

KEYSTONE SYMPOSIA

on Molecular and Cellular Biology

The Human Microbiome: Ecology and Evolution (Q3)

Scientific Organizers: Ruth E. Ley, Alejandro Reyes and C. Jessica Metcalf

Supported by the Directors' Fund

Novel Approaches Against Emerging Antimicrobial Resistance (Q4)

Scientific Organizers: Man-Wah Tan and Deborah T. Hung

February 13-16, 2022 • Fairmont Banff Springs • Banff, AB, Canada

Supported by the Directors' Fund

Scholarship Deadline: October 28, 2021 / Abstract Deadline: November 4, 2021 / Discounted Registration Deadline: December 14, 2021

SUNDAY, FEBRUARY 13

Arrival and Registration

MONDAY, FEBRUARY 14

Welcome and Keynote Address (Q3)

Howard Ochman, University of Texas at Austin, USA
Evolution of the Human Microbiome

Welcome and Keynote Address (Q4)

Eric G. Pamer, University of Chicago, USA
Impact of Antibiotic on Resistance Development, the Microbiome and Human Health

Host Factors and the Microbiome (Q3)

Alexandra Zhernakova, University Medical Center Groningen, Netherlands
Host Genetics in Relation to the Microbiome

C. Jessica Metcalf, Princeton University, USA
Demographics and the Human Microbiome

Nandita Garud, University of California, Los Angeles, USA
Comparative Population Genetics in the Human Gut Microbiome

Short Talk(s) Chosen from Abstracts

Expanding the Source of Chemical Space for Antimicrobial (Q4)

Man-Wah Tan, Genentech, Inc., USA
DNA Encoded Macrocycles and Metagenomic Mining for Antibiotic Discovery

David Bikard, Pasteur Institute and Eligo Bioscience, France
Engineering CRISPR-CAS Systems to Kill Bacteria

Davide Corti, Vir Biotechnology, Switzerland
Advances and Challenges in the Development of Anti-Infective Monoclonal Antibodies

Short Talk(s) Chosen from Abstracts

Workshop 1: Pathways to a Sustainable Antimicrobial Ecosystem (Q4)

Short Talks Chosen from Abstracts

Co-Evolution and Co-Diversification of Microbiota and their Hosts (Q3)

Andrew Moeller, Cornell University, USA
Coevolution of Hominids and their Microbiomes

Katherine R. Amato, Northwestern University, USA
Diet and the Evolution of the Human Microbiome

Ran Blekhan, University of Minnesota, USA
Human Genomics and the Human Microbiome

Short Talk(s) Chosen from Abstracts

Novel Approaches to Discover Therapeutics and Overcome AMR (Q4)

Deborah T. Hung, Broad Institute of MIT & Harvard, USA
Systems Approach to Antimicrobial Discovery

Regina Barzilay, Massachusetts Institute of Technology, USA
with

Jonathan M. Stokes, Massachusetts Institute of Technology, USA
AI-Driven Antibiotic Design: New Weapons Against Old Foes

Houra Merrikh, Vanderbilt University, USA
Blocking the Evolution of Resistance

David S. Weiss, Emory University, USA
Novel Ways to Treat MDR Microbes

Short Talk(s) Chosen from Abstracts

Poster Session 1

TUESDAY, FEBRUARY 15

Controlling the Microbiome for Health (Q3)

Fredrik Bäckhed, University of Gothenburg, Sweden
The Microbiome in Metabolic Disease

Lisa Maier, University of Tübingen, Germany
Microbe-Drug Interactions

Sandrine Claus, Ysopia Bioscience, France
*A New Strain of *Christensenella minuta* as a Potential Biotherapy for Obesity and Associated Metabolic Diseases*

Jens Walter, APC Microbiome Ireland. University College Cork, Ireland

Applying Ecological Theory in Controlling Microbiomes

Short Talk(s) Chosen from Abstracts

Alternatives Approaches to tackle AMR (Q4)

Annette Vogel, BioNTech, Germany
TB Vaccine based on mRNA Technology

Speaker to be Announced

Kimberly Kline, Nanyang Technological University, Singapore
Biofilm and AMR

Heather Pinkett, Northwestern University, USA
Transporters in AMR

Short Talk(s) Chosen from Abstracts

Host-Virus-Microbiome Interactions (Joint)

Andrew T. Gewirtz, Georgia State University / Frontiers, USA
Host-Virus-Microbiome Interactions

Alejandro Reyes, Los Andes University, Colombia
Bioinformatics Approaches to Phage-Host Interactions

Matthew Henn, Seres Therapeutics, USA
Microbiome Therapeutics to Combat Antimicrobial Resistance and Modulate Host Immunity

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Poster Session 2

WEDNESDAY, FEBRUARY 16

Microbe-Microbe Interactions in Shaping the Microbiome (Q3)

Britt Koskella, University of California, Berkeley, USA

How Microbial Interactions Maintain Diversity

Speaker to be Announced

Jeff Gore, Massachusetts Institute of Technology, USA

Modeling Interactions

Kevin Foster, University of Oxford, UK

Cooperation and Competition in Microbes and the Microbiome

Short Talk(s) Chosen from Abstracts

Innovations in Rapid Diagnostic to Combat AMR (Q4)

Pierre Mahé, Biomerieux, France

Diagnosing AMR through Sequencing

Julie A. Segre, National Institutes of Health, USA

*Tracking an Emerging Pathogen *Candida auris* in Nursing Homes with Genomic-Epidemiology*

Kelly Flentie, Selux Diagnostics, Inc, USA

Rapid Phenotypic Antibiotic Susceptibility Testing

Short Talk(s) Chosen from Abstracts

Workshop 2: Lessons Learnt from Covid19 (Q4)

Short Talks Chosen from Abstracts

Molecular Cross Talk (Q3)

Elizabeth L. Johnson, Cornell University, USA

Sphingolipids in the Infant Gut Microbiome

Ruth E. Ley, Max Planck Institute for Developmental Biology, Germany

The Interactions between Bacterial Flagellins and Toll-Like Receptor 5

Eric C. Martens, University of Michigan Medical School, USA

*The *Bacteroides* Capsule in Microbiome Interactions*

Short Talk(s) Chosen from Abstracts

Challenges and Novel Pathways to Develop Alternative Therapies (Q4)

Sumathi Nambiar, Johnson and Johnson, USA

Regulatory Paths and Novel Clinical Endpoints

Laura Piddock, Global Antibiotic R&D Partnership, Switzerland

Sustaining Antimicrobial Innovation

Timothy Jinks, Wellcome Trust, UK

Novel Antimicrobials to Patient: Creating Sustainable R&D and Marketplace for Antimicrobials

Short Talk(s) Chosen from Abstracts

Meeting Wrap-Up: Outcomes and Future Directions (Organizers) (Q3)

Meeting Wrap-Up: Outcomes and Future Directions (Organizers) (Q4)

THURSDAY, FEBRUARY 17

Departure