2025 KSBNS

Symposium 21

Title: Innovations in imaging- and sequencing-based approaches in neuroscience

August 25th (Monday), 14:30-16:25

Rm.113-115, Songdo CONVENSIA, Incheon, Korea

Registration KSBNS2025.org

Organizer

Chang Ho Sohn

Graduate School of Medical Science and Engineering, Korea Advanced Institute of Science and Technology

Description

: This symposium highlights recent breakthroughs in imaging and sequencing-based analysis methods in neuroscience. The featured research spans innovative approaches including in vivo two-photon imaging for sensory neurobiology, human whole-brain mapping, single-cell RNA sequencing techniques, advanced optical imaging for deep brain visualization, and novel tools for gene delivery and spatial transcriptomics. Together, these advances are transforming our ability to study the nervous system from molecular to system-wide scales.

Speakers

Juhyuk Park

Department of Materials Science and Engineering, Seoul National University, Korea
"Polymer-based platform for multiscale molecular human brain mapping"

He is dedicated to pioneering the design and processing technology for next-generation polymeric materials and systems. His lab develops novel polymeric materials including hydrogels, micro/nanopatterned surfaces, composites, and metamaterials, with a focus on their application in biotechnology and biomedicine. Notably, his work includes developing innovative polymer hydrogel-based platforms for advanced tissue processing, large-scale bioimaging, and detailed human brain mapping.

Chang Ho Sohn

Graduate School of Medical Science and Engineering, Korea Advanced Institute of Science and Technology, Korea
"Fixative eXchange (FX)-seq: scalable single-nucleus RNA sequencing analysis of PFA-fixed or FFPE tissue"

His research is at the forefront of developing and integrating cutting-edge technologies like single-cell transcriptomics, spatial transcriptomics, and advanced tissue clearing/expansion methods. By enabling comprehensive molecular and cellular analysis of complex biological tissues with unprecedented spatial resolution, his work aims to provide profound insights into fundamental biological processes and disease mechanisms, particularly relevant for understanding the intricacies of the brain and neural systems.

Wonshik Choi

Department of Physics, Korea University, Korea
"Longitudinal optical imaging of the deep brain through the intact mouse skull"

His research confronts the fundamental challenge of multiple light scattering in biological tissues, which has long limited the depth of high-resolution optical imaging. Professor Choi's group develops innovative optical methodologies to visualize structures, dynamics, and functionalities deep within living tissues, aiming to significantly improve in vivo applications crucial for neuroscience and early medical diagnosis by overcoming current optical limitations.

Min Jee Jang

Department of Bioengineering, University of Illinois, Urbana-Champaign, IL, USA
"Engineering interventional neuro-omics: where viral vectors meet 3D spatial biology"

Her lab, the Jang Lab at UIUC, focuses on exploring the genetic code of the brain by developing and applying innovative technologies including viral vector engineering for precise cell-type targeting, advanced tissue clearing, high-resolution imaging, and computational tool development. She aims to achieve a comprehensive understanding of the brain at the genetic level and to create novel in vivo tools to access and manipulate genetic components for advancing human health and treating neurological diseases.