ZNZ Annual Symposium 2017

Thursday, 14 September 2017
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**
**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 Neuroscience and Behavior, 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
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
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