SYMPOSIUM

berlin-brandenburgische
AKADEMIE DER WISSENSCHAFTEN

Interdisciplinary Approaches in the Neurosciences

From Mitochondria to Behaviour and Neuromorphic Engineering

An event of the “Independent research groups in the neurosciences” (BMBF) in cooperation with the biennial theme 2021|22 “Measuring the Living” of the Berlin-Brandenburg Academy of Sciences and Humanities.

Academy building, Gendarmenmarkt
Leibniz-Saal, Jägerstraße 22/23, 10117 Berlin

Registration until **September 5th 2022** at: k.winklhoefer@hu-berlin.de

Monday
12/09/2022
9am–6pm

Free admission.
Registration required.

Understanding the brain remains a fascinating challenge that requires the exchange across many disciplines – from the molecular to behavioural sciences – and also involves computational and engineering approaches. In this scientific symposium we bring together researchers from diverse neuroscientific backgrounds who will share their latest insights into neural processing and engage into a lively interdisciplinary debate. The symposium also constitutes the final meeting of the research groups in the funding line “Independent Research Groups in the Neurosciences” of the Federal Ministry of Education and Research, Germany, celebrating a highly successful initiative that supported many talented researchers over the course of the past 15 years.

The symposium will enlighten us on the latest techniques for optogenetical manipulation of neural activity (Peter Hegemann), on the mechanisms of insect olfaction (Silke Sachse) as well as on the molecular mechanisms of synaptic memory storage (Susanne Schoch). We will learn about a novel functional correlation between mitochondrial and neural activity (Tim Vogels) and about the mightiness of dinosaur brains compared to that of primates in terms of neuron numbers (Suzana Herculano-Houzel). We will see how fast-moving insects, like flies, determine the direction of visual motion based on computational principles that inspire the research in many other species (Alexander Borst). Finally, we will see how the biophysics of action potentials have a strong say in what neural networks do (Susanne Schreiber) and why biological insights are important for the design of neuromorphic hardware (Elisa Donati), which in the future can be expected to impact more than just the neurological aspects of our lives.

Bundesministerium
für Bildung
und Forschung

Die Vermessung des Lebendigen

Weitere Informationen: Franziska Urban / franziska.urban@bbaw.de

Berlin-Brandenburgische Akademie der Wissenschaften, Akademiegebäude am Gendarmenmarkt, Jägerstraße 22/23, 10117 Berlin

Anfahrt: S-Bahn bis Friedrichstraße / U2 bis Hausvogteiplatz oder Stadtmitte / U6 Stadtmitte.
Bei Anfahrt mit dem eigenen PKW empfehlen wir die Nutzung der umliegenden Parkhäuser.

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Program

Monday, 12/09/2022

09.00 Welcome
Andreas Klein
Federal Ministry of Education and Research
Susanne Schreiber
Humboldt-Universität zu Berlin

09.15 Light-control of neuronal networks
Peter Hegemann
Member of BBAW
Humboldt-Universität zu Berlin

10.00 From brain to behaviour: neuronal mechanisms of insect olfaction
Silke Sachse
Max-Planck-Institute for Chemical Ecology, Jena

10.45 Coffee Break

11.15 Deciphering mechanisms of synaptic memory storage
Susanne Schoch
University of Bonn Medical Center

12.00 On the origin of spontaneous spikes: metabolic homeostasis to save the day
Tim Vogels
Institute for Science and Technology Austria, Klosterneuburg

12.45 Lunch Break

14.30 The surprising neuron numbers of dinosaur brains
Suzana Herculano-Houzel
Vanderbilt University, US

15.15 How fly neurons compute the direction of visual motion
Alexander Borst
Max-Planck-Institute for Biological Intelligence, Munich

16.00 Coffee Break

16.30 The underestimated role of action-potential biophysics for neural networks
Susanne Schreiber
Humboldt-Universität zu Berlin

17.15 Neuromorphic engineering for building human-machine interfaces
Elisa Donati
Institute of Neuroinformatics, University of Zurich and ETH Zurich

18.00 Closing Remarks

The symposium will be held in English.

To register for the symposium please send an e-mail with your contact details (including your work address and home institution) to **k.winklhoefer@hu-berlin.de** . Please note 'Registration Interdisciplinary Symposium' in the subject line of your mail. Participation is free, yet we ask you to consider your reservation as binding. **Registration deadline is September 5th 2022.**