

ZNZ Symposium 12 September 2019

Thursday, 12 September 2019

UZH Central Campus, Lecture Hall HAH E3, Haldeliweg 2, Zurich

- 08:30 – 08:45 **Introduction**
Prof. Fritjof Helmchen, Director ZNZ
- 08:45 – 09:30 Volker-Henn Lecture
Systems consolidation of memory during sleep
Prof. Jan Born, Institute for Medical Psychology and Behavioural
Neurobiology, Universität Tübingen
- 09:30 – 10:00 Coffee Break
- 10:00 – 11:30 Parallel Workshops
- Induced pluripotent stem cell models in neuroscience**
Lecture Hall E3, Organization: Prof. Ruxandra Bachmann-Gagescu, Prof.
Edna Grünblatt and Dr. Christian Tackenberg
- The interplay of microcirculation and plasticity after ischemic stroke
(CRPP Stroke)**
Lecture Hall E11, Organization: Prof. Susanne Wegener
- Pain – concepts and circuits (CRPP Pain)**
Lecture Hall F1, Organization: Prof. Uli Zeilhofer and Prof. Armin Curt
- 11:30 – 12:15 **Speed presentations of selected posters, 15 posters in 3 min each**
- 12:15 – 14:45 **Poster Session, Lunch (Foyer)**
- 12:15 **General Assembly of ZNZ group leaders (Lecture Hall E3)**

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Short Talks

- 14:45 – 15:05 **Studying axon-glia signalling and axonal energy metabolism in white matter**
Dr. Aiman Saab, Institute of Pharmacology and Toxicology, UZH
- 15:05 – 15:25 **Cognition, action, and the hypothalamus**
Prof. Denis Burdakov, Institute for Neuroscience, ETH
- 15:25 – 15:45 **Combining fMRI with chemo- and optogenetics in the mouse to deconstruct brain network activity**
Dr. Valerio Zerbi, Neural Control of Movement Lab, ETH
- 15:45 – 16:05 **Modulation of sleep to modify neurological disease? Lessons from traumatic brain injury, Parkinson, and Alzheimer models**
Dr. Daniela Noain, Department of Neurology, USZ
- 16:05 – 16:30 Coffee Break
- 16:30 – 16:45 **ZNZ Award for the Best PhD Thesis 2019**
- 16:45 – 17:30 Betty and David Koetser Award Lecture
Circuit solutions for programming actions
Prof. Silvia Arber, Biozentrum and Friedrich Miescher Institute, Basel
- 17:30 – 18:45 Apéro

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Parallel Workshops, 10:00 – 11:30

Induced pluripotent stem cell models in neuroscience (Lecture Hall E3)

Since the discovery by Yamanaka and Takahashi of induced pluripotent stem cells (iPSC), this technology has opened unprecedented possibilities to study virtually any cell type of interest in vitro and to model human diseases “in a dish”. Applications of iPSC-based technology have been particularly valuable in neuroscience, where access to living human neuronal cells is exceedingly challenging. Today, an abundance of protocols for 2D and 3D differentiation into various neuronal cell types are available. In this workshop, four lectures will cover various applications of iPSC-based methods in different fields of neuroscience, addressing a broad range of fundamental questions including human neurogenesis, pathological mechanisms of neurodegenerative diseases and of neurodevelopmental and psychiatric disorders.

Introduction and Moderation

Prof. Edna Grünblatt, Department of Child and Adolescent Psychiatry and Psychotherapy, University Hospital of Psychiatry Zurich (PUK)
Dr. Christian Tackenberg, Institute for Regenerative Medicine, UZH
Prof. Ruxandra Bachmann-Gagescu, Institute of Medical Genetics, UZH

- 10:00 - 10:45 **Modelling human neurogenesis with cerebral organoids**
Dr. Silvia Cappello, Max Planck Institute of Psychiatry, München
- 10:45 - 11:00 **Generating iPSC-based models for a neurodevelopmental ciliopathy**
Affef Abidi and Melanie Eschment, Institute of Medical Genetics, UZH
- 11:00 - 11:15 **Modelling Alzheimer's Disease with iPSC-derived neural cells**
Sherida de Leeuw, Institute for Regenerative Medicine, UZH
- 11:15 - 11:30 **Modelling ADHD neurodevelopmental alterations using iPSCs**
Sakshi Bansal, Translational Molecular Psychiatry, KJPP, PUK

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Parallel Workshops, 10:00 – 11:30

The interplay of microcirculation and plasticity after ischemic stroke (Lecture Hall E11)

The consequences of ischemic stroke can be minimized by interventions in the acute phase that aim at re-establishing circulation and tissue perfusion. However, not everybody benefits from recanalization. Opening of a large vessel does not automatically improve microcirculation on the tissue level. Besides vessel patency, microcirculation is influenced by collateral blood supply to the territory of the occluded/recanalized large artery, by the degree of reperfusion injury and by cerebrovascular reactivity (CVR).

This workshop introduces the new CRPP Stroke, in which we aim to investigate the relationship between microcirculation, collateral perfusion, CVR and neuroplasticity, the evolution of these factors over time after stroke and their predictive value for recovery.

Introduction and Moderation

Prof. Susanne Wegener, Department of Neurology, USZ

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| 10:00 - 10:15 | Connectivity changes after stroke: how much and how functional?
Dr. Meret Branscheid, Department of Neurology, USZ |
| 10:15 - 10:30 | Impact of collaterals on reperfusion and outcome in stroke
Dr. Mohamad El Amki, Department of Neurology, USZ |
| 10:30 - 11:00 | The cerebral collateral circulation: genetics, stroke, high-altitude and neurovascular coupling
Prof. James Faber, Department of Cell Biology and Physiology, University of North Carolina at Chapel Hill |
| 11:00 - 11:15 | Application of BOLD-CVR in acute stroke
Dr. Bas Van Niftrik, Department of Neurosurgery, USZ |
| 11:15 - 11:30 | Brief update on functional imaging in stroke
PD Dr. Lars Michels, Department of Neuroradiology, USZ |

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Parallel Workshops, 10:00 – 11:30

Pain – concepts and circuits (Lecture Hall F1)

Chronic pain has an estimated prevalence at about 19% in the general society, likely to further increase due to demographic and lifestyle changes. Independent of the diverse clinical presentations, plastic changes at the level of individual neurons and neuronal circuits are a common theme occurring along the pain pathway. This workshop introduces the new CRPP “Pain – from phenotypes to mechanisms”, which addresses the interplay of peripheral, spinal and supra-spinal plasticity in chronic pain. Four speakers will present their views on neurophysiological and computational concepts of pain and the underlying neurobiological mechanisms in patients and in mice.

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| 10:00 - 10:05 | Introduction
Prof. Hanns Ulrich Zeilhofer, Institute of Pharmacology and Toxicology, UZH |
| 10:05 - 10:45 | The construction of pain: from nociception to conscious sensation
Prof. Luis Garcia-Larrea, Centre for Neuroscience, University of Lyon |
| 10:45 - 11:00 | Bayesian models of nociception
Matthias Müller-Schrader, Translational Neuromodeling Unit, UZH/ETHZ |
| 11:00 - 11:15 | Central pain in patients: from phenotype to mechanisms
Dr. Jan Rosner, Spinal Cord Injury Center, Balgrist University Hospital, UZH |
| 11:15 - 11:30 | Let's get physical: neurons and circuits of descending pain modulation
Dr. Karen Haenraets, Institute of Pharmacology and Toxicology, UZH |