

Detailed Schedule: July 1 (Mon.)

Monday, July 1, 2019

9:00–16:30 **Registration**

10:00–11:00 **Preconference Educational Seminar (Basic)**

Chair: Michiyasu Suzuki

Minimum knowledge to start basic research on CSD

Cenk Ayata

Massachusetts General Hospital, USA

11:00–12:00 **Preconference Educational Seminar (Clinical)**

Chair: Michiyasu Suzuki

Monitoring of spreading depolarizations on the ICU

Jens P. Dreier

Center for Stroke Research Berlin, Germany

14:00–14:10 **Opening**

14:10–15:50 **Session 1 | SD in Migraine**

Chairs: Cenk Ayata, Fumiaki Oka

Intravascular administration of endothelin-1 does not trigger or increase susceptibility to spreading depolarizations

Kazutaka Sugimoto

Departments of Radiology, Massachusetts General Hospital, Harvard Medical School, USA

Cortical spreading depression and seizures: bidirectional interactions and relevance for migraine

Isra Tamim

Neurovascular Research Laboratory, Department of Radiology, Massachusetts General Hospital, Harvard Medical School, Charlestown, Massachusetts, USA

Responsiveness to potassium-induced cortical spreading depression and subsequent c-Fos expression in a mouse model of familial hemiplegic migraine 2

Chunhua Tang

Department of Neurology, Keio University School of Medicine, Tokyo, Japan

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Enhanced susceptibility and wide distribution of c-Fos expression to cortical spreading depression in two-types of Na⁺,K⁺-ATPase α 2 subunit-deficient mice as a model of familial hemiplegic migraine 2

Miyuki Uekawa

Department of Neurology, Keio University School of Medicine, Tokyo, Japan

TRPA1/CGRP signaling mediates cortical spreading depression

Minyan Wang

Centre for Neuroscience, Department of Biological Sciences, Xi'an Jiaotong-Liverpool University, China

15:50–16:20 **Break**

16:20–16:50 **Keynote 1**

Chair: Michiyasu Suzuki

Investigator-initiated Clinical Trial for Medical Devices and Regulatory Points to Consider

Jun Sakurai

Center for Innovative Clinical Medicine, Okayama, Japan

16:50–18:30 **Open Discussion 1 | Is SD really harmful?**

Chairs: Cenk Ayata, David Andrew

18:30–20:30 **Welcome Reception**

Detailed Schedule: July 2 (Tue.)

Tuesday, July 2, 2019

8:30–9:00 **Breakfast**

9:00–10:40 **Session 2 | Mechanisms of SD**

Chairs: Bill Shuttleworth, David Andrew

NMDA receptors are activated in the sustained but not the initial depolarization phase during spreading depolarization

Ning Zhou

Graduate Institute of Biomedical Sciences, China Medical University, Taichung, Taiwan

Non-spreading anoxic/ischemic depolarization

Eszter Farkas

Group of Cerebral Blood Flow and Metabolism, Department of Medical Physics and Informatics, University of Szeged, Szeged, Hungary

Non-spreading anoxic/ischemic depolarization is linked to impaired astrocyte function

Ákos Menyhárt

Department of Medical Physics and Informatics, Faculty of Medicine and Faculty of Science and Informatics, University of Szeged; Szeged, Hungary

Precapillary sphincters exist in the brain and are involved in cortical spreading depolarization

Søren Grubb

University of Copenhagen, Copenhagen, Denmark

TEMPORAL DYNAMICS OF ARTERIOLAR DIAMETER AND CAPILLARY PERFUSION DURING CORTICAL SPREADING DEPOLARIZATION AN OPTICAL COHERENCE TOMOGRAPHY STUDY

Maryam Anzabi

Center of Functionally Integrative Neuroscience (CFIN) and MINDLab, Department of Clinical Medicine, Aarhus University, Aarhus, Denmark

10:40–11:10 **Break**

Detailed Schedule: July 2 (Tue.)

11:10–12:50 **Session 3 | SD in Injured Brain**

Chairs: Eszter Farkas, Laura Ngwenya

The impact of cortical depolarization on early brain injury after subarachnoid hemorrhage in rats

Satoshi Murai

Department of Neurological Surgery, Okayama University Graduate School, Okayama, Japan

Subarachnoid hemorrhage leads to early and persistent functional connectivity and behavioral changes in mice

David Y. Chung

Neurovascular Research Laboratory, Department of Radiology, Massachusetts General Hospital, Charlestown, MA, USA

Spreading Depolarizations and Mild Traumatic Brain Injuries: Behavior, Cognition, and Attention

Russell A. Morton

Department of Neurosciences, Center for Brain Recovery and Repair University of New Mexico HSC, Albuquerque, NM, USA

Shock wave-induced spreading depolarization and concomitant hemodynamic abnormalities in the rat brain

Shunichi Sato

Division of Bioinformation and Therapeutic Systems, National Defense Medical College Research Institute, Tokorozawa, Saitama, Japan

Effects of Intracranial Hypertension on the Cortical Spreading Depolarization

Takuma Nishimoto

Department of Neurosurgery, Yamaguchi University Graduate School of Medicine, Ube, Yamaguchi, Japan

12:50–14:00 **Lunch Break**

Detailed Schedule: July 2 (Tue.)

14:00–14:40 **Keynote 2**

Chair: Michiyasu Suzuki

Active ictal DC shifts and red slow in epilepsy patients: other slows among pathological DC brain potentials

Akio Ikeda

Department of Epilepsy, Movement Disorders and Physiology, Kyoto University Graduate School of Medicine, Kyoto, Japan

14:40–16:10 **Session 4 | Clinical Monitoring of SD**

Chairs: Michiyasu Suzuki, Johannes Woitzik

Perfusion-dependent impairment of cerebral autoregulation in malignant hemispheric stroke

Nils Hecht

Department of Neurosurgery, Charité – Universitätsmedizin Berlin, Berlin, Germany

Does the shape of a spreading depolarization matter?

Tomas Watanabe

Vagalume LLC, Palo Alto, California, USA

Scalp EEG could record cortical spreading depolarizations (CSDs) even with time constant 2 seconds: A case report of acute traumatic brain injury and hemorrhage

Takahito Tsukamoto

Department of Neurology, Kyoto University Graduate School of Medicine, Kyoto, Japan

Non-invasive detection of spreading depolarization: Initial results

Stephen C. Jones

CerebroScope, Pittsburgh, PA, USA

A reliable method for non-invasive detection of Spreading Depolarisations using Electroencephalography (EEG)

Sharon L. Jewell

Department of Basic and Clinical Neuroscience, King's College London, UK

Feasibility of a wireless, endovascular stent-electrode in the superior sagittal sinus for monitoring SD

Michael Ayad

New York Presbyterian Hospital, Brooklyn, USA

Detailed Schedule: July 2 (Tue.)

16:10–16:40 **Break**

16:40–18:40 **Session 5 | Treatments of SD**

Chairs: Andrew Carlson, Sharon Jewell

Therapies that influence spreading depolarizations

Edgar Santos

Department of Neurosurgery, University Hospital Heidelberg, Ruprecht-Karls-University Heidelberg, Germany

Ketamine reduces excitotoxic consequences of spreading depolarization after stroke

K. M. Reinhart

Department of Neurosciences, University of New Mexico School of Medicine, Albuquerque, NM, USA

A Single Spreading Depolarization can Induce Synaptic Strengthening and BDNF Upregulation

J. E. Weisend

Department of Neurosciences, University of New Mexico School of Medicine, Albuquerque, NM, USA

Trigeminal Nerve Stimulation To Modulate Cortical Spreading Depolarizations After Brain Injury

Chunyan Li

Department of Neurosurgery, Donald and Barbara Zucker School of Medicine at Hofstra/Northwell, Hempstead/Northwell, Hempstead, NY, USA

The beneficial effect of FP receptor antagonism on spreading depolarization in cerebral ischemia

Dániel P. Varga

Department of Medical Physics and Informatics, University of Szeged, Szeged, Hungary

Surviving neurons in the ischemic core following focal stroke in mice

Rasha H. Mehder

Department of Biomedical & Molecular Sciences, Queen's University, Kingston, Canada

19:30–21:30 **iCSD Dinner**

at Yokohama Royal Park Hotel

Detailed Schedule: July 3 (Wed.)

Wednesday, July 3, 2019

8:30–9:00 **Breakfast**

9:00–10:40 **Session 6 | Novel Technologies for monitoring SD**

Chairs: Stéphane Marinesco, Alan Urban

Whole brain functional ultrasound imaging (fUSi) for detection and tracking of spreading depolarization during stroke in anesthetized rats

Alan Urban

NeuroElectronics Research Flanders, IMEC, VIB, KU Leuven, Leuven, Belgium

Multispectral photoacoustic imaging of hemodynamics during spreading depolarization

Thomas Kirchner

Division of Computer Assisted Medical Interventions, German Cancer Research Center (DKFZ), Heidelberg, Germany

Near-infrared reflectance imaging for monitoring spreading depolarizations and accompanying lesion progression in a rat focal cerebral ischemia model

Satoko Kawauchi

Division of Bioinformation and Therapeutic Systems, National Defense Medical College Research Institute, Tokorozawa, Saitama, Japan

Real time nitric oxide changes during spreading depolarization, ischemia and reperfusion.

Baptiste Balança

Lyon Neuroscience Research Center, Lyon, France

Monitoring Rat Cortical Spreading Depolarizations Using Minimally-invasive microelectrode biosensors Based on Platinized Carbon Fibers

Stéphane Marinesco

Lyon Neuroscience Research Center, Team TIGER Faculty of Medicine, Lyon, France

10:40–11:10 **Break**

Detailed Schedule: July 3 (Wed.)

11:10–11:50 **Keynote 3**

Chair: Michiyasu Suzuki

Brain decoding: concepts and potential applications

Shinji Nishimoto

CiNet, National Institute of Information and Communications Technology, Osaka, Japan

11:50–13:00 **Lunch Break**

13:00–13:50 **Keynote 4**

Chair: Jens P. Dreier

Neurovascular coupling in health and diseases

Edith Hamel

Montreal Neurological Institute, McGill University, Montreal, Canada

13:50–15:50 **Session 7 | Clinical Research on SD**

Chairs: Jed Hartings, Baptiste Balanca

Spreading Depolarizations Are Associated with Worsening Pathologic Anatomy in Computed Tomographic Imaging after Severe Brain Trauma

Laura B. Ngwenya

Department of Neurosurgery, University of Cincinnati College of Medicine, Cincinnati, Ohio, USA

The Impact of Physiological Variables on Spreading Depolarization and Neurovascular Coupling after Malignant Hemispheric Stroke

Leonie Schumm

Department of Neurosurgery, Charité Universitätsmedizin Berlin, Germany

Preliminary evidence that clinical manipulations are associated with increased cortical spreading depolarization in patients with acute neurologic injury

Andrew P. Carlson

Department of Neurosurgery, University of New Mexico School of Medicine, Albuquerque, NM, USA

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Effect of locally delivered nimodipine microparticles on spreading depolarization after aneurysmal subarachnoid hemorrhage.

Andrew P. Carlson

Department of Neurosurgery, University of New Mexico School of Medicine,
Albuquerque, NM, USA

Characteristics of ictal DC shifts, another infraslow EEG, recorded by scalp EEG in epilepsy patients: Comparison between scalp- and subdural recording

Shunsuke Kajikawa

Department of Neurology, Kyoto University Graduate School, Japan

Correlates of spreading depolarization, spreading depression and negative ultraslow potential in human epidural versus subdural electrocorticography

Jens P. Dreier

Center for Stroke Research Berlin, Germany

15:50–16:20 **Break**

16:20–17:50 **Open Discussion 2 | SD, Seizures and Epilepsy**

Chairs: Jens P. Dreier, Ákos Menyhárt

17:50– **Closing**