

Conference Programme

Advances in Brain Research

7th KAST-Leopoldina Bilateral Symposium

28 – 29 June 2023 | Halle (Saale)



Programme

Wednesday, 28 June 2023

09:30 – 10:00 Registration

10:00 – 10:30 Opening Session

Welcome Remarks

Gerald Haug ML
President of the Leopoldina

Ook-Joon Yoo
President of KAST

Introductory Remarks by the Scientific Coordinators

Hans Schöler ML
Max Planck Institute for Molecular Biomedicine, Münster

Bong-Kiun Kaang
Department of Biological Sciences, Seoul National University

10:30 – 12:00 Keynote Session

The Cerebral Cortex, a Delay Coupled Oscillator Network: Computations in High Dimensional Dynamic Space

Wolf Singer ML
*Ernst Strüngmann Institute (ESI) for Neuroscience in Cooperation with the
Max Planck Society, Frankfurt/Main*

Reactive Astrocytes as the Cause of Alzheimer's Disease

Changjoon Justin Lee
Center for Cognition and Sociality, Institute for Basic Science (IBS), Daejeon

12:00 – 13:00 Group Photo and Lunch Break

13:00 – 15:00 Session 1: Progress in Understanding the Fundamental Functions of the Human Brain (I)

Cerebral Cortex Connectomics

Moritz Helmstaedter
Max Planck Institute for Brain Research, Frankfurt/Main

Cell-Type Specific Connectivity Mapping and Cellular Profiling

Jinhyun Kim
*Brain Science Institute, Korea Institute of Science and Technology (KIST),
Seoul*

Synchronization of Neuronal Networks at High Speed

Dietmar Schmitz ML
Charité Universitätsmedizin Berlin

Understanding Pain: Insights from the Brain and Artificial Intelligence

Choong-Wan Woo

Center for Neuroscience Imaging Research, Department of Biological Sciences, Sungkyunkwan University, Suwon

15:00 – 15:15 **Coffee and Tea Break**

15:15 – 16:15 **Session 1: Progress in Understanding the Fundamental Functions of the Human Brain (II)**

Dopaminergic Control of Compulsive Eating: Role of Dopamine D2 Receptor

Ja-Hyun Baik

Department of Life Sciences, Korea University, Seoul

Enhancer RNAs in Brain Plasticity

Tae-Kyung Kim

Department of Life Sciences, Pohang University of Science and Technology (POSTECH)

16:15 – 16:30 **Coffee and Tea Break**

16:30 – 18:00 **Session 1: Progress in Understanding the Fundamental Functions of the Human Brain (III)**

Neural Processing Beyond Reinstatement During Memory Retrieval in the Human Brain

Sue-Hyun Lee

Department of Psychology, Seoul National University

Modeling Human Brain Development and Disease in Stem Cell Derived 3D Culture

Jürgen Knoblich

IMBA – Institute of Molecular Biotechnology, Vienna, Austria

Discussion

Thursday, 29 June 2023

09:00 – 09:05 **Welcome Remarks**

Ulla Bonas ML

Vice-President of the Leopoldina

09:05 – 11:00 **Session 2: New Research Avenues – From Stem Cell Research and Organoids to Artificial Intelligence-Assisted Brain Science**

Creation of Forebrain Assembloids to Recapitulate the Dynamic Cellular Interactions in the Human Schizophrenia Brain

Kunwoo Shin

Department of Biological Sciences, Seoul National University

ML - Member of the Leopoldina

Machine Learning and AI for the Sciences: Toward Understanding

Klaus-Robert Müller ML

Berlin Institute for the Foundations of Learning and Data (BIFOLD)

Biomedical Integrated Circuits and Systems for Brain Engineering

Chul Kim

Department of Bio and Brain Engineering, Korea Advanced Institute of Science and Technology (KAIST), Daejeon

Discussion

11:00 – 11:15 **Coffee and Tea Break**

11:15 – 12:15 **Session 3: Advances in the Diagnosis and Treatment of Brain Disorders (I)**

Genetic Architecture of the Restless Legs Syndrome

Juliane Winkelmann ML

Helmholtz Institute for Neurogenomics, Munich

Brain Somatic Mutations in Intractable Focal Epilepsy

Jeong Ho Lee

Graduate School of Medical Science and Engineering, Korea Advanced Institute of Science and Technology (KAIST), Daejeon

12:15 – 13:30 **Lunch Break and Guided Tour of Leopoldina Building**

13:30 – 15:30 **Session 3: Advances in the Diagnosis and Treatment of Brain Disorders (II)**

**Reduced Penetrance of Hereditary Movement Disorders:
Elucidating Mechanisms of Endogenous Disease Protection**

Christine Klein ML

University of Luebeck

**Using Cerebral Organoids to Map the Impact of Prenatal Stress
on Brain Development: Consequences for Psychiatry**

Elisabeth Binder ML

Max Planck Institute of Psychiatry, Munich

Development of New Tools to Study Autophagy

Jin-A Lee

*Department of Biopharmaceutical Engineering,
Hannam University, Daejeon*

Discussion

15:30 – 15:45 **Coffee and Tea Break**

15:45 – 16:30 **Concluding Discussion and Closing Remarks**

Hans Schöler ML

Max Planck Institute for Molecular Biomedicine, Münster

Bong-Kiun Kaang

Department of Biological Sciences, Seoul National University

Conference Venue:

Lecture Hall, German National Academy of Sciences Leopoldina
Jägerberg 1, 06108 Halle (Saale), Germany

The **Korean Academy of Sciences and Technology** is an authoritative academic organization comprised of Korea's leading science and technology scholars. It was established as a purely private organization in 1994 to lay the foundation of promoting Korea's science and technology community. KAST supports policy research and advisory activities of scholars in science and technology for the development of basic science in Korea and the creation of a healthy R&D eco-system. It also performs science education and cultural activities to nurture future talent. Additionally, through exchanges and cooperation with overseas academies, KAST plays a crucial role in science and technology private diplomacy, and works towards ensuring that science and technology contribute to the common good of humankind.

The **Leopoldina** is a classical scholarly society and has 1,600 members from almost all branches of science. In 2008, the Leopoldina was appointed as the German National Academy of Sciences and, in this capacity, was invested with two major objectives: representing the German scientific community internationally, and providing policymakers and the public with science-based advice.