ZNZ Symposium 13 September 2018

Thursday, 13 September 2018
UZH Central Campus, Lecture Hall HAH E3, Häldeliweg 2, Zurich

8:30 – 8:45  Introduction
Prof. Fritjof Helmchen, Director ZNZ

8:45 – 9:30  Volker-Henn Lecture
Dopamine, reward and economic utility
Prof. Wolfram Schultz, University of Cambridge

9:30 – 10:00  Coffee Break

10:00 – 11:30  Parallel Workshops

Electrical brain stimulation: From neurophysiology to clinical application
(Lecture Hall E3)
Organization: Prof. Christian Ruff and Prof. Christian Baumann

The bright and the dark side of glia
(Lecture Hall F1)
Organization: Prof. Bruno Weber and Prof. Michael Weller

Imaging pathological changes in CNS tissue composition and physiology
(Lecture Hall E11)
Organization: Prof. Jan Klohs and PD Dr. Paul Unschuld

11:30 – 14:00  Poster Session, Lunch (Foyer)
11:30  General Assembly of ZNZ Group Leaders (Lecture Hall E3)

Short Talks, Part I:

14:00 – 14:20  MicroRNA function in mammalian synapse development and behavior
Prof. Gerhard Schratt, Institute for Neuroscience, ETH

14:20 – 14:40  Automated large-scale reconstruction of synaptic-resolution neural wiring diagrams from volume EM data
Dr. Michal Januszewski, Google AI, Zurich

14:40 – 15:00  Engineering brain activity patterns for therapeutics
Prof. Mehmet Fatih Yanik, Neurotechnology Laboratories, ETH

15:00 – 15:20  Understanding and modulating human decision behavior via neurocomputational modelling and brain stimulation
Prof. Rafael Polania, Decision Neuroscience Lab, ETH

15:20 – 16:00  Coffee Break
Short Talks, Part II:

16:00 – 16:20  **The bodily self and its plasticity in health and disease**  
Prof. Bigna Lenggenhager, Department of Psychology, UZH

16:20 – 16:40  **Advanced MRI in gliomas**  
Prof. Christoph Stippich, Department of Neuroradiology, University Hospital Zürich

16:40 – 16:55  **ZNZ Award for the Best PhD Thesis 2018**  
Short Break

17:00 – 17:45  Betty and David Koetser Award Lecture:  
**Multiple sclerosis: the story of mechanism-based therapeutics**  
Prof. Alastair Compston, University of Cambridge

17:50 – 18:30  Apéro
Parallel Workshops, 10:00 – 11:30

Electrical brain stimulation: From neurophysiology to clinical application
(Lecture Hall E3)

Electrical brain stimulation methods are becoming increasingly popular in research and the clinic, due to their capacity to modulate human brain function in a safe and often non-invasive manner. The properties and possible limitations of these methods are currently the subject of lively debate. This workshop gives an overview of how these methods can be tailored - based on measures of neurophysiology and brain-behavior-relations - to assess and enhance clinically relevant aspects of brain function.

Introduction
Prof. Christian Ruff, Zurich Center for Neuroeconomics, UZH

10:00 – 10:30
The neurophysiology of transcranial electrical stimulation
Prof. Michael Nitsche, Leibniz Research Centre for Working Environment and Human Factor, University of Dortmund

10:30 – 10:45
Studying large-scale oscillatory brain interactions with transcranial alternating current stimulation
Prof. Rafael Polania, Decision Neuroscience Lab, ETH

10:45 – 11:00
Brain network computations underlying value-based decisions revealed by transcranial alternating current stimulation
Dr. Marius Moisa, Zurich Center for Neuroeconomics, UZH

11:00 – 11:15
EEG feedback-controlled sleep stimulation establishes the influence of sleep oscillations on brain function
Dr. Caroline Lustenberger, Mobile Health Systems Lab, ETH

11:15 – 11:30
Assessing deep brain stimulation effects with Magnetic Resonance Spectroscopy
PD Dr. Ruth O’Gorman Tuura, Center for MR Research, University Children's Hospital Zurich
Parallel Workshops, 10:00 – 11:30

The bright and the dark side of glia
(Room F1)

The discovery of glia as a major class of cells in the nervous system dates back more than a decade. But what do they do? What emerges from recent research is the importance of glial cells in development, function, and malfunction that can only be understood as a tight interplay between neurons and glial cells. Rather than being passive support cells as long thought, glial cells are highly active players in many - if not all - neurobiological processes. In this workshop, some of these intriguing glial functions are highlighted in normal physiology and when things go wrong.

Introduction
Prof. Bruno Weber, Institute of Pharmacology and Toxicology, UZH, and Prof. Michael Weller, Dept. of Neurology, USZ

10:00 – 10:30  Mechanisms of neuron-glial signaling and metabolic coupling
Dr. Aiman Saab, Institute of Pharmacology and Toxicology, UZH

10:30 – 11:00  Astrocytes as the pivotal damage management cells in the CNS: The fine regulation of reactive astrogliosis
PD Dr. Swetlana Sirko, Department of Physiological Genomics, Ludwig-Maximilian-University of Munich

11:00 – 11:30  How glial are gliomas?
Genetic glioma models to explore vulnerabilities of the tumor microenvironment
Dr. Hans-Georg Wirsching, Department of Neurology, University Hospital Zurich
Imaging pathological changes in CNS tissue composition and physiology (Lecture Hall E11)

Neuroimaging has evolved from a platform providing mere anatomical data of the central nervous system to one that can quantitatively probe tissue composition and derive physiological and molecular information. This progress has been made possible by advances in imaging hardware and post-processing algorithms as well as the design and synthesis of new imaging probes. In this workshop, four lectures will present methodological advances in imaging and discuss their application to diseases of the central nervous system.

Introduction and Moderation
Jan Klohs, Institute for Biomedical Engineering, UZH & ETH, and Paul Unschuld, USZ

10:00 - 10:45
Amyloid and vascular dysfunction in Alzheimer’s disease
Jun Hua, Johns Hopkins University School of Medicine, Baltimore, USA

10:45 - 11:00
Quantitative susceptibility mapping of iron in Alzheimer’s disease
Laetitia Vionnet, Institute for Biomedical Engineering, UZH & ETH

11:00 - 11:15
Photoacoustic imaging of hemodynamic dysfunction and amyloid deposition in preclinical models of Alzheimer’s disease models
Ruiqing Ni, Institute for Biomedical Engineering, UZH & ETH

11:15 - 11:30
Quantitative MRI of spinal cord injury
Patrick Freund, Spinal Cord Injury Center, Balgrist University Hospital