1st Symposium 'Extracellular Vesicles in Nervous Systems'

Day 1 – December 6, 2023

8:30 am – 8:40 am **Welcome Introduction**
On behalf of ISEV: Edit Buzas, Semmelweis University, Hungary
On behalf of EVIta: Benedetta Bussolati, Universita degli Studi di Torino, Italy
Symposium opening: Julie Saugstad, Oregon Health & Science University, USA & Christian Neri, Sorbonne Université, France

8:40 am – 9:10 am **Special Lecture Neuroscience 1** (25 min + 5 min Q&A)
Protecting against tauopathy: new insights
Illana Gozes, Secretary, European Society for Neurochemistry, Tel Aviv University, Tel Aviv, Israel

9:10 am – 1:00 pm
Session 1: EVs and Intercellular Communication in the Nervous System
(20 min + 5 min Q&A each talk)

Chairs: Eva-Maria Krämer-Albers, Germany and Co-Chair Jason Shepherd, USA
EVs in oligodendrocyte-neuron communication and axonal maintenance
Eva-Maria Krämer-Albers, Johannes Gutenberg University of Mainz, Mainz, Germany

Oligodendrocyte-derived EV signaling regulates axonal energy metabolism
Zu-Hang Sheng, National Institute of Neurological Disorders and Stroke, Washington DC, USA

Exosome-mediated astroglia to neuron signaling in development and neurodegeneration
Yongjie Yang, Tufts University School of Medicine, Boston, Massachusetts, USA

Virus-like extracellular vesicle biogenesis involved in synaptic plasticity and neurodegeneration
Jason Shepherd, University of Utah, Salt Lake City Utah, USA

10:45 am – 11:15 am Coffee Break

11:15 am – 1:00 pm ***Session 1: Short Talks*** (12 min + 3 min Q&A each talk)

Neuron-derived extracellular vesicles regulate axon development in primary cortical neurons via miR-99a targeting of HS3ST2 in the axon
Federico Dajas-Bailador, University of Nottingham, Nottingham, UK

Extracellular vesicles as mediators of trans-synaptic signaling and circuit connectivity
Anna Antoniou, University of Bonn, Bonn, Germany

Microglia-derived extracellular vesicles promote synaptic pruning
Giulia D'Arrigo, CNR Institute of Neuroscience of Milan, Vedano al Lambro (MB), Italy

Extracellular Vesicles in Müller glia-neuron crosstalk during neuroinflammation
Cristiano Lucci, KU Leuven, Leuven, Belgium

Exosomes are vehicles for the stress-regulated secretion of histones
Jonathan Gilthorpe, Umeå University, Umeå, Sweden

Brain-derived extracellular vesicles regulate the dynamics of stress-induced behavior
Benjamin Jurek, Max-Planck Institute for Psychiatry, Munich, Germany

Ciliary EV biogenesis in C. elegans
Patrick Laurent, Université Libre de Bruxelles, Brussels, Belgium

1:00 pm – 2:15 pm Lunch

2:15 pm – 5:45 pm
Session 2: Role of EVs and Underlying Mechanisms in Neurological Disorders & Brain Injury
(20 min + 5 min Q&A each talk)

Chairs: Tsuneya Ikezu, USA and Co-Chair Juan Carlos Polanco, Australia

Pathogenic role of microglial extracellular vesicles in neuroinflammatory and neurodegenerative diseases
Claudia Verderio, CNR Institute of Neuroscience of Milan, Vedano al Lambro (MB), Italy

The role of exosome-like EVs in Tau pathology – uncovering opportunities for therapeutic interventions
Juan Carlos Polanco, University of Queensland, Queensland, Australia

Plasma extracellular vesicle Tau isoform ratios and TDP-43 inform about molecular pathology in Frontotemporal Dementia and Amyotrophic Lateral Sclerosis
Anja Schneider, German Center for Neurodegenerative Diseases, Bonn, Germany

3:15 pm – 3:45 pm Coffee Break

3:45 pm – 5:45 pm ***Session 2: Short Talks*** (12 min + 3 min Q&A each talk)

Tau filaments are tethered within brain extracellular vesicles in Alzheimer's disease
Stephanie Fowler, University College London, University of Oxford, UK

Extracellular vesicle remodeling in response to mutant huntingtin
Natayme Rocha Tartaglia, Institut Curie, Sorbonne Université/IBPS, France

Large and small extracellular vesicle profiling reveals an AD signature and differential implication in tau seeding
Marie Oosterlynck, University of Lille, UMR 1172, France

Novel method for collecting hippocampal interstitial fluid extracellular vesicles (EVISF) reveals sex-dependent changes in microglial EV proteome in response to Aβ pathology
Shannon Macauley, University of Kentucky, Lexingont, Kentucky, USA

Mesenchymal-derived extracellular vesicles treatment mediate shifts in microglial phenotypes underlying functional recovery in a rhesus monkey model of cortical injury
Tara Moore, Boston University, Boston, Massachusetts, USA

Identification of a mechanism for packaging α-synuclein in exosomes that causes Parkinson's disease-like pathology
Jason Howitt, Swinburne University, Australia

Pathogenic mitovesicles impair long-term potentiation: implications for memory dysfunction in neurodegenerative disorders
Pasquale D'Acunzo, Nathan S. Kline Institute for Psychiatric Research, USA

Amyloid precursor-like protein 1 (APLP1) are postulated as seminal entities shaping the future trajectory of neurodegenerative disease diagnostics
Jisook Moon, Dept of Biotechnology, College of Life Science, CHA University, Republic of Korea

5:45 pm – 7:30 pm
Poster Session (Sessions 1 & 2)

7:30 pm Reception and Group Photo

8:30 pm Dinner on your own

Day 2 – December 7, 2023

8:15 am – 1:15 pm
Session 3: EVs and communication between the CNS and periphery
(20 min + 5 min Q&A each talk)

Chairs: Andy Hill, Australia and Co-Chair Christian Neri, France

The gut-brain axis in disease: a role for bacterial extracellular vesicles?
Roosmarijn Vandenbroucke, Vlaams Instituut voor Biotechnologie, Zwijnaarde, Belgium

Scope and function of EV communication between periphery and CNS in vivo
Stefan Momma, Goethe-Universität Frankfurt am Main, Frankfurt, Germany

From silence to symphony: considerations for studies of CNS-periphery crosstalk
Kenneth Witwer, Department of Molecular and Comparative Pathobiology, Johns Hopkins University School of Medicine, Baltimore, MD, USA

Nociceptive neuron-macrophage communication by extracellular vesicles in neuropathic pain
Marzia Malcangio, King's College London, London, UK

9:45 am – 10:15 am **Special Lecture Neuroscience 2** (25 min + 5 min Q&A)
The molecular machinery of CNS exosomes and possible functions in vivo
Frank Kirchhoff, President, German Neuroscience Society, Ulm University Medical Center, Ulm, Germany

10:15 am – 10:45 am Coffee Break

10:45 am – 12:45 am ***Session 3: Short Talks*** (12 min + 3 min Q&A each talk)

Neuropathologic metabolite L-histidinol is selectively loaded in bacterial extracellular vesicles and promotes Alzheimer's disease within gut-microbiome-brain axis
Gagan Deep, Wake Forest University School of Medicine, USA

Peripheral extracellular vesicles from Alzheimer's patients cross the blood-brain barrier and trigger IL-6 release by microglia cells
Hermine Counil, Institut National de la Recherche Scientifique, Canada

Brain pericyte-derived small extracellular vesicles as mediators of the Blood-Brain Barrier main features?
Julien Saint-Pol, Université d'Artois - Blood Brain Barrier Laboratory, France

Primary rat cortical tri-culture to study cellular response to cancer EVs
Rachel Mizenko, University of California Davis, USA

The role of brain tumor initiating cells derived extracellular vesicles in the remodeling of the Glioblastoma tumor microenvironment
Marissa Russo, Mayo Clinic Graduate School of Biomedical Sciences, USA

Bisphenol A and small extracellular vesicles regulate oxidative equilibrium on the placenta-brain axis
Leonardo Ermini, University of Siena, Italy

LDHA-enrich EVs activated stemness of glioblastoma by promoting glycolysis and critical for GBM recurrence warning

Xin Zhang, Laboratory Medicine Center, Nanfang Hospital, Southern Medical University, Guangzhou, Guangdong, P. R. China

Presence of TDP43 and α-Syn within and on the surface of plasma neuron-derived extracellular vesicles
Erez Eitan, NeuroDex, USA

12:25 am – 1:15 pm **Keynote Lecture** (25 min + 5 min Q&A)
EVs in the nervous system – insights and outlooks
Andy Hill, Victoria University, La Trobe University, Melbourne, Australia

1:15 pm – 2:30 pm Lunch

2:30 pm – 3:30 pm
General Assembly Special Interest Group EViNS

3:30 pm – 4:00 pm Coffee Break

4:00 pm – 6:00 pm
Poster Session (Sessions 3 & 4)

7:00 pm Networking Dinner – In Villa Restaurant (https://www.invilla-ricevimentieventi.it/in-villa/)
7:00 pm Buses from A.Roma to In Villa, 9:00 pm Buses from In Villa to A.Roma 8:30 pm

Day 3 – December 8, 2023

8:15 am – Noon
Session 4: Therapeutics, Biomarkers and CNS-Related Technology Development
20 min + 5 min Q&A each talk)

Chairs: Julie Saugstad, USA and Co-Chair Yongjie Yang, USA

Discovery of neuron-specific EV markers and their application in neurologic disorders
Tsuneya Ikezu, Mayo Clinic Florida, Jacksonville, Florida, USA

Signalling properties of EVs from brain stem cells
Stefano Pluchino, University of Cambridge, Cambridge, UK

Opportunities and challenges for CNS EVs as biomarkers for neurological disorders
Ursula Sandau, Oregon Health & Science University, Portland, Oregon, USA

9:30 am – 10:00 am Coffee Break

10:00 am – Noon ***Session 4: Short Talks*** (12 min + 3 min Q&A each talk)

Characterization of brain-derived extracellular vesicles in Alzheimer's and Parkinson's diseases and across brain regions
Yiyao Huang, Department of Molecular and Comparative Pathobiology, Johns Hopkins University School of Medicine, Baltimore, MD, USA

A novel isolation method for spontaneously released extracellular vesicles from human and mouse brain tissue and its implications for stress-driven brain pathology
Ioannis Sotiropoulos, Institute of Biosciences & Applications, NCSR Demokritos, Athens, Greece & ICVS, School of Medicine, University of Minho, Braga, Portugal

Unveiling neuron-derived extracellular vesicles: promising biomarkers for neuropsychiatric diseases
Takashi Kudo, Osaka University, Toyonaka, Japan

Biofluid-derived extracellular small RNAs as premanifest biomarkers in Huntington's disease Marina Herrero Lorenzo, University of Barcelona, Barcelona, Spain

High-pressure and low-pressure microfluidics for the high-throughput isolation and high-loading of extracellular vesicles
Simona Silvestri, Department of Chemical, Materials and Production Engineering (DICMaPI), University of Naples Federico II and Interdisciplinary Research Center on Biomaterials CRIB, Naples, Italy

Intranasal delivery of BDNF-loaded small extracellular vesicles for cerebral ischemia therapy
Qing-Ling Fu, The First Affiliated Hospital, Sun Yat-sen University, Guangzhou, China

Amyotrophic Lateral Sclerosis proteomic signature and treatment with mesenchymal stem cell-derived extracellular vesicles
Suzy Varderidou-Minasian, University Medical Centre Utrecht: Universitair Medisch Centrum Utrecht, Utrecht, Nederland

Preliminary results from the first-in-human study of ER2001, an innovative treatment for Huntington's disease using in vivo self-assembled siRNA
Zhong Pei, Department of Neurology, National Key Clinical Department and Key Discipline of Neurology, Guangdong Key Laboratory for Diagnosis and Treatment of Major Neurological Diseases, The First Affiliated Hospital, Sun Yat-sen University, Guangzhou, China

Noon – 1:00 pm **Awards Session & Concluding Remarks**
Awards for best posters and best short-talks

Conclusion of the 1st EViNS Symposium