

ZNZ Annual Symposium 2017

Thursday, 14 September 2017
UZH Central Campus, Lecture Hall HAH E3, Haldeliweg 2, Zurich

- 8:30 – 8:45 **Introduction**
Prof. Fritjof Helmchen, Director ZNZ
- 8:45 – 9:30 Volker-Henn Lecture
Connectomics: Structure and function of brain networks
Prof. Olaf Sporns, Indiana University, USA
- 9:30 – 10:00 Coffee Break
- 10:00 – 11:30 Parallel Workshops
- Brain connectivity: generative models and connectomics for clinical applications** (Lecture Hall E3)
Organization: Prof. Klaas Enno Stephan
- Constructing and deconstructing neural circuits in brain disorders**
(Lecture Hall F1)
Organization: Dr. Abhishek Banerjee and Prof. Theofanis Karayannis
- The Clinical Research Priority Program (CRPP) Sleep & Health**
(Lecture Hall E11)
Organization: Prof. Hans-Peter Landolt
- 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 **Dissecting the impact of stress: New tools, new perspectives**
Prof. Johannes Bohacek, Molecular and Behavioral Neuroscience, ETH
- 14:20 – 14:40 **Principles of Generalization in Artificial and Biological Neuronal Networks**
Prof. Benjamin Grewe, Institute of Neuroinformatics, UZH & ETH
- 14:40 – 15:00 **Exploring neuronal basis of cognition using neuromorphic devices in a closed sensory-motor loop**
Dr. Yulia Sandamirskaya, Institute of Neuroinformatics, UZH & ETH
- 15:00 – 15:20 **A neurometric approach to brain plasticity**
Prof. Nicolas Langer, Institute of Psychology, UZH
- 15:20 – 16:00 Coffee Break

Short Talks, Part II:

- 16:00 – 16:20 **Detection of C-terminally truncated amyloid beta species in the earliest stages of the Alzheimer's disease continuum**
Dr. Luka Kulic, Institute for Regenerative Medicine, UZH
- 16:20 – 16:40 **Predicting outcome after stroke: take a look at the other side**
Prof. Susanne Wegener, Department of Neurology, University Hospital Zürich
- 16:40 – 16:55 **ZNZ Award for the Best PhD Thesis 2017**
- Short Break
- 17:00 – 17:45 Betty and David Koetser Award Lecture:
Testing human vestibular function - what have we learnt in the last 100 years?
Prof. Gabor Michael Halmagyi, University of Sydney
- 17:50 – 18:30 Apéro

Parallel Workshops, 10:00 – 11:30

Brain connectivity: generative models and connectomics for clinical applications (Lecture Hall E3)

Structural and functional aberrations of brain connectivity play a central role in pathophysiological theories of psychiatric and neurological disorders. Innovative approaches for quantifying brain-wide patterns of connections (the connectome) are opening up exciting possibilities for clinical applications. In this workshop, three lectures examine these innovations from different angles, presenting both methodological advances as well as discussing novel empirical findings in health and disease.

Introduction

Prof. Klaas Enno Stephan, Institute for Biomedical Engineering, UZH & ETH

10:00 – 10:30

Connectomics and psychiatry

Prof. Ed Bullmore, Behavioural and Clinical Neuroscience Institute, University of Cambridge

10:30 – 11:00

Abnormal functional connectivity in autism: from man to mouse

Prof. Nicole Wenderoth, Institute of Human Movement Sciences and Sport, ETH

11:00 – 11:30

Mapping whole-brain effective connectivity

Dr. Stefan Frässle, Institute for Biomedical Engineering, UZH & ETH

Parallel Workshops, 10:00 – 11:30

Constructing and deconstructing neural circuits in brain disorders (Room F1)

Identifying and understanding biological correlates of neurological disorders is one of the pressing challenges of modern Neuroscience. Single gene disorders of brain development have been the drivers of discovery in pathophysiology, and genetically tractable animal models have been used effectively to study the synaptic and circuit bases of neurological disorders. But several multigenic brain disorders or diseases without a clear genetic cause require identifying specific neurological endophenotypes to help us understand the pathophysiology behind the disorder. Recent advances in precision neuroengineering tools have revolutionized modeling brain disorders in an unprecedented way. However, the exquisite architecture and complexity of neural circuits, composed of heterogeneous cellular subtypes that shape signal flow and sculpt network dynamics, still makes it extremely difficult to parcel out changes in individual components that build the dysfunctional circuit.

In this workshop, we have invited five eminent early- to mid-career researchers, postdocs to professors, to shed light onto processes and overarching principles on how brain integrative properties are disrupted in neurological disorders. We believe this symposium will be of broad interest to basic, clinical and translational neuroscientists.

- 10:00 – 10:15 **Interrogating neurological disease mechanisms with genome editing**
Prof. Randall Platt, Department of Biosystems Science and Engineering, ETH
- 10:15 – 10:30 **Input-specific serotonergic modulation of striatal synaptic plasticity options**
Dr. Raffaella Tonini, Senior Researcher, Neuroscience and Brain Technologies, Italian Institute of Technology
- 10:30 – 10:45 **Pharmacogenetic fMRI in brain circuits underlying social motivation and repetitive behaviour**
Dr. Valerio Zerbi, Postdoc, Neural Control of Movement Lab, ETH
- 10:45 – 11:00 **Optogenetic modeling of ventral hippocampal hyperactivity as an endophenotype of Schizophrenia**
Prof. Dennis Kaetzel, Institute of Applied Physiology, University of Ulm
- 11:00 – 11:30 **Panel discussion: key challenges in understanding a dysfunctional brain**
Moderators:
Chair: Prof. Christopher Pryce, Center for Psychiatric Research, UZH
Prof. Theofanis Karayannis, Brain Research Institute, UZH
Dr. Abhishek Banerjee, Brain Research Institute, UZH

Parallel Workshops, 10:00 – 11:30

The Clinical Research Priority Program (CRPP) Sleep & Health (Lecture Hall E11)

The CRPP of the UZH aims at establishing the necessary knowledge, to offer patients and individuals with sleep-wake disorders and insufficient sleep optimal and personalized help and therapies to improve their sleep and well-being.

- 10:00 – 10:30 **The CRPP Sleep & Health: Past, present and future**
Prof. Christian Baumann, Department of Neurology, University Hospital Zürich
Prof. Hans-Peter Landolt, Institute of Pharmacology & Toxicology, UZH
- 10:30 – 10:45 **Cellular strategies to alter sleep need**
Prof. Steven A. Brown, Institute of Pharmacology & Toxicology, UZH
- 10:45 – 11:00 **Impact of sleep modulation on protein accumulation in the rodent brain**
Dr. Daniela Noain, Department of Neurology, University Hospital Zürich
- 11:00 – 11:15 **Electrophysiological correlates of increased risk-seeking after sleep restriction**
Angelina Maric, Department of Neurology, University Hospital Zürich
- 11:15 – 11:30 **The MemoSleep Hypothesis: How does cognition influence sleep?**
Prof. Björn Rasch, Department of Psychology, University of Fribourg