

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, Università 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, President, European Society for Neurochemistry, Tel Aviv University, Tel Aviv, Israel

9:10 am

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

9:10 am – 9:35 am

EVs in oligodendrocyte-neuron communication and axonal maintenance

Eva-Maria Krämer-Albers, Johannes Gutenberg University of Mainz, Mainz, Germany

9:35 am – 10:00 am

Oligodendrocyte-derived EV signaling regulates axonal energy metabolism

Zu-Hang Sheng, National Institute of Neurological Disorders and Stroke, Washington DC, USA

10:00 am – 10:25 am

Exosome-mediated astroglia to neuron signaling in development and neurodegeneration

Yongjie Yang, Tufts University School of Medicine, Boston, Massachusetts, USA

10:25 am – 10:50 am

Virus-like extracellular vesicle biogenesis involved in synaptic plasticity and neurodegeneration

Jason Shepherd, University of Utah, Salt Lake City, Utah, USA

10:50 am – 11:15 am **Coffee Break**

11:15 am

Session 1: Short Talks (12 min + 3 min Q&A each talk)

11:15 am – 11:30 am

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

11:30 am – 11:45 am

Extracellular vesicles as mediators of trans-synaptic signaling and circuit connectivity

Anna Antoniou, University of Bonn, Bonn, Germany

11:45 am – 12:00 pm

Microglia-derived extracellular vesicles promote synaptic pruning

Giulia D'Arrigo, CNR Institute of Neuroscience of Milan, Veduggio al Lambro (MB), Italy

12:00 pm – 12:15 pm

Extracellular Vesicles in Müller glia-neuron crosstalk during neuroinflammation

Cristiano Lucci, KU Leuven, Leuven, Belgium

12:15 pm – 12:30 pm

Exosomes are vehicles for the stress-regulated secretion of histones

Jonathan Gilthorpe, Umeå University, Umeå, Sweden

12:30 pm – 12:45 pm

Brain-derived extracellular vesicles regulate the dynamics of stress-induced behavior

Benjamin Jurek, Max-Planck Institute for Psychiatry, Munich, Germany

12:45 pm – 1:00 pm

Ciliary EV biogenesis in C. elegans

Patrick Laurent, Université Libre de Bruxelles, Brussels, Belgium

1:00 pm – 2:15 pm Lunch

2:15 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

2:15 pm – 2:40 pm

Pathogenic role of microglial extracellular vesicles in neuroinflammatory and neurodegenerative diseases

Claudia Verderio, CNR Institute of Neuroscience of Milan, Veduggio al Lambro (MB), Italy

2:40 pm – 3:05 pm

The role of exosome-like EVs in Tau pathology – uncovering opportunities for therapeutic interventions

Juan Carlos Polanco, University of Queensland, Queensland, Australia

3:05 pm – 3:30 pm

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

3:30 pm – 3:45 pm Coffee Break

3:45 pm

Session 2: Short Talks (12 min + 3 min Q&A each talk)

3:45 pm – 4:00 pm

Tau filaments are tethered within brain extracellular vesicles in Alzheimer's disease

Stephanie Fowler, University College London, University of Oxford, UK

4:00 pm – 4:15 pm

Extracellular vesicle remodeling in response to mutant huntingtin

Natayme Rocha Tartaglia, Institut Curie, Sorbonne Université/IBPS, Paris, France

4:15 pm – 4:30 pm

Large and small extracellular vesicle profiling reveals an AD signature and differential implication in tau seeding

Marie Oosterlynck, University of Lille, UMR 1172, France

4:30 pm – 4:45 pm

Novel method for collecting hippocampal interstitial fluid extracellular vesicles (EVISF) reveals sex-dependent changes in microglial EV proteome in response to A β pathology

Shannon Macauley, University of Kentucky, Lexington, Kentucky, USA

4:45 pm – 5:00 pm

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

5:00 pm – 5:15 pm

Identification of a mechanism for packaging α -synuclein in exosomes that causes Parkinson's disease-like pathology

Jason Howitt, Swinburne University, Melbourne, Australia

5:15 pm – 5:30 pm

Pathogenic mitovesicles impair long-term potentiation: implications for memory dysfunction in neurodegenerative disorders

Pasquale D'Acunzo, Nathan S. Kline Institute for Psychiatric Res., Orangeburg, New York, USA

5:30 pm – 5:45 pm

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 Welcome Reception and Group Photo

8:30 pm Dinner on your own

Day 2 – December 7, 2023

8:15 am

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

8:15 am – 8:40 am

The gut-brain axis in disease: a role for bacterial extracellular vesicles?

Roosmarijn Vandenbroucke, Vlaams Instituut voor Biotechnologie, Zwijnaarde, Belgium

8:40 am – 9:05 am

Scope and function of EV communication between periphery and CNS in vivo

Stefan Momma, Goethe-Universität Frankfurt am Main, Frankfurt, Germany

9:05 am – 9:30 am

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, Maryland, USA

9:30 am – 9:55 am

Nociceptive neuron-macrophage communication by extracellular vesicles in neuropathic pain

Marzia Malcangio, King's College London, London, England, UK

9:55 am – 10:25 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

10:25 am – 10:45 am Coffee Break

10:45 am

Session 3: Short Talks (12 min + 3 min Q&A each talk)

10:45 am – 11:00 am

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, Salem, North Carolina, USA

11:00 am – 11:15 am

Peripheral extracellular vesicles from Alzheimer's patients cross the blood-brain barrier and trigger IL-6 release by microglia cells

Hermine Council, Institut National de la Recherche Scientifique, Quebec, Canada

11:15 am – 11:30 am

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, Arras, France

11:30 am – 11:45 am

Primary rat cortical tri-culture to study cellular response to cancer EVs

Rachel Mizenko, University of California Davis, California, USA

11:45 am – 12:00 pm

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, Jacksonville, Florida, USA

12:00 pm – 12:15 pm

Bisphenol A and small extracellular vesicles regulate oxidative equilibrium on the placenta-brain axis

Leonardo Ermini, University of Siena, University of Siena, Siena, Italy

12:15 pm – 12:30pm

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

12:30 pm – 12:45 pm

Presence of TDP43 and α -Syn within and on the surface of plasma neuron-derived extracellular vesicles

Erez Eitan, NeuroDex, Natick, Massachusetts, USA

12:45 pm – 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 (Ticket event – you can purchase your ticket at registration)–
In Villa Restaurant (<https://www.invilla-ricevimentieventi.it/in-villa/>)
7:00 pm Buses leave from A.Roma hotel to In Villa
9:00 pm Buses leave In Villa to A.Roma hotel

Day 3 – December 8, 2023

8:15 am

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

8:15 am – 8:40 am

Discovery of neuron-specific EV markers and their application in neurologic disorders

Tsuneya Ikezu, Mayo Clinic Florida, Jacksonville, Florida, USA

8:40 am – 9:05 am

Signalling properties of EVs from brain stem cells

Stefano Pluchino, University of Cambridge, Cambridge, UK

9:05 am – 9:30 am

Opportunities and Challenges for Cerebrospinal Fluid 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

Session 4: Short Talks (12 min + 3 min Q&A each talk)

10:00 am – 10:15 am

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

10:15 am – 10:30 am

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

10:30 am – 10:45 am

Unveiling neuron-derived extracellular vesicles: promising biomarkers for neuropsychiatric diseases

Takashi Kudo, Osaka University, Toyonaka, Japan

10:45 am – 11:00 am

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

11:00 am – 11:15 am

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, University of Naples Federico II and Interdisciplinary Research Center on Biomaterials CRIB, Naples, Italy

11:15 am – 11:30 am

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

11:30 am – 11:45 am

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

11:45 am – 12:00 pm

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

12:00 pm – 1:00 pm **Concluding Remarks**

Conclusion of the 1st EViNS Symposium

Thank you to our sponsor!

