

KEYSTONE SYMPOSIA

on Molecular and Cellular Biology

The Microbiome: From Mother to Child (J3)

Scientific Organizers: Jacques Ravel, David M. Aronoff, Grace M. Aldrovandi and Maria Carmen Collado

Part of the Keystone Symposia Global Health Series, supported by the Bill & Melinda Gates Foundation

Harnessing the Microbiome for Disease Prevention and Therapy (J4)

Scientific Organizers: Eric G. Pamer, Laurie E. Comstock and Alan Walker

January 17-21, 2021 • Keystone Resort • Keystone, CO, USA

Supported by the Directors' Fund

Global Health Travel Award Deadline: August 17, 2020 / Scholarship Deadline: September 24, 2020 / Abstract Deadline: October 15, 2020 / Discounted Registration Deadline: November 17, 2020

SUNDAY, JANUARY 17

Arrival and Registration

MONDAY, JANUARY 18

Welcome and Keynote Address (Joint)

Jeffrey I. Gordon, Washington University School of Medicine, USA
Nutrition, the Gut Microbiota and Infant Development

Chemical Biology of the Microbiome (Joint)

Emily P. Balskus, Harvard University, USA
Dissecting and Manipulating Microbial Metabolism in the Vagina and the Gut Microbiota

Sean F. Brady[†], Rockefeller University, USA
Discovering Genetically Encoded, Medically Relevant Microbial Molecules

Mohamed S. Donia, Princeton University, USA
Chemical Ecology of the Human Microbiome in Health and Disease

Michael A. Fischbach, Stanford University, USA
Small Molecules from the Human Microbiota

Short Talks Chosen from Abstracts

The Vaginal Microbiome in Health and Disease (J3)

Jacques Ravel, University of Maryland School of Medicine, USA
The Host-Vaginal Microbiome Dialogue

Tal Korem, Columbia University, USA
Modeling Vaginal Metagenomes: Metabolomes in Health and Disease

Marguerite Indriati Hood-Pishchany, Boston Children's Hospital, USA

Interspecies Competition for Glycans in the Vaginal Microbiota

Short Talks Chosen from Abstracts

Interactions between Phage and Intestinal Bacteria (J4)

Kimberley Seed, University of California, Berkeley, USA
*Phage Dynamics during Intestinal Infection with *Vibrio cholerae**

Paul L. Bollyky, Stanford University, USA
Impact of Bacteriophage on Mammalian Cells

Colin Hill, University College Cork, Ireland
Shining Light on the Viral Dark Matter of the Human Gut Microbiome.

Short Talks Chosen from Abstracts

Poster Session 1

TUESDAY, JANUARY 19

The Microbiome and Pregnancy Outcomes (J3)

Michal A. Elovitz, University of Pennsylvania School of Medicine, USA
Immunological and Microbial Modulation of the Cervicovaginal Microbiota and Spontaneous Preterm Birth

David MacIntyre, Imperial College London, UK
Glycan Mediated Microbiota-Host Interactions in the Reproductive Tract and Pregnancy Outcomes

David A. Relman, Stanford University, USA
The Post-Partum Microbiome and Predisposition Towards Spontaneous Preterm Birth

Katharina Ribbeck, Massachusetts Institute of Technology, USA
Modulation of the Properties of Cervicovaginal Mucus by the Microbiota. A Role in Spontaneous Preterm Birth?

Short Talks Chosen from Abstracts

Interactions of Pathogens with the Microbiota (J4)

Denise M. Monack, Stanford University, USA
*Commensal Metabolites and Inhibitions of *Salmonella**

Bärbel Stecher, Ludwig-Maximilians-Universität München, Germany
Interaction of Pathogens and the Gut Microbiota

Trevor Lawley, Wellcome Sanger Institute, UK
Exploiting Commensal Bacteria to Combat Intestinal Infection

Manuela Raffatellu, University of California, San Diego, USA
Mechanisms of Commensal-Mediated Inhibition of Pathogens

Short Talks Chosen from Abstracts

Microbiome Transmission from Mother to Infants (J3)

Moran Yassour, Hebrew University of Jerusalem, Israel
Strain-Level Analysis of Mother-to-Child Bacterial Transmission during the First Few Months of Life

Anita L. Kozyrskyj, University of Alberta, Canada
Roles of Birth Mode and Infant Gut Microbiota in Intergenerational Transmission of Overweight and Obesity from Mother to Offspring

Grace M. Aldrovandi, University of California, Los Angeles, USA
When Mom is Sick: Maternal Health and the Infant Microbiome

Short Talks Chosen from Abstracts

Metabolic Pathways within the Microbiota (J4)

Alan Walker, University of Aberdeen, Scotland
Implications of Gut Microbiota Variability for Dietary and Therapeutic Interventions

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Kiran Patil, European Molecular Biology Laboratory, Germany
Impact of Therapeutic Drugs on Microbiota Metabolism

Lora V. Hooper, University of Texas Southwestern Medical Center, USA

Metabolism, the Microbiome, and the Circadian Clock

Short Talks Chosen from Abstracts

Poster Session 2

WEDNESDAY, JANUARY 20

Development of the Infant Gut Microbiota (J3)

Joseph F. Petrosino, Baylor College of Medicine, USA
Temporal Development of the Gut Microbiome in Early Childhood from the TEDDY Study

Marie-Claire Arrieta, University of Calgary, Canada
Maturation of the Gut Micro and Mycobiome and Risk of Asthma in Childhood

Erika C. Claud, University of Chicago, USA
Necrotizing Enterocolitis and the Preterm Infant Microbiome

Short Talks Chosen from Abstracts

Microbiome and Immunity (J4)

Ivaylo I. Ivanov, Columbia University, USA
Uptake and Presentation of Commensal Antigens

Wendy S. Garrett, Harvard School of Public Health, USA
Commensal Bacteria, Inflammation and Cancer

Kenya Honda, School of Medicine, Keio University, Japan
Mining the Microbiota and Identifying Effector Microbes that Causally Affect the Host Physiology

Short Talks Chosen from Abstracts

The Influence of Nutrition on Infants' Microbiota and Health (J3)

Steven D. Townsend, Vanderbilt University, USA
Human Milk Oligosaccharides: Defense Against Pathogens

David M. Aronoff, Vanderbilt University, USA
Group B Streptococcus: Transmission of a Pathogen from Mother to Infant

Maria Carmen Collado, Institute of Agrochemistry and Food Technology-Spanish National Research Council, Spain
Impact of Maternal Diet and Environment/Geographical Location on Maternal Breast Milk Neonatal Microbiota

Short Talks Chosen from Abstracts

Optimizing the Microbiota for Cancer Treatment (J4)

Thomas Gajewski, University of Chicago, USA
Using Commensal Microbes to Fight Cancer

Melody Smith, Memorial Sloan Kettering Cancer Center, USA
Intestinal Microbiome Analyses Identify Biomarkers for Patient Response to CAR T Cell Therapy

Laurence Zitvogel, Institut Gustave Roussy, France
Mechanisms By Which Microbiota Impact Tumor Immunosurveillance

Short Talks Chosen from Abstracts

Poster Session 3

THURSDAY, JANUARY 21

The Mother and Infant Microbiome and Neurodevelopment (J3)

Joanne Sordillo[†], Harvard Medical School, USA
Association of the Infant Gut Microbiome with Early Childhood Neurodevelopmental Outcomes

Tracy L. Bale, University of Maryland School of Medicine, USA
The Transfer of Stress and Trauma via the Maternal Vaginal Microbiome

Elaine Y. Hsiao, University of California, Los Angeles, USA
Perinatal Interactions between the Microbiome, Immunity, and Neurodevelopment

Jun R. Huh, Harvard Medical School, USA
Maternal Microbiota and Neurodevelopmental Abnormalities

Short Talks Chosen from Abstracts

The Microbiome, Intestinal Inflammation and Cancer (J4)

Ramnik Xavier, Massachusetts General Hospital, USA
Microbiota Compositions and Inflammatory Bowel Disease

Bana Jabri, University of Chicago, USA
Microbiota, Bowel Inflammation and Celiac Disease

Cynthia L. Sears, Johns Hopkins University School of Medicine, USA
Commensal Bacterial Biofilms associated with Colon Cancer

Short Talks Chosen from Abstracts

The Placental and Endometrial Microbiota – A Debate: Technical Artefact or Biological Reality? (J3)

***Jacques Ravel**, University of Maryland School of Medicine, USA
Indira U. Mysorekar, Washington University School of Medicine, USA
Moving from 'Microbiome' to Microbes in the Placenta and Uncovering Microbial-Immune Crosstalk

Frederic D. Bushman, University of Pennsylvania, USA
De-Discovery of the Placenta Microbiome

Short Talks Chosen from Abstracts

Genetics of Microbe-Microbe Interactions (J4)

Seth Rakoff-Nahoum, Boston Children's Hospital, USA
Talk Title to be Announced

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Chun-Jun Guo, Weill Cornell Medicine, USA

A Genetic Approach to Investigate Microbe-Host Interaction at the Molecular Level

Laurie E. Comstock, Brigham and Women's Hospital/Harvard Medical School, USA

Antagonism within the Microbiota

Andrew L. Goodman, Yale School of Medicine, USA

Survival Strategies in the Gut Microbiome

Short Talks Chosen from Abstracts

Meeting Wrap-Up: Outcomes and Future Directions (Organizers) (J3)

Meeting Wrap-Up: Outcomes and Future Directions (Organizers) (J4)

FRIDAY, JANUARY 22

Departure