



Exosomes/Microvesicles: Heterogeneity, Biogenesis, Function, and Therapeutic Developments

June 4–8, 2018 | Beaver Run Resort | Breckenridge, Colorado | USA

Scientific Organizers:

Crislyn D'Souza-Schorey, University of Notre Dame, USA

David Lyden, Weill Cornell Medical College, USA

Extracellular vesicles (EVs) have emerged as critical mediators of intercellular communication in both local and distant microenvironments, during normal development and physiological processes, and in orchestrating systemic pathophysiological events. EVs comprise a large group of heterogeneous particles, including exosomes and microvesicles, and are released from virtually all cell types. Differing in size, macromolecular composition and mechanism of formation, subpopulations of extracellular vesicles contain biologically active molecules, such as nucleic acids (DNA, mRNA, microRNA and other noncoding RNAs), proteins (transmembrane receptors, transcription factors, enzymes, extracellular matrix proteins) and lipids that can in part or in sum contribute to the functional capabilities of the vesicle itself, or the reprogramming of target cells that interact with EVs. This complexity presents significant challenges in determining the functional roles of the various EV populations during both normal and pathological processes. Conference sessions will focus on EV cargo and composition; the role of EVs in development; EV-mediated immune regulation; EVs in cancer and metastasis, neurodegeneration and infectious disease; emerging technologies; and harnessing the therapeutic potential of EVs. The overall goal is to deepen our understanding of the structural and functional complexity of extracellular vesicles, their biogenesis and function in health and disease, cargo enrichment, potential as ideal biomarkers, and breakthroughs in their use as therapeutic targets/agents.

Session Topics:

- Extracellular Vesicles (EVs): Cargo and Composition
- EVs and Regulation of the Immune Response
- EVs and Cancer I (Tumor Growth and Dissemination)
- EVs in Neurobiology: Neurodevelopment, Degeneration and Regeneration
- EVs and Cancer II (Metastases)
- Current and Emerging Technologies
- EVs in Host-Pathogen Interactions
- EV Therapeutics

plus two workshops

Scholarship Application & Discounted Abstract Deadline: February 6, 2018

Abstract Deadline: March 6, 2018

Discounted Registration Deadline: April 10, 2018



Note: Scholarships are available for graduate students and postdoctoral fellows and are awarded based on the abstract submitted. Submitting an abstract is an excellent opportunity to gain exposure for your work. Abstracts submitted by the abstract deadline will also be considered for short talks on the program.

Upper image of extracellular RNA communication courtesy of Office of Strategic Coordination – The Common Fund, NIH

Meeting Hashtag: #KSexomicro

www.keystonesymposia.org/18E2

KEYSTONE SYMPOSIA[™]
on Molecular and Cellular Biology
Accelerating Life Science Discovery

www.keystonesymposia.org/meetings | 1.800.253.0685 | 1.970.262.1230

a 501(c)(3) nonprofit educational organization

KEYSTONE SYMPOSIA

on Molecular and Cellular Biology

Exosomes/Microvesicles: Heterogeneity, Biogenesis, Function and Therapeutic Developments (E2)

June 4-8, 2018 • Beaver Run Resort • Breckenridge, Colorado, USA

Scientific Organizers: Crislyn D'Souza-Schorey and David Lyden

Supported by Directors' Fund

Abstract & Scholarship Deadline: February 6, 2018 / Abstract Deadline: March 6, 2018 / Discounted Registration Deadline: April 10, 2018

MONDAY, JUNE 4

Arrival and Registration

TUESDAY, JUNE 5

EV Cargo and Delivery

Xandra O. Breakefield, Massachusetts General Hospital, USA
Functional delivery by EVs

Dolores Di Vizio, Cedars-Sinai, USA
Oncosomes in Prostate Cancer

Huang-Ge Zhang, University of Louisville, USA
Development of Three Generations of Edible Plant Exosome-like Nanovectors for Therapy

Stephen J. Gould, Johns Hopkins University School of Medicine, USA
Mapping Exosome/Microvesicle Trafficking in vivo

Andrew M. Leidal, University of California, San Francisco, USA
Short Talk: The Autophagy Conjugation Machinery Specifies The Loading of RNA-binding Proteins Into Extracellular Microvesicles

Michael Hantak, Loyola University Stritch School of Medicine, USA
Short Talk: Enhancers and Suppressors of EV - Mediated Intercellular Cargo Transfer

Poster Session 1

Panel: Meet the Editors

Gemma Kathleen Alderton, Science Magazine, UK

Alexia-Ileana Zaromytidou, Nature Cell Biology, UK

João Monteiro[†], Nature Medicine, USA

EVs and Regulation of the Immune Response

Marca H.M. Wauben, Universiteit Utrecht, Netherlands
Cross-Organism Communication: The Immune Regulatory Role of Breast Milk Extracellular Vesicles

Susanne Gabrielsson, Karolinska Institutet, Sweden
Potentiating Immune Responses to Exosomes for Cancer Therapy

Olga V. Volpert, University of Texas MD Anderson Cancer Center, USA
The Dichotomy of the Innate Immune Response to Cancer Exosomes

Simon Heidegger, Klinikum Rechts der Isar, Technical University Munich, Germany
Short Talk: Targeting Tumor-Intrinsic RIG-I Signaling Initiates the Release of Immunogenic Extracellular Vesicles that Mediate T Cell-Based Antitumor Immunity

Jessy S. Deshane[†], University of Alabama at Birmingham, USA
Short Talk: Extracellular Vesicles from Airways of Asthmatics Promote Th2 and Th17 Polarization

WEDNESDAY, JUNE 6

EVs and Cancer I (Tumor Growth and Dissemination)

James Clancy, University of Notre Dame, USA
Regulated Cargo Delivery to Tumor Microvesicles: How Do Cells Put Their Messages in a Bottle?

Richard A. Cerione, Cornell University, USA

Probing the Mechanisms of Extracellular Vesicle Biogenesis and Function in Cancer and Development

Raghu Kalluri, University of Texas MD Anderson Cancer Center, USA
Exosomes and the Progression of Pancreatic Cancer

Clotilde Théry, Institut Curie, France
Biochemical and Functional Heterogeneity of Extracellular Vesicles in Cancer-Immune Cross Talk

Leonora Balaj, Massachusetts General Hospital, USA
Short Talk: Longitudinal Analysis of Serum-Derived Extracellular RNA for Monitoring of Treatment Response to Targeted Therapy in Glioblastomas

Haiping Zhang, , USA

Short Talk: Identification of Distinct Nanoparticles and Subsets of Extracellular Vesicles by Asymmetric-Flow Field-Flow Fractionation

Workshop 1

Philip D. Stahl, Washington University in St. Louis, School of Medicine, USA

Special Lecture: The Exosome Paradigm of Intercellular Communication

Mikael Klingeborn, Duke University, USA
Retinal Exosomes as Therapeutic Targets and Diagnostic Biomarkers

Albert Lu, Stanford University, USA

A Genome-Wide CRISPR Screen using Barcoded-MicroRNAs Enables Systematic Interrogation of Extracellular Vesicle Biology

John Pena, Weill Cornell Medical College, USA
Enhancing Extracellular Vesicle Imaging in Biological Fluids and Tissues using a Non-Reversible Fixative

EVs in Neurobiology: Neurodevelopment, Degeneration and Regeneration

Andrew Hill, La Trobe University, Australia
Extracellular Vesicles - Their Role in Neurodegenerative Disease Pathogenesis

Stefan Momma, Frankfurt University Hospital, Germany
Extracellular Vesicle-Mediated Communication from Blood to Brain is Triggered by Neural Activity in vivo

Tsuneya Ikezu, Boston University School of Medicine, USA
Recent Progress in EV Biology in Neurodegenerative Disorders

Jason Shepherd, University of Utah, USA
Short Talk: Viral-Like Mechanisms of Neuronal Extracellular Vesicle Biogenesis

Judith Maxwell Silverman[†], University of British Columbia, Canada
Short Talk: CNS-Derived Extracellular Vesicles from SOD1G93A Transgenic Mice are Heterogeneous in Cellular Origin, Carry ALS-Associated Proteins, and Induce SOD1 Misfolding in Primary Neuronal Cultures

KEYSTONE SYMPOSIA

on Molecular and Cellular Biology

Exosomes/Microvesicles: Heterogeneity, Biogenesis, Function and Therapeutic Developments (E2)

June 4-8, 2018 • Beaver Run Resort • Breckenridge, Colorado, USA

Scientific Organizers: Crislyn D'Souza-Schorey and David Lyden

Supported by Directors' Fund

Abstract & Scholarship Deadline: February 6, 2018 / Abstract Deadline: March 6, 2018 / Discounted Registration Deadline: April 10, 2018

Poster Session 2

THURSDAY, JUNE 7

EVs and Cancer II (Metastases)

David Lyden, Weill Cornell Medical College, USA

The Role of Tumor-Secreted Exosomes in Cancer Metastasis

Janusz Rak, McGill University, Canada

Extracellular Vesicles and Brain Malignancies

Takahiro Ochiya, National Cancer Center Research Institute, Japan

EV-Mediated Micromanaging of Tumor Metastasis

Dihua Yu, University of Texas MD Anderson Cancer Center, USA

Tumor Microenvironment-Derived Exosomes in Metastasis and Immune Activation

Viktor Fleming, German Cancer Research Center, Germany

Short Talk: Induction of Myeloid-Derived Suppressor Cells via Tumor-Derived Extracellular Vesicles in Malignant Melanoma

Workshop 2

Alissa M. Weaver, Vanderbilt University Medical Center, USA

Investigating the Role of Exosome Secretion in Cellular Migration by Live Imaging

Amy E. Baek, University of Illinois at Urbana-Champaign, USA

Cholesterol Metabolite Promotes Breast Cancer Progression via Extracellular Vesicles

Joerg Votteler, University of Utah, USA

Designed Proteins Induce Formation of Nanocage-containing Vesicles

Ana O'Loghlen, Blizzard Institute, UK

The Bystander Effect of Exosomes in Senescence and Ageing

Current and Emerging Technologies

Olivier de Wever, University Hospital Ghent, Belgium

Standardized Analysis of Extracellular Vesicles in Liquid Biopsies

David Issadore, University of Pennsylvania, USA

Optofluidics Platforms for Exosome-based Diagnostics

Bruno Costa-Silva, Champalimaud Foundation, Portugal

Population Analysis of Exosomes

Jina Ko, University of Pennsylvania, USA

Short Talk: Multiplexed Exosome Diagnostics Using Machine Learning Combined Nanofluidics

Robert R. Kitchen, Exosome Diagnostics, USA

Short Talk: A High-Performance Urine Exosomal-mRNA Signature to Rule-Out Healthy Individuals Suspected of Bladder Cancer

Poster Session 3

FRIDAY, JUNE 8

EVs in Host-Pathogen Interactions

Neta Regev-Rudzki, Weizmann Institute of Science, Israel

Malaria Parasites Regulate Secretion of Exosomes Carrying Distinct Cargo

Jeff S. Schorey, University of Notre Dame, USA

Extracellular Vesicles: Friend or Foe in the Immune Response against a Mycobacterium tuberculosis Infection

Ana Claudia Torrecilhas, Universidade Federal de São Paulo, Brazil

Extracellular Vesicles Modulate Innate Immune Response in Protozoa Infection

Marlene Dreux, CIRI, International Center for Infectology Research, France

Flavor of Flavivirus by Plasmacytoid Dendritic Cells

João Pedra, University of Maryland School of Medicine, USA

Short Talk: Trans-Kingdom Intercommunication at the Vector-Pathogen-Host Interface

Sreenivas Gannavaram†, US Food and Drug Administration, USA

Short Talk: Role of Exosomal MicroRNAs in Shaping Protective Immunity Induced by Live Attenuated Leishmania Vaccines

EV Therapeutics

Johan Skog, Exosome Diagnostics, Inc., USA

Current State of Exosome Based Diagnostics

Jan Lötvall, University of Gothenburg, Sweden

Potential of Exosomes for Therapeutic Uses

Eva Rohde, Paracelsus Medical University Salzburg, Austria

Pharmaceutical Engineering and Clinical Testing of Stromal Cell-Derived Extracellular Vesicles

Meeting Wrap-Up: Outcomes and Future Directions (Organizers)

SATURDAY, JUNE 9

Departure