

Title: Synaptic development, function, and brain disorders

August 26th (Tuesday), 14:30-16:25

Grand Ballroom, Songdo CONVENIA, Incheon, Korea

Registration KSBNS2025.org

Organizer



Eunjoon Kim

Center for Synaptic Brain Dysfunction, IBS/Department of Biological Sciences, KAIST

This session presents the latest research on synaptic function and development, highlighting their roles in neuropsychiatric and neurodevelopmental disorders such as schizophrenia, autism, and Alzheimer's disease. Leading scientists discuss molecular mechanisms, genetic mutations, and potential therapeutic strategies, offering a comprehensive overview of how synaptic processes impact brain health and disease.

Speakers



Morgan Sheng

Massachusetts Institute of Technology

"Dissecting schizophrenia: molecular mechanisms and neuronal and synaptic dysregulations"

His pioneering research has transformed understanding of synapse biology, particularly through elucidating the molecular organization and function of postsynaptic density proteins and their roles in synaptic plasticity and brain diseases. His work has had major impact on the study of neurodevelopmental, neurodegenerative, and psychiatric disorders, and he continues to lead efforts to uncover disease mechanisms and develop new therapeutics for conditions like schizophrenia, bipolar disorder, Alzheimer's, and Parkinson's disease.



Peter Scheiffele

University of Basel

"Control of neurodevelopmental gene expression programs and circuit assembly by spontaneous neuronal activity in the mouse visual cortex"

His pioneering work revealed the essential roles of neuroligin and neurexin adhesion molecules in synapse formation, fundamentally advancing understanding of how neuronal networks are built in the central nervous system. His research has also contributed to uncovering the molecular mechanisms underlying neurodevelopmental disorders such as autism, and he continues to develop innovative genetic tools for studying synaptic function and neuronal connectivity.



Matthijs Verhage

Vrije University

"Disease mechanisms and intervention strategies for neurodevelopment disorders caused by mutations in presynaptic genes"

He is renowned for elucidating the molecular mechanisms of synaptic vesicle exocytosis, particularly through his discovery of the essential roles of proteins like Munc18-1 and Munc13 in neurotransmitter release and early brain development. His research has also advanced understanding of neurodevelopmental disorders linked to synaptic dysfunction, such as SNAREopathies, and highlighted how synaptic gene diversity distinguishes neuronal cell types.



Yelin Chen

Shanghai Institute of Organic Chemistry

"Synaptic mechanisms for brain development and antidepressant responses"

His research centers on the function of N-methyl-D-aspartate receptors (NMDARs) and how their dysfunction leads to synaptic impairment in brain diseases. He has contributed to understanding the role of GluN2A-containing NMDARs in neurological and psychiatric disorders, and to the development of positive allosteric modulators targeting these receptors as potential therapeutics.



Heera Moon

Korea Advanced Institute of Science and Technology

"Synaptic and neuronal mechanisms in mouse models of autism with sensory abnormalities"

She has been a member of Eunjoon Kim lab since June 2020 and is involved in research related to synaptic brain dysfunctions, which includes neurobiological mechanisms of autism spectrum disorders with focus on sensory hypersensitivity.