

FIRST WORLD CONGRESS ON

Targeting Extracellular Vesicles

Mitochondria and Microbiota:
Crucial Impact

OCTOBER, 17TH & 18TH 2024 - MALTA



International Society
of **m**icrobiota

www.targeting-exosomes.com

First World Conference Targeting Extracellular Vesicles

Day 1 – Thursday October 17, 2024

8h00 Materials Distribution & Welcoming of Attendees

8h50 Welcome Note of Targeting Microbiota 2024

Session 1: Extracellular Vesicles & Mitochondria

Presentations duration: 25 minutes + 5 minutes Q&A.

Moderators: Devika Manickam, Marvin Edeas



9h00 – Keynote Speech:

Mitochondria and Extracellular Vesicles: Recent Discoveries & Challenges

Devika S. Manickam, Duquesne University, USA



9h30 – **The Role of Mitovesicles in the Brain with Mitochondrial Dysfunction**

Efrat Levy, NYU Grossman School of Medicine, USA



10h00 – **Mitochondrial DAMPs in EVs: Triggering Early Neuroinflammation in Neurodegeneration**

Carla Lopes, University of Coimbra, Portugal

10h30 – 11h15 Coffee Break, Networking, & Poster Session



11h15 – **Liposomes & Exosomes: Lessons & Perspectives**

Volkmar Weissig, Midwestern University, College of Pharmacy Glendale, USA



11h25 – **Engineering Exosomes for Precise Mitochondrial Targeting in Brain Cells: Expanding the Frontiers of Cellular Communication and Therapeutics**

Lanrong Bi, Michigan Technological University, USA



11h55 – **Cancer-related Extracellular Vesicles in relation to Mitochondria, Microbiota and More**

Lorraine O'Driscoll, Trinity College Dublin and Trinity St. James's Cancer Institute, Ireland

12h25 – 14h00 Lunch Break, Networking, & Poster Session

Moderators: Efrat Levy, Carla Lopes



14h00 – **Extracellular Vesicle Release of Mitochondria in Response to Lysosomal Dysfunction**

Åsa B. Gustafsson, University of California San Diego, USA



14h30 – **Delivery of Mitochondria-Containing EVs to the Blood-Brain Barrier**
Devika S. Manickam, *Duquesne University, USA*



15h00 – **New strategies for the targeting of central regulation of obesity with a nanotechnology approach using engineered extracellular vesicles**
Ramaroson Andriantsitohaina, *University of Montpellier, France*

15h30 – 16h15 Coffee Break, Networking, & Poster Session



16h15 – **Exploring the Capabilities of Exosomes from Muscle-Derived Mesenchymal Stem Cells: Insights into Immunomodulation and Mitochondrial Transfer**
Didier Serteyn, *Université de Liège, Belgium*

16h45 Short Oral Presentations & Innovations (8 slots)

Mitochondrial Cargo Determines Paracrine Effects of Endothelial-Derived Extracellular Vesicles

Zahid Manzar, University at Buffalo-SUNY, USA

Identification of Mitochondrial Exosome as an Escape Mechanism of Mitochondrial DNA in a Cardiac *in vitro* Model of Lipotoxicity

Mónica Velásquez-Esparza, Escuela de Medicina y Ciencias de la Salud, Tecnológico de Monterrey, Mexico

Extracellular Vesicles as Alternative Modulators of Mitochondria Quality Control in Skin Aging and Disease

Maria Cavinato, University of Innsbruck, Austria

Exosomal Chaperons – Emerging Biomarkers for Cancer Diagnosis, Prognosis and Treatment

Wioletta Baranska-Rybak, Medical University of Gdańsk, Poland

Extracellular Vesicles Secreted By GDF15-Depleted Fibroblasts Modulate Skin Homeostasis

Ines Martic, University of Innsbruck, Austria

Proteomic and Biological Profiling of Mitochondria-Containing Extracellular Vesicles from Neural Progenitor Cells (NPCs) Derived From an Alzheimer's Disease Patient

Tingting Chen, University of Groningen, The Netherlands

Exosomal Heat Shock Proteins in Melanoma – Potential Prognostic Markers and Therapeutical Targets

Magdalena Gorska-Ponikowska, Medical University of Gdańsk, Poland

Other Contributions – Poster Presentations

The Role of Exosomes in Tumor Progression and Therapy Resistance

Julia Federspiel, Medical University of Innsbruck, Austria

Extracellular Vesicles as a Response Biomarker in Patients with Metabolic Dysfunction-Associated Steatotic Liver Disease (MASLD)

Sheila Gato, Universidad de Sevilla, Spain

Effects of Mitochondrial Dysfunction in Organotypic Slice Cultures

Maria do Carmo Greier, Medical University of Innsbruck, Austria

The Investigation of Glioblastoma-Derived Extracellular Vesicles Effect on Cells in the Cardiovascular System

Deimantė Kulakauskienė, Lithuanian University of Health Sciences, Lithuania

Role of Plant-Derived Extracellular Vesicles in Modulating Bioenergetic and Metabolic Activity during Viral Inflammation

Emilija Mikalauskiene, Lithuanian University of Health Sciences, Lithuania

Impact of Virus Mimetic Poly(I:C)-Primed Airway Extracellular Vesicles on Microglial Mitochondrial Structure and Function

Deimantė Naruskaitė, Lithuanian University of Health Sciences, Lithuania

Platelet-Derived Extracellular Vesicles (PEVS) as a Potential Biomarker for Hepatocellular Carcinoma (HCC)

Ángela Rojas, Universidad de Sevilla, Spain

Stem Cell-Derived Exosomes Increase the Survival of Irradiated Mouse NSCS *in vitro* and Alleviate Cranial Radiation-Induced Cognitive Dysfunction

Mariia Ratushnyak, National Research Centre "Kurchatov Institute", Russia

18h15 – 18h45

A Crucial Debate on the Future of Extracellular Vesicles: Key Questions & What's Next?

After the presentations, speakers and scientific committee members will be invited for an in-depth debate and Q&A session, where we will address meticulously chosen, high-quality questions designed to focus on the most significant and impactful issues, rather than technical details.

Standardization and Protocols

- What are the main challenges preventing the standardization of EVs in research and clinical applications?
- What steps are being taken by the scientific community to develop standardized protocols for EV and exosome research?

Targeting and Delivery

- What are the current methods used to target EVs to specific organs or tissues?
- How can surface modifications on EVs enhance their targeting efficiency?
- What role do ligands and receptors play in the targeted delivery of EVs and exosomes?
- How does the microenvironment of specific tissues influence the uptake of EVs?

Mitochondrial Function, Dysfunction and Therapeutic Applications

- How do EVs contribute to the optimization of mitochondrial function through whole mitochondria, mitovesicles, protein, and genetic material transfer?
- What are the mechanisms by which EVs can spread damaged mitochondrial components, and how does this affect disease progression?
- How can mitochondrial dysfunction impact the EVs cargo loading and their impact on the target cells?
- How do we control the quality and quantity of mitochondria entrapped in cell-derived EV? Robust characterization of mitochondrial content in EVs: tools and technologies.
- How can EVs be used as vehicles for different cargo and drugs?

18h45 **End of Congress Day 1**

20h00 **Meet the Speakers Dinner** (*Reserved for ticket holders only*)
Summer Kitchen, Corinthia Palace, Malta

First World Conference Targeting Extracellular Vesicles

Day 2 – Friday October 18, 2024

8h00 **Materials Distribution & Welcoming of Attendees**

8h20 **Opening of Day 2**

Session 2: Microbiota & Extracellular Vesicles

Presentations duration: 25 minutes + 5 minutes Q&A.

Moderators: Justus Reunanen, Ramaroson Andriantsitohaina



8h30 – **Microbiota-Derived Extracellular Vesicles in Maternal-Fetal Communication: What We Know?**
Justus Reunanen, University of Oulu, Finland



9h00 – **Lactobacilli Extracellular Vesicles: Potential Postbiotics to Support the Vaginal Microbiota Homeostasis**
Carola Parolin, University of Bologna, Italy



9h30 – **Gut-Microbiome Derived Extracellular Vesicles in Cancer**
Surbhi Mishra, University of Oulu, Finland

10h00 – 10h45 Coffee Break, Networking, & Poster Session



10h45 – **Therapeutic Applications of Microbial Extracellular Vesicles**
Steven Jay, University of Maryland, USA



11h15 – **Modulation of Phage-Microbe interactions and Antimicrobial Resistance by Bacterial Extracellular Vesicles**
Meta Kuehn, Duke University, USA



11h45 – **The gut microbe-derived extracellular vesicles - mitochondria axis in mental disorders: Strengths and weaknesses of new studies**
Seyed Davar Siadat, Pasteur Institute of Iran, Iran

12h15 – 13h45 Lunch Break, Networking, & Poster Session



13h45 – **Role of Stem Cell-Derived Extracellular Vesicles to Promote Successful Aging**
Consuelo Borrás, University of Valencia, Spain



14h15 – **Bioinspired, Fully Synthetic Extracellular Vesicles to Optimize Wound Healing**
Joachim Pius Spatz, University of Heidelberg, Germany

14h45 Short Oral Presentations & Innovations (8 slots)

Differential Transcriptomic Profile in Platelet-Derived Extracellular Vesicles in Patients with Metabolic Dysfunction-Associated Steatotic Liver Disease (MASLD)

Vanessa Garcia-Fernandez, Universidad de Sevilla, Spain

CD34+Microparticles Affect the Apoptotic Mechanism of Mononuclear Cells Derived from Umbilical Cord Blood and HL60 Cells

Angeliki Xagorari, G.Papanikolaou Hospital, Greece

Testing the Potency of Extracellular Vesicles derived from Differentiating Mesenchymal Stem Cells with an Adapted Wound Assay

Edda Tobiasch, Bonn-Rhein-Sieg University of Applied Sciences, Germany

Proteomic Analysis of Fecal Extracellular Vesicles in Young and Old Mice

Khalyfa Abdelnaby, Marshall University, USA

16h15 – 16h45

A Crucial Debate on the Future of Extracellular Vesicles: Key Questions & What's Next?

General Feasibility and Challenges

- Why is using EVs as biomarkers still considered far from reality?
- What are the key challenges in isolating and identifying specific EVs as disease markers?

Technological and Methodological Advancements

- How can advances in high-throughput technologies improve the feasibility of using EVs as biomarkers?
- How can multi-omics approaches enhance the reliability of EVs as diagnostic tools?

Biological and Therapeutic Applications

- How can we best select cells for isolating EVs for therapies?
- What are the critical components of EVs that contribute to biological effects (proteins vs RNAs vs metabolites/other)?
- What are the potential advantages of using EVs over traditional biomarkers?
- What potential biomarkers can be identified from microbiota-derived EVs for immune modulation?

Microbiota and Microbial Interactions

- How can understanding microbiota-derived EVs lead to new therapeutic strategies for managing microbiota-related diseases?
- How do microbiota-derived EVs facilitate communication between microbial communities and host cells?
- How do we consider phage and viruses when developing EVs as therapeutics?
- How can we use our understanding of how EVs help bacteria adapt to antimicrobials in the environment to combat antimicrobial resistance?

Novel Hypotheses and Speculative Questions

- What if extracellular vesicles could orchestrate and revolutionize communication between mitochondria, human cells, and the microbiome?

16h45 Targeting EVs 2024 Concluding Remarks & Awards

17h00 Networking Accompanied by Drinks and Appetizers

