

**ZNZ**

Zentrum für Neurowissenschaften Zürich  
Neuroscience Center Zurich



**University of  
Zurich** UZH

**ETH**

Eidgenössische Technische Hochschule Zürich  
Swiss Federal Institute of Technology Zurich

# **ZNZ SYMPOSIUM 2022**

**15 September 2022**

**08.30 – 18.00**

**UZH Central Campus  
Haldeliweg 2  
8044 Zürich**

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## PROGRAM

- 08:30 – 08:45 **Introduction**  
Prof. Fritjof Helmchen, Director ZNZ
- 08:45 – 09:30 Volker-Henn Lecture  
**Molecular genetics of essential tremor**  
Prof. Guy Rouleau, Director Montreal Neurological Institute-Hospital,  
McGill University
- 09:30 – 10:15 Coffee Break
- 10:15 – 11:45 Parallel Workshops
- Structural and functional adaptations of brain networks (URPP AdaBD)**  
Lecture Hall E3, Organization: Prof. Fritjof Helmchen
- StimuLOOP: Precision sensorimotor neurorehabilitation through personalised stimulation loops**  
Lecture Hall E11, Organization: Dr. Oliver Lamercy and  
Prof. Andreas Luft
- The Hochschulmedizin Zurich Flagship Project STRESS**  
Lecture Hall F1, Organization: Dr. Miriam Ries
- 11:45 – 14:15 **Poster Session**, Lunch (Foyer)
- 11:45 **General Assembly of ZNZ group leaders** (Lecture Hall E3)
- 14:15 – 14:30 **ZNZ Award for the Best PhD Thesis 2022**

## Short Talks of New Members

- 14:30 – 14:50 **Dopamine-dependent circuits and behavior across the lifespan**  
Dr. Marie Labouesse, Translational Nutritional Biology Lab, ETH Zurich
- 14:50 – 15:10 **Marmoset monkeys as model species in Evolutionary Anthropology and Neuroscience**  
Prof. Judith Burkart, Department of Anthropology, University of Zurich
- 15:10 – 15:30 **Beyond cortico-motor control: Probing the role of the reticulospinal system in movement control and functional recovery after spinal cord injury**  
PD Dr. Linard Filli, Spinal Cord Injury Center, Balgrist University Hospital
- 15:30 – 15:50 **Deep brain stimulation in epilepsy: Studying neural dynamics between the anterior thalamus and the cortex in epilepsy patients**  
PD Dr. Lukas Imbach, Medical Director, Swiss Epilepsy Clinic, Klinik Lengg AG
- 15:50 – 16:30 Coffee Break
- 16:30 – 17:15 Plenary Lecture  
**Mapping and modeling microglia states to function in development and disease**  
Prof. Beth Stevens, F.M. Kirby Neurobiology Center at Boston Children's Hospital and Harvard Medical School
- 17:15 – 18:00 Apéro
-

## Parallel Workshops, 10:15 – 11:45

### Structural and functional adaptations of brain networks

(Lecture Hall E3)

Neural circuits in the brain form during embryonic and postnatal development, but also remain adaptive throughout adulthood, which is considered the basis for flexible behavior and learning. Adaptations comprise both structural reorganizations (e.g., rewiring) and functional adaptations (e.g., changes in excitability or in the interactions of cells or brain regions). Structural and functional changes typically go hand in hand, as structural changes on one level often imply functional changes on the next higher level. However, we still poorly understand the principles that underlie brain plasticity or the responsible mechanisms. The University Research Priority Program “Adaptive Brain Circuits in Development and Learning” (URPP AdaBD) focuses on such mechanisms of brain network adaptations from the molecular level to the large-scale circuit level. In this workshop, we will discuss diverse examples of brain network adaptations, covering a wide range of spatial scales – from molecular programs to changes in brain connectivity – as well as the translational axis from mouse to humans. Furthermore, we will discuss the role of non-neuronal cells in adaptive processes. The challenges remain high to better bridge and connect adaptive phenomena across scales, to achieve a more comprehensive understanding of brain adaptations and their behavioral significance.

#### Introduction and moderation

Prof. Esther Stoeckli, Dep. of Molecular Life Sciences, University of Zurich  
Prof. Fritjof Helmchen, Brain Research Institute, University of Zurich

- |               |   |
|---------------|---|
| 10:15 – 10:20 | <b>Introduction</b>   |
| 10:20 – 10:45 | <b>Shaping cortical wiring and molecular programs by spontaneous neuronal activity</b><br>Prof. Peter Scheiffele, Biozentrum, University of Basel   |
| 10:45 – 11:00 | <b>Adolescence is a sensitive period for glia cells to act on structural and functional maturation of the prefrontal cortex</b><br>Dr. Tina Notter, Institute of Pharmacology and Toxicology, University of Zurich    |
| 11:00 – 11:15 | <b>Changes in brain network connectivity with learning and maturation in child development</b><br>Prof. Silvia Brem, Department of Child and Adolescent Psychiatry and Psychotherapy, University of Zürich            |
| 11:15 – 11:30 | <b>Dynamic reorganization of the cortico-basal ganglia-thalamo-cortical network during task learning</b><br>Dr. Yaroslav Sych, Institute of Cellular and Integrative Neurosciences, University of Strasbourg and CNRS |
| 11:30 – 11:45 | <b>Rewiring of adult brain circuits</b><br>Prof. Csaba Földy, Brain Research Institute, University of Zurich  |

## Parallel Workshops, 10:15 – 11:45

### **StimuLOOP: Precision sensorimotor neurorehabilitation through personalised stimulation loops** (Lecture Hall E11)

Parkinson's disease and stroke lead to a considerable socioeconomic burden for patients and health systems worldwide. Neurorehabilitation includes treatments to reduce disability, but their efficacies vary largely between individuals, and they frequently fail to achieve meaningful outcomes. The StimuLOOP project (supported by the LOOP Zurich and the Vontobel Foundation), aims at investigating two personalized and complementary approaches: real-time feedback during neurorehabilitation therapy sessions based on biomechanical or neural biomarkers, and modulation of sleep for offline consolidation.

In this workshop, we will highlight the different research avenues of the project at the interface between neurology, neurorehabilitation, and technology development. We will discuss the key research questions in the ongoing clinical trials, present preliminary results and depict a roadmap for the implementation of more personalized neurorehabilitation approaches that bridge the domains of neurorehabilitation and sleep.

#### **Introduction and moderation**

Prof. Andreas Luft, Stroke Center, University Hospital of Zurich

Dr. Olivier Lamercy, Rehabilitation Engineering Laboratory, ETH Zurich

10:15 – 10:25	<b>Introduction</b>
10:25 – 10:40	<b>Neurorehabilitation: feedback, motor learning and recovery</b> Dr. Meret Branscheidt, cereneo Center for Neurology and Rehabilitation, Hertenstein
10:40 – 10:55	<b>Designing actionable feedback for personalised gait rehabilitation</b> Dr. Christopher Awai, cereneo Foundation, Hertenstein
10:55 – 11:10	<b>Deep Brain Stimulation neurofeedback in Parkinson's patients</b> Lena Salzmann, Rehabilitation Engineering Laboratory, ETH Zurich
11:10 – 11:25	<b>Sleep enhancement for boosting and consolidating rehabilitation gains</b> Nora Hjördis-Moser, Clinic for Neurology, University Hospital of Zurich
11:25 – 11:40	<b>Gait biomarkers for personalised rehabilitation in people with Parkinson's disease</b> Dr. Deepak Ravi, Institute for Biomechanics, ETH Zurich
11:40 – 11:45	<b>Closing remarks</b>

## Parallel Workshops, 10:15 – 11:45

### Hochschulmedizin Zurich Flagship Project STRESS (Lecture Hall F1)

Stress affect millions of people worldwide and can have a continuing impact on physical and psychological wellbeing. It is a risk factor for chronic conditions including cardiovascular diseases and can negatively influence mental health. Despite its prevalence, the diagnosis and treatment of stress remain a challenge, especially in young people. A better understanding is needed of the mechanisms linking stress exposure to its negative effects.

This workshop, organized in conjunction with the Hochschulmedizin Zurich Flagship Project STRESS, will highlight the transdisciplinary nature of stress research, from the molecular to the clinical.

#### Introduction and moderation

Prof. Dr. Birgit Kleim, Psychiatric University Hospital Zurich and Department of Psychology, University of Zurich

Dr. Miriam Ries, Scientific Coordinator of Hochschulmedizin Zurich Flagship Project STRESS, ETH Zurich and University of Zurich

- 10:15 – 11:00 **Neurocognitive markers of stress-resilience: the relevance of emotional action control**  
Prof. Karin Roelofs, Behavioural Science Institute, Radboud University
- 11:00 – 11:10 **Presentation of the Hochschulmedizin Zurich Flagship Project STRESS**  
Prof. Isabelle Mansuy, Institute for Neuroscience, ETH Zurich and Brain Research Institute, University of Zurich  
Prof. Birgit Kleim, Psychiatric University Hospital Zurich and Department of Psychology, University of Zurich
- 11:10 – 11:45 **Short talks**
- Investigating brain-based predictors of stress resilience and mental health in medical personnel**  
Ella McPherson, Institute of Psychology, University of Zurich
- Effects of parenting on the emotion regulatory brain development**  
Mirjam Habegger, Department of Psychology and Department of Economics, Jacobs Center for Productive Youth Development, University of Zurich
- More points, fewer mice**  
Dr. Oliver Sturman, Institute for Neuroscience, ETH Zurich
- Cell-free RNA biomarkers of stress**  
Dr. Bogdan Mateescu, Brain Research Institute, University of Zurich and Department of Chemistry and Applied Biosciences, ETH Zurich
- The effects of pupil-based neurofeedback on emotional responses**  
Dr. Sarah Meissner, Department of Health Sciences and Technology, ETH Zurich

**OVERVIEW of the POSTER ABSTRACTS** (listed by topics)**NEUROANATOMY / PHYSIOLOGY**

Poster Abstract number(s)

**Group Leader**

Delvendahl I.	1,3
Földy C.	2
Müller M.	4
Labouesse M.	5

**NEURAL DEVELOPMENT****Group Leader**

Stoeckli E.	6,7,8
Jessberger S.	9,10
Natalucci G.	11

**GLIA / METABOLISM****Group Leader**

Notter T.	12,13
Weber B.	14
Saab A.	15
Scheidegger M.	16

**PROTEIN AGGREGATION****Group Leader**

Aguzzi A.	17,20
Ni R.	18,19
Polymenidou M.	21,22,23

**AUDITORY SYSTEM / HEARING****Group Leader**

Brem S.	24,25,26
Preisig B.	27
Frühholz S.	28
Roccio M.	29,30



**SLEEP**

Poster Abstract number(s)

**Group Leader**

Brown S.	31,32
Huber R.	33
Noain D.	34,35

**NEUROFEEDBACK****Group Leader**

Preisig B.	36
Gassert R./Lambercy O.	37
Michels L.	38,39
Brem S.	40,41

**STROKE****Group Leader**

Wahl A-S.	42
Wegener S.	43,45
El Amki M.	44
Gassert R.	46

**EPILEPSY****Group Leader**

Ramantani G.	47,49
Tuura O'Gorman R.	48
Sarnthein J.	50
Rauch A.	51
Wirsching H-G.	52
Polania R./Imbach L.	53
Polania R.	54

**PAIN****Group Leader**

Meier M.L.	55
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**SPINAL CORD PATHOLOGY**

Poster Abstract number(s)

**Group Leader**

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**STRESS****Group Leader**

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**SOCIAL NEUROSCIENCE****Group Leader**

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Raschle N.	72
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Hahnloser R.	75,76
Pryce C.	77

**NEUROPSYCHIATRY****Group Leader**

Popp J. (ZNZ Associate)	78
Stassen H.H.	79
Polania R.	80
Grünblatt E.	81,82
Pryce C.	83

**HUMAN STUDIES**

Poster Abstract number(s)

**Group Leader**

Stephan K.E.	84
Brem S.	85
Filli L.	86
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Wirsching H-G.	88
Straumann D.	89
Quednow B.	90
Henke K.	91
Sarnthein J.	92

**TECHNOLOGY DEVELOPMENT****Group Leader**

Aguzzi A.	93,94
Wirsching H-G.	95
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Yanik M.F.	97
Wolfer D.	98
Indiveri G.	99,100
Donati E.	101
Jakab A.	102
Liu S-C.	103

## POSTER ABSTRACTS

### NEUROANATOMY / PHYSIOLOGY

#### Group Leader: IGOR DELVENDAHL

- 1 Functional heterogeneity in cerebellar granule cells:** P. O'Neil, M. Müller, I. Delvendahl

#### Group Leader: CSABA FÖLDY

- 2 Rewiring of hippocampal CA1 pyramidal cells in the adult mouse brain:** N. Cruz-Ochoa, W. Luo, D. Lukacsovich, C. Földy

#### Group Leader: IGOR DELVENDAHL

- 3 Homeostatic depression of release counteracts increased AMPAR function:** K. Kita, M. Müller, I. Delvendahl

#### Group Leader: MARTIN MÜLLER

- 4 KCNQ2 channelopathy: probing variant-specific effects on channel function and neural excitability:** A. Kapnulina, G. Siegel, A. Frei, K. Schmidt, A. Rauch, M. Müller

#### Group Leader: MARIE LABOUESSE

- 5 An axon collateral circuit for motor control in the adult striatum:** M. Labouesse, A. Torres-Herraez, J. Villarin, J. Greenwald, X. Sun, A. Tang, M. Zahran, S. Lam, J. Bonaventura, F. de Carvalho, C. Lacefield, M. Michaelides, S. Chan, O. Yizhar, C. Kellendonk

## NEURAL DEVELOPMENT

### Group Leader: ESTHER T. STOECKLI

- 6 **Characterization of cerebellar neural circuit deficits associated with intellectual disability and ataxia:** A. Koutourlou, M. Schaettin, E.T. Stoeckli
- 7 **Investigating the role of primary cilia during neural circuit formation:** E. Yusifov, A. Dumoulin, E.T. Stoeckli
- 8 **Characterization of FoxP family genes' impact on the development of neural circuits associated with autism spectrum disorders:** H. Yeliseyeva, E. Stoeckli

### Group Leader: SEBASTIAN JESSBERGER

- 9 **Exploration of hippocampal intercellular signalling networks across age by single cell and spatial data modalities:** V. Korobeynyk, Y. Wu, I. Mallona, M.D. Robinson, E. Llorens, J. Frisen, S. Jessberger
- 10 **MLC1 promotes neural stem cell quiescence:** D. Machado, K. Buthey, A. Denoth-Lippuner, S. Jessberger

### Group Leader: GIANCARLO NATALUCCI

- 11 **2D co-culture of human oligodendrocytes and cortical neurons to analyse human milk nutrients contribution on myelination:** S. Chie, Z. Szentpetery, G. Natalucci, M. Miletta

## **GLIA / METABOLISM**

### **Group Leader: TINA NOTTER**

- 12 Increased astrocyte activity in the mPFC impairs cognitive functions via kynurenic acid:** S.M. Schalbetter, U. Weber-Stadlbauer, K. Ferrari, J. Furrer, F. Mueller, R. Amport, U. Meyer, T. Notter
- 13 The role of astrocytes in postnatal synaptic refinement of the medial prefrontal cortex:** J. Furrer, S. Schalbetter, T. Notter

### **Group Leader: BRUNO WEBER**

- 14 How does a ketogenic diet affect the body and brain?:** R. Meister, M.T. Wyss, L. Ravotto, B. Weber

### **Group Leader: AIMAN SAAB**

- 15 Role of oligodendroglial ROS in axon-glia metabolic coupling:** U. Dalvi, H. Zanker, L. Ravotto, Z. Looser, K. Ferrari, J. Bolanos, B. Weber, A. Saab

### **Group Leader: MILAN SCHEIDEGGER**

- 16 Effects of the psychotropic ayahuasca-constituents N,N-DMT and harmine on cerebral energy metabolism and activity on the 5-HT<sub>2A</sub> receptor in the rodent brain:** K. Egger, P. Cumming, M. Palner, B. Quednow, M. Scheidegger

## PROTEIN AGGREGATION

### Group Leader: ADRIANO AGUZZI

- 17 Therapeutic potential of LCP-conjugates in neurodegenerative diseases:** H. Zhang, P.R. Nilsson, S. Hornemann, A. Aguzzi

### Group Leader: RUIQING NI

- 18 Aquaporin 4 is differentially increased and dislocated in association with tau and amyloid-beta:** V. Kecheliev, L. Boss, U. Maheshwari, U. Konietzko, A. Keller, D. Razansky, R. Nitsch, J. Klohs, R. Ni
- 19 In vivo imaging of  $\alpha$ -synucleinopathy using THK565-4 in M83 mouse model:** N. Straumann, X.L. Dean Ben, J. Gerez, V. Kecheliev, Z. Chen, U. Konietzko, D. Noain, R. Roland, N. Okamura, D. Razansky, R. Nitsch, R. Ni

### Group Leader: ADRIANO AGUZZI

- 20 High-throughput whole genome-wide CRISPR activation screening for the identification of potential modifiers of alpha-synuclein aggregates:** S. Neupane, E. De Cecco, A. Aguzzi

### Group Leader: MAGDALINI POLYMENIDOU

- 21 Template dependent amplification of pathological TDP-43 and roles of phosphorylation:** P. De Rossi<sup>1</sup>, A.J. Lewis<sup>2</sup>, J. Furrer<sup>1</sup>, L. De Vos<sup>1</sup>, T. Demeter<sup>1</sup>, A. Zbinden<sup>1</sup>, W. Zhong<sup>1</sup>, V.I. Wiersma<sup>1</sup>, C. Scialo<sup>1</sup>, C. Böing<sup>3</sup>, T. Lashley<sup>4,5</sup>, H. Stahlberg<sup>2</sup> and M. Polymenidou<sup>1</sup>

<sup>1</sup>Dep. of Quantitative Biomedicine, University of Zurich, Zurich, Switzerland

<sup>2</sup>Laboratory of Biological Electron Microscopy, Institute of Physics, SB, EPFL, Dep. of Fundamental Microbiology, Faculty of Biology and Medicine, UNIL, Lausanne, Switzerland

<sup>3</sup>C-CINA, Biozentrum, University of Basel, Basel, Switzerland

<sup>4</sup>Queen Square Brain Bank for Neurological diseases, Department of Movement Disorders, UCL Institute of Neurology, London, UK

<sup>5</sup>Dep. of Neurodegenerative Disease, UCL Institute of Neurology, London, UK

- 22 Oligomerization acts as gatekeeper for TDP-43 nucleocytoplasmic shuttling and modulates its aggregation patterns:** V.I. Wiersma, M. Pérez-Berlanga, L. De Vos, E. Tantardini, A. Zbinden, M. Hruska-Plochan, M. Polymenidou
- 23 Synaptic RNA homeostasis in Amyotrophic Lateral Sclerosis (ALS): What is all the FUSs about?:** E. Tantardini, V. Wiersma, M. Polymenidou



## AUDITORY SYSTEM / HEARING

### Group Leader: SILVIA BREM

- 24 Neural activation during digit processing in children at the end of primary school:** S.V. Di Pietro, I.I. Karipidis, S. Brem
- 25 Altered audiovisual congruency effect in late but not early ERP time windows for beginning typical vs poor readers:** C. Lutz, S. Coraj, A. Kressebuch, G. Fraga-González, S. Brem
- 26 Learning novel symbols and speech sounds associations: a model-based fMRI approach:** G. Fraga-Gonzalez, P. Haller, D. Willinger, V. Gehrig, N. Frei, S. Brem

### Group Leader: BASIL PREISIG

- 27 Probing neural alpha lateralization as a marker for auditory target selection and distractor suppression:** J. Jacobs, M. Alavash, T. Popov, M. Wöstmann, J. Obleser, B. Preisig

### Group Leader: SASCHA FRÜHHOLZ

- 28 The neural basis of spectro-temporal glimpsing speech-in-noise:** H. Swanborough, S. Frühholz

### Group Leader: MARTA ROCCIO

- 29 Human pluripotent stem cells-derived inner ear organoids recapitulate otic development in vitro:** D. Doda<sup>1\*</sup>, S. Alonso Jimenez<sup>1\*</sup>, V. Valsamides<sup>1</sup>, H.R. Widmer<sup>2</sup>, M. Roccio<sup>1</sup>

<sup>1</sup>Inner Ear Stem Cell Laboratory, Dep. Otorhinolaryngology Head and Neck Surgery, University Hospital Zurich and University of Zurich

<sup>2</sup> Experimental Neurosurgery Laboratory, Dep. Neurosurgery, University Hospital Bern and University of Bern

\* equal contribution

- 30 Transcriptional characterization of otic placode development in human iPSC-derived in inner ear organoids:** S. Alonso, V. Valsamides, D. Doda, M. Roccio

## SLEEP

### Group Leader: STEVEN BROWN

- 31 A single atypical phosphoswitch in specific SCN neurons gates winter seasonality in mice:** S. Pierre-Ferrer, B. Collins, D. Lukacsovich, S. Wen, Y. Chai, J. Winterer, B. Auerbach, M. Li, J. Yan, L. Pedersen, C. Földy, S.A. Brown
- 32 Uncoupling of behavioural and metabolic rhythms in an arctic ruminant:** S. Meier, M. Furrer, N. Nowak, M. A. Sundset, R. Huber, R. Zenobi, S.A. Brown\*, G. Wagner\* (\*co-corresponding)

### Group Leader: RETO HUBER

- 33 Changes in reindeer sleep regulation across the year: A central role for rumination?:** M. Furrer, S. Meier, M. Jan, P. Franken, M. A. Sundset, R. Huber, S. A. Brown, G. C. Wagner

### Group Leader: DANIELA NOAIN

- 34 Myelin basic protein assessments as marker of potential neuroprotection upon up-phase closed-loop auditory stimulation in TBI rats:** M. Gönel, C.G. Moreira, A. Müllner, C.R. Baumann, D. Noain
- 35 Defining optimal parameters for auditory stimulation (CLAS) during slow-wave sleep in mouse models of Alzheimer's and Parkinson's disease:** I. Dias, M. Lopez, M. Hunger, C. G. Moreira, S. Kollarik, C. Baumann, D. Noain

## NEUROFEEDBACK

### Group Leader: BASIL PREISIG

- 36 The influence of alpha power lateralization on auditory spatial attention: an EEG-based neurofeedback study:** A. Glättli<sup>1</sup>, J. Jacobs<sup>1,2</sup>, B. Preisig<sup>1,2,3</sup>

<sup>1</sup> The Department of Comparative Language Science, University of Zurich, Switzerland

<sup>2</sup> Zurich Center for Linguistics, University of Zurich, Switzerland

<sup>3</sup> Neuroscience Center Zurich, University of Zurich and Eidgenössische Technische Hochschule Zurich, Zurich, Switzerland

### Group Leader: ROGER GASSERT/ OLIVIER LAMBERCY

- 37 Neurofeedback for personalized rehabilitation of Parkinson's patients:** L. Salzmann, M. Lestoille, D.K. Ravi, C. Awai Easthope, C. Baumann, W.R. Taylor, O. Lambercy

### Group Leader: LARS MICHELS

- 38 The effects of real-time fMRI neurofeedback on response inhibition and attention:** J. Popovova, R. Mazloum, G. Macaуда, P. Stämpfli, P. Vuilleumier, S. Frühholz, F. Scharnowski, L. Michels
- 39 Voluntary control over attention using real-time fMRI neurofeedback (rtfMRI); Multimodal imaging during conscious and unconscious perception:** R. Mazloum, J. Popovova, G. Macaуда, P. Stämpfli, S. Frühholz, P. Vuilleumier, F. Scharnowski, V. Menon, R. Gassert, L. Michels

### Group Leader: SILVIA BREM

- 40 Activity regulation of the Visual Word Form Area with real-time fMRI neurofeedback:** A. Haugg, N. Frei, M. Menghini, F. Stutz, S. Steinegger, M. Röthlisberger, S. Brem
- 41 Regulating brain activity in the Visual Word Form Area with real-time fMRI neurofeedback in poor and typical readers:** N. Frei, A. Haugg, M. Menghini, F. Stutz, S. Steinegger, M. Röthlisberger, S. Brem

## STROKE

### Group Leader: ANNA-SOPHIA WAHL

- 42 Brain-wide microlesions affect degeneration of memory circuits in the hippocampus:** H. Heiser, A. Hoffmann, V. Ibanez, M. Wieckhorst, F. Helmchen, A-S. Wahl

### Group Leader: SUSANNE WEGENER

- 43 Reperfusion failure after thrombolysis in a rat model of stroke:** W.A. Middleham, N.F. Binder, M.T. Wyss, A.R. Luft, B. Weber, M. El Amki, S. Wegener

### Group Leader: MOHAMAD EL AMKI

- 44 Neutrophils as key players in microvascular injury and failure in stroke:** J. Droux, C. Glück, A. Del Campo Fonseca, M.T. Wyss, B. Weber, S. Wegener, D. Ahmed, M. El Amki

### Group Leader: SUSANNE WEGENER

- 45 Deep learning vs. stroke neurologists: functional outcome prediction in large vessel occlusion stroke patients based on clinical and imaging data:** L. Herzog, L. Kook, J. Hamann, C. Globas, M. Heldner, D. Seiffge, K. Antonenko, T. Dobrocky, L.D. Panos, J. Kaesmacher, U. Fischer, J. Gralla, M. Arnold, R. Wiest, A.R. Luft, B. Sick, S. Wegener

### Group Leader: ROGER GASSERT

- 46 Investigating the feasibility of personalized augmented feedback for post-stroke gait and balance rehabilitation:** M. Legrand-Lestoille, J. Hess, A. Luft, C.A Easthope, O. Lamercy

**EPILEPSY****Group Leader: GEORGIA RAMANTANI**

- 47 Imaging the cytoarchitectural changes within focal cortical dysplasia using diffusion tensor imaging – an update:** A.G. Gennari, D. Cserpan, I. Yakoub, R. Kottke, R. Tuura O’Gorman, G. Ramantani

**Group Leader: RUTH TUURA O’GORMAN**

- 48 Arterial spin labelling: exploring the perfusion changes associated with focal cortical dysplasia:** A.G. Gennari, I. Yakoub, D. Cserpan, R. Kottke, G. Ramantani, R. Tuura O’Gorman

**Group Leader: GEORGIA RAMANTANI**

- 49 Modelling synaptic dynamics in benzodiazepine-resistant paediatric status epilepticus:** T. Fedele, R. Burman, A. Steinberg, G. Selmin, R. Rosch, G. Ramantani

**Group Leader: JOHANNES SARNTHEIN**

- 50 A spiking neural network with sparse and high dimensional coding detects High Frequency Oscillations and Interictal Discharges in the intracranial EEG:** F. Costa, G. Indiveri, J. Sarnthein

**Group Leader: ANITA RAUCH**

- 51 Identifying new mechanisms in epileptic encephalopathy by functional assessment of non-coding DNA variants in patient iPSC derived neurons:** J. Wu, G. Siegel, A. Rauch

**Group Leader: HANS-GEORG WIRSCHING**

- 52 Treating epilepsy to treat brain cancer – repurposing of clinically approved glutamate antagonists to treat glioblastoma:** J. Uriach Dasca, D. Noain, F. Helmchen, M. Weller, H-G. Wirsching

**Group Leader: RAFAEL POLANIA / LUKAS IMBACH**

- 53 Personalized predictive modeling of epileptic network dynamics:**  
T. Dubcek, D. Ledergerber, F. Capecchi, M. Serra Garcia, L. Imbach,  
R. Polania

**Group Leader: RAFAEL POLANIA**

- 54 Neural interaction dynamics between the anterior thalamus and the cortex in epilepsy patients:** G. Aiello, L. Stieglitz, C. Baumann, R. Polania, L. Imbach

**PAIN****Group Leader: MICHAEL L. MEIER**

- 55 Chronic low back pain reshapes cortical somatosensory representations:** D. Cole, P. Stämpfli, L. Schibli, P. Schweinhardt, P. Schuetz, M. Meier

**Group Leader: MICHÈLE HUBLI**

- 56 Sensory profiles in chronic pain – implications for underlying mechanisms:** I. De Schoenmacker, L. Sirucek, P.S. Scheuren, R. Lütolf, F. Brunner, A. Curt, J. Rosner, P. Schweinhardt, M. Hubli

**Group Leader: PETRA SCHWEINHARDT**

- 57 Decreased excitatory/inhibitory balance in a key descending pain modulatory brainstem region of patients with chronic low back pain:** L. Sirucek, N. Zoelch, P. Schweinhardt

**Group Leader: PATRICK FREUND**

- 58 Structural changes in the cervical cord of episodic migraine patients: Involvement of the spinothalamic tracts:** S. Schading, L. Farner, H. Pohl, L. Michels, P. Freund

## **SPINAL CORD PATHOLOGY**

### **Group Leader: MICHÈLE HUBLI**

- 59 Clinical applicability of intra-epidermal electrical stimulation in degenerative cervical myelopathy patients:** S.U. Júlio, N. Pfender, M. Hubli, M. Schubert

### **Group Leader: MARYAM SEIF**

- 60 Investigating spinal cord perfusion and blood flow impairment in DCM patients: a quantitative MRI study:** A. Le Bret, S. Lévy, N. Pfender, V. Callot, P. Freund, M. Seif

### **Group Leader: THOMAS M. KESSLER**

- 61 Feasibility of lumbosacral spinal cord imaging for patients with neurogenic lower urinary tract dysfunction:** S. Büeler, P. Freund, T.M. Kessler, G. David, M.D. Liechti
- 62 Effects of sacral neuromodulation on afferent signal processing in patients with neurogenic lower urinary tract dysfunction – preliminary results:** S.A. Stalder, M.D. Liechti, S. van der Lely, S. Knüpfer, C.E. Anderson, U. Mehnert, T.M. Kessler

### **Group Leader: PATRICK FREUND**

- 63 Development of a practical functional MRI protocol of the lumbosacral spinal cord:** C. Kündig, C. Achim, P. Freund, G. David

### **Group Leader: MARTIN E. SCHWAB**

- 64 Stimulation of the mesencephalic locomotor region to improve motor function after spinal cord injury:** M.I. Scheuber, C. Guidolin, A.S. Hofer, A.M. Sartori, M.E. Schwab
- 65 Traumatic brain injury: A novel regenerative therapy combined with neurorehabilitation:** H.M. Shan, M.I. Scheuber, M.E. Schwab



**STRESS****Group Leader: KATHARINA GAPP**

- 66 Effects of chronic restraint stress on the offspring:** V. Fischer<sup>1,2</sup>, M. Kretschmer<sup>1,2</sup>, M. Gazorpak<sup>1,2</sup>, K. Gapp<sup>1,2</sup>

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<sup>2</sup>Neuroscience Centre Zurich, ETH Zurich and University of Zurich, 8057 Zürich, Switzerland

- 67 Novel tool to dissect paternal transmission of glucocorticoid receptors to the embryo:** M. Kretschmer, I. Ivanova, K. Hugentobler, M. Gazorpak, E. Carreira, K. Gapp

**Group Leader: JOHANNES BOHACEK**

- 68 Characterizing stress adaptation in the locus coeruleus-noradrenergic system:** R. Waag, O. Sturman, A. Floriou-Servou, Y. Vermeiren, P. De Deyn, J. Bohacek
- 69 Locus coeruleus firing patterns: an assessment across scales:** S. Duss, C. Grimm, M. Privitera, B. R. Munn, J. M. Shine, V. Zerbi, J. Bohacek

**Group Leader: BIRGIT KLEIM**

- 70 Study protocol for a prospective cohort study investigating molecular, brain-based and digital-behavioural predictors of stress resilience in medical students:** E.B. McPherson, L.E. Meine, S. Hüni, M. Morf, E. Seifritz, A. Bernstein, C.C. Ruff, B. Kleim

## **SOCIAL NEUROSCIENCE**

### **Group Leader: HENNRIC JOKEIT**

- 71 COSIMO – An online-based screening tool for social cognition:**  
R. Johannessen, M. Eicher, H. Jokeit

### **Group Leader: NORA RASCHLE**

- 72 What can we learn from multi-brain magnetic resonance neuroimaging research?:** P. Dimanova, E. Salmina, M. Anzelini, E. Federici, R. Borbás, N. Raschle

### **Group Leader: CHRISTIAN RUFF**

- 73 The social brain: Domain-general contributions to decision making?:**  
C. Lugin, A. Konovalov, C. Ruff

### **Group Leader: BENJAMIN GREWE**

- 74 Neural dynamics underlying social transmission of maternal behavior:**  
E. Streit Morsch, E.A. Amadei, R. Boehringer, B.F. Grewe

### **Group Leader: RICHARD HAHNLOSER**

- 75 Behavioral signatures and remote detection of copulations in freely behaving zebra finches:** T. Tomka, L. Rüttimann, H. Yamahachi, H. Hörster, R.H.R. Hahnloser, M.D. Rocha
- 76 Multimodal Behavioral Recording System for Social Songbirds:**  
L. Rüttimann, J. Rychen, T. Tomka, H. Hörster, M. Rocha, R.H.R. Hahnloser

### **Group Leader: CHRISTOPHER PRYCE**

- 77 Social-stimulus responsive neurons in the mouse basal amygdala-nucleus accumbens pathway:** G. Poggi, R. Dulinkas, L. Madur, G. Bergamini, A. Greter, C. Ineichen, A. Dagostino, D. Kúkel'ová, H. Sigrist, K. Bornemann, F. Fernandez-Albert, G. Alanis-Lobato, B. Hengerer, C. Pryce

## NEUROPSYCHIATRY

### Group Leader: JULIUS POPP (ZNZ ASSOCIATE)

- 78 Molecular endophenotypes associated with neuropsychiatric symptoms in healthy aging and neurodegenerative disorders:** C. Clark, M. Rabl, M. Mroczek, G. Bowman, L. Dayon, J. Popp

### Group Leader: HANS H. STASSEN

- 79 Analysis of genetic diversity in patients with major psychiatric disorders: A molecular-genetic study of 1,698 subjects genotyped for 100 candidate genes (549 SNPs):** H.H. Stassen, S. Bachmann, R. Bridler, K. Cattapan, A. Hartmann, D. Rujescu, E. Seifritz, M. Weisbrod, C. Scharfetter

### Group Leader: RAFAEL POLANIA

- 80 Causal rhythmic control of feature-based attention in human prefrontal cortex:** J. Brus, J. Heng, F. Gonzalez, V. Beliaeva, M. Grueschow, R. Polania

### Group Leader: EDNA GRÜNBLATT

- 81 Elucidating the functional effects of omega-3 fatty acids as a treatment in ADHD:** N.M. Walter, C.M. Yde Ohki, J. M. Salazar, S. Ruhstaller, D. Dzmitranista, O. Vityk, L. Grossmann, C. Döring, A.M. Werling, S. Walitza, E. Grünblatt
- 82 Involvement of the Wnt-Signaling in Methylphenidate (Ritalin) treatment of ADHD:** C.M. Yde Ohki, N. Walter, A. Bender, M. Rickli, L. Keusch, N. Vahdani, J. Pfister, L. Grossmann, C. Döring, A.M. Werling, S. Walitza, E. Grünblatt

### Group Leader: CHRISTOPHER PRYCE

- 83 Psilocybin effects on neuronal and behavioural plasticity in mice:** J. Albiez, J. Romanos, H. Sigrist, G. Poggi, F. Vollenweider, C. Pryce

## HUMAN STUDIES

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- 84 The Thermoceptive Mismatch Response as a signature of interoceptive prediction errors:** B. Toussaint, J. Heinzle, N. Bachmaier, E. Federici, N. Friedli, L. Köchli, N. Zahnd, S. Iglesias, F. Hennel, L. Kasper, K.E. Stephan

### Group Leader: SILVIA BREM

- 85 The effects of puberty on structural brain connectivity in youth with gender dysphoria:** I.I. Karipidis, D.S. Hong

### Group Leader: LINARD FILLI

- 86 The role of the reticulospinal system in the coordination of bilateral hand movements:** N. Holliger, V. Dietz, A. Christen, M. Geissmann, L. Filli

### Group Leader: MARTIN WOLF

- 87 Infradian rhythms in cerebral oxygenation and blood volume in humans at rest: A 5 year-long study:** F. Scholkmann, H. Zohdi, M. Wolf, U. Wolf

### Group Leader: HANS-GEORG WIRSCHING

- 88 A multi-center phase Ib/II randomized drug repurposing trial of glutamate signaling inhibitors in combination with chemoradiotherapy in patients with newly diagnosed glioblastoma (GLUGLIO):** H-G. Wirsching, L. Held, A.F. Hottinger, D. Migiorini, H. Läubli, K. Seystahl, A. Ochsenbein, T. Hundberger, R. von Moos, A. Bink, L.L. Imbach, F. Jörger, P. Roth, M. Weller, for the GLUGLIO study group

**Group Leader: DOMINIK STRAUMANN**

- 89 A wearable-based system to reduce space motion sickness by multi-sensory pre-habituation:** C-A. Vollette, C. Bockisch, D. Straumann, G. Bertolini

**Group Leader: BORIS QUEDNOW**

- 90 Investigating the role of serotonin in declarative memory using a human serotonin lesion model:** R.C. Coray, J. Zimmermann, A. Haugg, A. Stock, C. Beste, D.M. Cole, B.B. Quednow

**Group Leader: KATHARINA HENKE**

- 91 Tracking hippocampal memory traces in healthy humans using 7T fMRI:** T. Willems, K. Henke

**Group Leader: JOHANNES SARNTHEIN**

- 92 Information flows from hippocampus to cortex during replay of verbal working memory items:** V. Dimakopoulos<sup>1</sup>, P. Mégevand<sup>2,3</sup>, L. Stieglitz<sup>1</sup>, L. Imbach<sup>4,5</sup>, J. Sarnthein<sup>1,5</sup>

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## TECHNOLOGY DEVELOPMENT

### Group Leader: ADRIANO AGUZZI

- 93 Investigate the genetic and molecular landscape of the hnRNP K cellular essentiality by performing unbiased CRISPR screens:** S. Sellitto, D. Caredio, L. Frick, E. Lemes, S. Neupane, D.L. Vena, A. Aguzzi
- 94 Robust and versatile arrayed libraries for human genome-wide CRISPR activation, deletion and silencing:** J.-A. Yin, L. Frick, M.C. Scheidmann, C. Trevisan, A. Dhingra, A. Spinelli, Y. Wu, L. Yao, D.L. Vena, E. De Cecco, K. Ging, T. Liu, J. Täger, S. Rodriguez, J. Guo, S. Berry, M. Losa, S. Hornemann, M. Kampmann, L. Pelkmans, D. Hoepfner, P. Heutink, A. Aguzzi

### Group Leader: HANS-GEORG WIRSCHING

- 95 Exploring SSTR2 targeted universal CAR-T cell therapy in genetically engineered and xenotransplantation meningioma models:** C. Pellegrino, M. Antonios, D. Neri, M. Weller, H.-G. Wirsching

### Group Leader: JINGJING JIANG

- 96 Fabrication of multilayer microfluidic-based tissue-mimicking phantom for optical methods:** T. Li<sup>a,b</sup>, A. Kalyanov<sup>b</sup>, M. Wolf<sup>b</sup>, M. Ackermann<sup>b</sup>, E. Russomanno<sup>b</sup>, J. Jiang<sup>b</sup> and A. Di Costanzo Mata<sup>b</sup>

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### Group Leader: MEHMET FATIH YANIK

- 97 Localization of penetrating ultraflexible polymer electrodes by MRI:** E. Özil, M. Marks, T.B. Yasar, P. Gombkoto, W. von der Behrens, M.F. Yanik

### Group Leader: DAVID P. WOLFER

- 98 Motivating mice to learn difficult tasks in the IntelliCage without water restriction:** B. Schildknecht, X. Ma, M. Nigri, I. Amrein, D.P. Wolfer

**Group Leader: GIACOMO INDIVERI**

- 99 Intelligent neuromorphic technologies for sensing and processing neural signals:** E. Donati, M. Payvand, A. Rubino, J. Chen, S. Narayanan, M. Sharifshazileh, M. Cartiglia, and G. Indiveri
- 100 From neurobiological to computing systems:** V. Leite, R. Krause, M. Maryada, Y. Demirag, W. Chenxi, D. Zendrikov, J. Zhao, Z. Su, J. Chen, G. Saptarshi, G. Indiveri

**Group Leader: ELISA DONATI**

- 101 Hand kinematics estimation to control prosthetic devices: a neuromorphic approach:** D. Kubanek, F. Baracat, G. Indiveri, E. Donati

**Group Leader: ANDRAS JAKAB**

- 102 Whole-brain tractography in the newborn: the choice of algorithm for constrained spherical deconvolution impacts results in a clinical dataset:** A. Speckert, M. Feldmann, K. Payette, W. Knirsch, B. Latal, A. Jakab

**Group Leader: SHIH-CHII LIU**

- 103 Predicting hydration status using machine learning models from physiological and sweat biomarkers during endurance exercise:** S. Wang<sup>1</sup>, C. Lafaye<sup>2</sup>, M. Saubade<sup>2</sup>, C. Besson<sup>2</sup>, J.M. Margarit-Taulé<sup>3</sup>, V. Gremeaux<sup>2</sup>, S-C. Liu<sup>1</sup>

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**ZNZ GROUP LEADERS** (in alphabetic order and with poster numbers)

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## **ADDITIONAL POSTERS (not in the booklet)**

**Group Leader: KATHARINA GAPP**

**104 Novel custom-made Glucocorticoid receptor PROTAC outperforms traditional inhibitors:** M. Gazorpak, K. Hugentobler, M. Kretschmer, V. Fischer, S.M. Barrenechea, R. Rudolf, K. Matthis, P.-L. Germain, E.M. Carreira, J. Bohacek, K. Gapp