Introductory Remarks to Symposium 4

Current advances of extracellular vesicles in CNS-cell interaction and brain-periphery communication

Eva-Maria Krämer-Albers and Christian Neri, Mainz and Paris (France)

Extracellular vesicles (EVs) were recently established as versatile signaling entities facilitating both short-range communication within the CNS and long-range communication between the CNS and the periphery. EVs are regulated by neural activity and are engaged in neuron-neuron and neuron-glia crosstalk in the developing brain as well as during neurodegeneration. The field is developing rapidly and we are only just beginning to understand the importance of signaling through EVs within the brain and also between the brain and peripheral organs.

This symposium will highlight latest advancements at the interface of EV research and neuroscience, focusing on novel functional insights, technological developments and an improved understanding of brain-periphery interaction, including the gut-brain axis. The speakers will emphasize various aspects of EV signaling relevant to neurodegeneration, such as their role in synaptic pruning through microglial engulfment and spreading of tau pathology in Alzheimer's Disease. Furthermore, technological advances important for the discovery and detection of EV epitopes involved in EV function or potentially used as biomarkers of neurodegeneration will be presented. EVs interact with and can signal across CNS barriers. The speakers will critically discuss their latest findings and the impact of EVs on neuroinflammation and the mechanisms of interaction between gut microbiota and the brain.

The symposium is presented by representatives of the "EViNS" specific interest group (SIG) of the International Society of Extracellular Vesicles (ISEV), which aims at disseminating expert knowledge on EVs in the nervous system and strengthening interactions between EV-researchers and neuroscientists.

Symposium 4, Wednesday, March 26, 14:30 - 16:30

Symposia

Symposium 4

Wednesday, March 26, 2025
14:30 - 16:30, Lecture Hall 105

Chairs: Eva-Maria Krämer-Albers and Christian Neri, Mainz and Paris (France)

14:30 **Opening Remarks**

14:35 Claudia Verderio, Milan, Italy
MICROGLIAL EVS TRAVELLING AT THE NEURON SURFACE: IMPLICATION IN THE DELIVERY OF EAT-ME SIGNALS TO THE SYNAPSE (S4-1)

15:00 Tsuneya Ikezu, Jacksonville, USA
PROTEOMIC PROFILING OF TAU INTERACTING MOLECULES IN BRAIN DERIVED EXTRACELLULAR VESICLES UNCOVER KEY MOLECULES CONTRIBUTING TO TAU PATHOLOGY SPREAD IN ALZHEIMER'S DISEASE (S4-2)

15:25 Isabel Graf, Hamburg
HIGH PURITY FLUORESCENCE-ACTIVATED VESICLE SORTING FOR ENRICHMENT OF EXTRACELLULAR VESICLE (BRAIN) SPECIFIC POPULATIONS (S4-3)

15:40 Stefan Momma, Frankfurt/Main
SCOPE AND FUNCTION OF EXTRACELLULAR VESICLE-BASED COMMUNICATION BETWEEN PERIPHERY AND CNS *IN VIVO* (S4-4)

16:05 Roosmarijn Vandenbroucke, Ghent, Belgium
EXTRACELLULAR VESICLES IN THE COMMUNICATION BETWEEN PERIPHERY AND BRAIN (S4-5)

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