chair: Ausra Saudargiene | Lithuanian University of Health Sciences
- 15:00 – 15:40** **Astrocyte-neuron interactions: From synapses to cognition and brain disease**
Marja-Leena Linne | Tampere University
- 15:40 – 16:20** **Epilepsy and the Virtual Brain**
Viktor Jirsa | Aix-Marseille University
- 16:20 – 17:00** **Brain network simulations in disease**
Petra Ritter | Charité University Medicine Berlin
- 17:00 – 17:30** **Farewell**



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