Human Brain Project

Co-funded by the European Union

# Human Brain Project Newsletter

## May 2019

Dear Sir or Madam,

Please find below a short overview of news from the Human Brain Project (HBP) in April and May 2019, as well as an overview of upcoming HBP events.

Best Wishes,
HBP Public Relations

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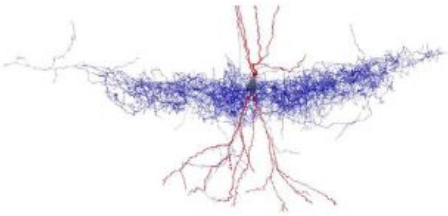
## Research News

### The scientific case for brain simulations

Neuron

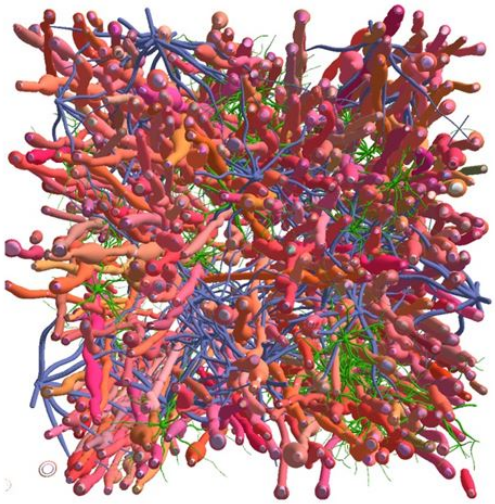
In the current edition of NEURON, researchers from the European Human Brain Project argue why the simulation of large-scale networks of neurons will be indispensable in understanding the brain. “The scientific case for brain simulation” has been published as a featured perspective article and is open access. More

### Live Papers of the Brain Simulation Platform



The Brain Simulation Platform (BSP) hosts workflows and software tools to allow researchers to build, configure and run detailed brain region models at different scales. Live Papers are interactive documents that refer to recently published scientific articles whose content is related to the work, tools and services publicly available on the BSP. More

### MRI and AI to develop a brain virtual biopsy tool

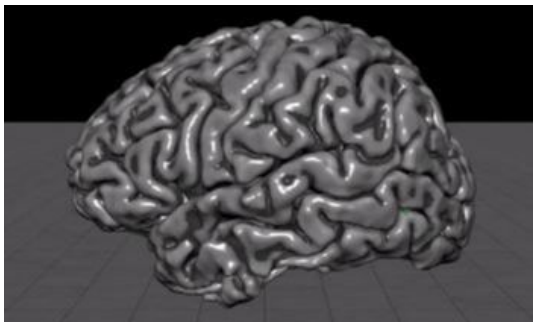


Based on large scale numerical simulations and machine learning algorithms HBP scientists in France and Germany are developing a novel computational approach for decoding healthy and pathological brain tissue cellular organization and axonal architecture using diffusion MRI and Polarized Light Imaging (PLI) modalities. The method was published in the journal Neuroimage and featured on the cover. More

### These insect-inspired robots don't need GPS for orientation

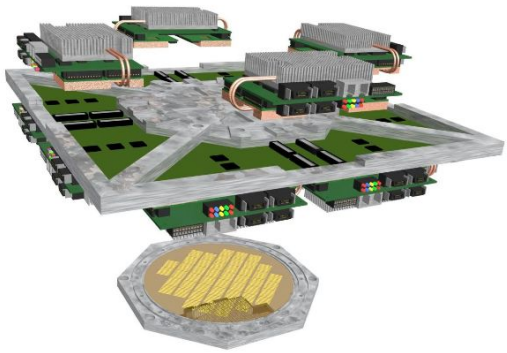
The 'Brains on Board' project is a collaboration between several British universities in partnership with the Human Brain Project and seeks to ‘translate’ the brains of ants and bees into algorithms that a machine will understand. Its aim is to create equally efficient robots that can be used for rescue, space exploration and terrain analysis. More

### Relating human conscious perception to the brain at unprecedented spatial resolution



State of the art neuroimaging has enabled a research team led by HBP-scientist Rainer Goebel at University of Maastricht to map neural correlates of conscious visual perception at a never before seen level of detail. The results have been published in the journal PNAS. More

**Neuromorphic hardware learns to learn**



A new paper by HBP's Neuromorphics team, including the late great Prof. Karlheinz Meier, demonstrates remarkable "learning to learn" results on the BrainScaleS analogue neuromorphic platform. Read it here: *Neuromorphic Hardware Learns to Learn*
See also: *Demonstrating Advantages of Neuromorphic Computation: A Pilot Study*

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## *In Focus:* HBP Curation support for neuroscience data

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### Help us realize the promise of Open Data!

If you are ready to publish your data, and want to maximize the impact of your research by making it available to the broader scientific community you need to know what the HBP Data Curation team can do for you! The recently launched HBP Curation Support Service offers data and metadata management services, along-side a long-term data storage solution. HBP Curation Support Service can ensure your published data is FAIR - Findable, Accessible, Interoperable and Re-usable. Be FAIR with your data and contact us at: curation-support@humanbrainproject.eu

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## Project News

### Announcing The Winners Of The HBP Infrastructure Voucher Call 2018

Fifteen innovative project proposals have been selected for implementation in the Human Brain Project Joint Platform Infrastructure. The aim of the Voucher Call was to open the HBP Joint Platform Infrastructure to meet the needs of the user community in a new dynamic way: The vouchers fund HBP engineers to solve the technical and scientific questions of the winning proposals via the development of new platform tools. Find the winning proposals here

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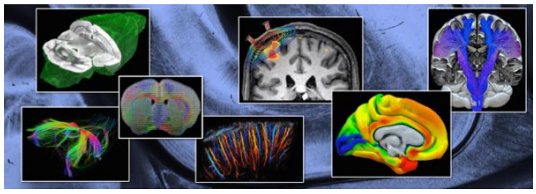
### Nine Projects from HBP enabled by FENIX consortium partner ETH Zuerich/CSCS e-infrastructure

To create the Fenix Infrastructure, leading European Supercomputing Centres BSC (Spain), CEA (France), CINECA (Italy), ETHZ-CSCS

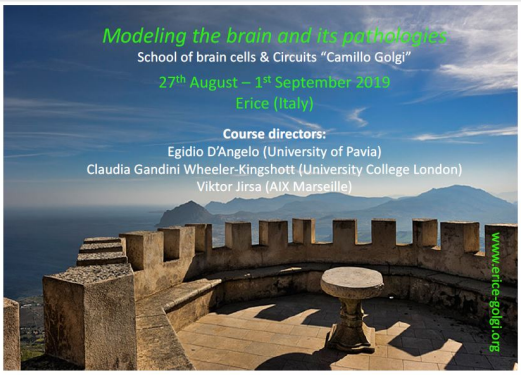
(Switzerland) and JUELICH-JSC (Germany) agreed to create set of federated e-infrastructure services to support collaborative research in Europe. Nine HBP research and development projects are successfully using Fenix e-infrastructure services at CSCS. More

**Registration open until June 3: Cajal course for whole brain imaging**



The CAJAL course in Whole Brain Imaging in Bordeaux, France, is an intensive three-week course that will carry participants through the theory and practice of advanced methods for investigating brain structure-function relationships at the organ level. More

**School of Brain Cells & Circuits "Camillo Golgi"**




The 2019 Course of the school of brain cells and circuits in Erice, Italy, will be dedicated to modelling the brain and its pathologies. Modelling local microcircuits properties as well as large scale network properties is essential to understand how the brain works. More

**Save the date: HBP Satellite workshop at Bernstein Conference 2019**

The yearly Bernstein Conference (Sept 17-20 2019, Berlin) is the largest annual Computational Neuroscience conference in Europe, attracting an international audience from across the world. The Satellite Workshop *"Brain Circuit Insight: From brain circuit models to brain circuit insights"* on the Sept 17 features more than a dozen speakers from the Human Brain Project. Find the programm of the workshop here. The tentative full conference program is here

## HBP in the media

**Euronews:** *Slicing brains and thinking machines*

**The Scientist (USA):** *Building a Silicone Brain*

**Variety (USA):** *AI Ethics, Computer With Souls, Self-Playing Games*

**TELOS (Spain):** *Mavi Sánchez-Vives: "El cerebro ya está en la nube"*

**3sat scobel (Germany):** *Human Brain Project. Digitalisierung des Gehirns (42:00)*

**La Liberté (Switzerland):** *Partenaire fribourgeois pour un vaste projet européen*

**Khrono (Norway):** *Camilla Hagen Blixhavn - Forskningsdata Publisering*

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## Events and Dates

### June and beyond

Spiking neural networks: Applications to computing, algorithmics, and robotics
Technical University of Munich, Germany
June 27, 2019 – June 28, 2019
This joint workshop between HBP and the EU-funded initiatives in robotics, TETRAMAX1 and TERRINet2, is a great opportunity for neuroscientists and HBP to reach out and engage with the robotics and research infrastructure communities.

BrainComp 2019 - Workshop on Brain-Inspired Computing
Cetraro, Italy
July 15, 2019 at 10:00 – July 19, 2019 at 15:00
Together Neuroscience and Computing are driving forces for research and innovation.

They enable new insights into the brain‘s complexity as well as biological information processing and lay ground for progress in Future Computing. Making use of this collaborative effort by bringing together relevant key players in the field of Neuroscience and Future Computing, the workshop on Brain-Inspired Computing (BrainComp) aims to shed a light on the digital transformation of Neuroscience by High Performance Computing (HPC).

ICEI project at ISC High Performance conference

Frankfurt, Germany

16 June 2019 to 20 June 2019

The ICEI project (Interactive Computing E-Infrastructure for the Human Brain Project) will present its activities at this key event on high performance computing in Frankfurt (16-20 June). ICEI is bringing five leading European Supercomputing Centres together to develop a set of e-infrastructure services that will form the Fenix Infrastructure. This infrastructure will offer unique federated data and supercomputing capabilities to the research community.

NEST Conference 2019

June 24, 2019 – June 25, 2019

Norwegian University of Life Sciences (NMBU), Ås, Norway

The NEST Conference provides an opportunity for the NEST Community to meet, exchange success stories, swap advice, learn about current developments in and around NEST spiking network simulation and its application.

Neurobiology for non-specialists: Studying the brain

Medical University Innsbruck, Austria

July 1, 2019 – July 3, 2019

This workshop especially addresses early-career researchers who are not familiar with the field of neuroscience and/or neurobiology. It covers a wide range of topics from basic neurobiology over cells biology, electrophysiology to big data handling. Application deadline: *10 June 2019*

New horizons in brain medicine: From research to clinics

Medical University Innsbruck, Austria

July 3, 2019 – July 5, 2019

The aim of this interactive workshop is to introduce and deepen the understanding of brain medicine for non-specialists with the most recent advances in research of neurodevelopmental, neurodegenerative and neuropsychiatric disorders.
Application deadline: *12 June 2019*

High Performance Computing for neuroscience: Hands-on introduction to supercomputing usage, tools and applications

Forschungszentrum Jülich, Germany

July 9, 2019 – July 11, 2019

This HBP Education Workshop will set the grounds for the students to get started with high-performance computing (HPC)-based research and thus lays the foundation for them to advance the state of the art in their fields. Application deadline: *3 June 2019*

Neuroscience, robotics, AI and medical informatics: New insights with diversity & ethics

Graz University of Technology, Austria

26-27 September 2019

In this 2-day workshop, scientists from different fields like neuroscience, robotics, AI and medical informatics will provide you with insights on how they consider variables such as sex, gender, age etc. Application deadline: *19 August 2019*

**Find further events at:** https://www.humanbrainproject.eu/en/follow-hbp/events/

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