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Microbiome, Host Resistance and Disease (X4)

joint with the meeting on [Manipulation of the Gut Microbiota for Metabolic Health \(X3\)](#)

Scientific Organizers: Wendy S. Garrett, Yasmine Belkaid and Janelle S. Ayres

March 4–8, 2018

Fairmont Banff Springs, Banff, Alberta, Canada

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Registered attendees of one meeting in a joint pair may participate in sessions of the other, pending space availability.

DEADLINES:

**All deadlines end at 11:59 PM US Mountain Standard Time*

Scholarship Deadline: Nov 1, 2017 [\[details\]](#)

Discounted Abstract Deadline: Nov 1, 2017 [\[details\]](#)

Abstract Deadline: Dec 1, 2017 [\[details\]](#)

Discounted Registration Deadline: Jan 9, 2018 [\[details\]](#)

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Conference Program [Print](#) | [View meeting in 12 hr \(am/pm\) time](#)

The meeting will begin on Sunday, March 4 with registration from 16:00 to 20:00 and a welcome mixer from 18:00 to 20:00. Conference events conclude on Thursday, March 8 with a closing plenary session from 17:00 to 19:00, followed by a social hour and entertainment. We recommend return travel on Friday, March 9 in order to fully experience the meeting.

SUNDAY, MARCH 4

16:00–20:00 **Arrival and Registration** [Van Horne Foyer](#)

18:00–20:00 **Welcome Mixer** [Van Horne Foyer](#)

No registration fees are used to fund alcohol served at this function.

MONDAY, MARCH 5

07:00–08:00 **Breakfast** [Mezzanine 2](#)

08:00–09:00 **Welcome and Keynote Address (Joint)** [Van Horne A/B](#)

[Registered attendees](#) can view abstracts starting on 02/04/2018

* Yasmine Belkaid, NIAID, National Institutes of Health, USA

* Janelle S. Ayres, The Salk Institute for Biological Studies, USA

* Nathalie Delzenne, Université Catholique de Louvain, Belgium

* Liping Zhao, Shanghai Jiao Tong University, China and Rutgers University, USA

Andreas J. Bäumlér, University of California, Davis, USA
Healthy Guts Exclude Oxygen

09:00–11:30 **Microbiota and Cardiovascular-Metabolic Health (Joint)** [Van Horne A/B](#)

[Registered attendees](#) can view abstracts starting on 02/04/2018

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

* Fredrik Bäckhed, University of Gothenburg, Sweden
Mechanistic Studies of the Impact of the Gut Microbiome on Obesity and Type 2 Diabetes

Coffee Break

Susan A. Joyce, University College Cork, Ireland
Bacteria, Bile Acids and Metabolism: Exploring the Host Microbe Interface

Liping Zhao, Shanghai Jiao Tong University, China and Rutgers University, USA
Ecological Understanding of the Causative Role of Gut Microbiota in Obesity and Type 2 Diabetes

Julia H. Kreznar, University of Wisconsin-Madison, USA
Short Talk: Identifying the Genetic Determinants of Gut Microbiome Composition on a Western Diet

Amy McMillan, Cleveland Clinic, USA
Short Talk: The Gut Microbe-Dependent Metabolite Trimethylamine N-oxide (TMAO) Is Associated with Multiple Measures of Periodontal Disease and Cardiovascular Disease Risk

11:30–17:00	On Own for Lunch	
11:30–13:00	Poster Setup	Mezzanine 2
13:00–22:00	Poster Viewing	Mezzanine 2
14:30–16:30	Workshop: Metagenomic, Metatranscriptomic and Multi'Omic Microbiome Analyses (Joint)	Van Horne A/B
	<p>This workshop will provide an introduction to study design tools and analysis methods for emerging molecular tools in microbiome studies: detailed metagenomic, metatranscriptomic, and other culture-independent molecular methods. Alternating between lecture content and hands-on activities, tutorial presentations will walk attendees through the typical steps in a meta'omic study design and analysis workflow: 1) integration of multiple molecular techniques within a study, 2) bioinformatics for metagenomes and metatranscriptomes, 3) and profiling of microbial community features (taxa, strains, pathways, genes, and others). The hands-on components of the tutorial will introduce the bioBakery suite of meta'omic analysis methods, which are publicly available and will be used online through a cloud interface during the workshop. Attendees will work on their personal laptops and interact with their instances through a web browser-based graphical interface (https://bitbucket.org/biobakery/biobakery/wiki/biobakery_workshop). In the time available, each individual tutorial module will occupy ~30-45 minutes combining background lecture and hands-on components for each analysis module.</p> <p>Tutorial Schedule:</p> <p>Introduction 20 min Setup 10 min StrainPhlAn 10 min intro, 25 min lab Break 10 min HUMAN2 15 min intro, 30 min lab</p>	
	* Curtis Huttenhower, Harvard School of Public Health, USA	
16:30–17:00	Coffee Available	Van Horne Foyer
17:00–19:15	The Gut Microbiome in the Control of Fat Metabolism (Joint)	Van Horne A/B
	Registered attendees can view abstracts starting on 02/04/2018	
	* Fredrik Bäckhed, University of Gothenburg, Sweden	
	* Anna Mae Diehl, Duke University Medical Center, USA <i>The Gut Microbiome and NAFLD Pathogenesis</i>	
	Mirko Trajkovski, University of Geneva - CMU, Switzerland <i>The Microbiota and the Browning of Adipose Tissue</i>	
	Patrice D. Cani, Université Catholique de Louvain, Belgium <i>Intestinal Endocannabinoids, Gut Microbes and Adiposity: Novel Mechanisms</i>	
	Kelsey E. Huus, University of British Columbia, Canada <i>Short Talk: The Development of IgA-Lactobacillus Interactions Is Disrupted during Malnutrition and Environmental Enteropathy</i>	
	Philippe Gerard, National Research Institute for Agricultural Research, INRA, France <i>Short Talk: A Bacterial Species Isolated from an Obese Human Gut Triggers Non-Alcoholic Fatty Liver Disease in Germ-Free Mice through Lps-Dependent Mechanism</i>	
19:15–20:15	Social Hour with Lite Bites	Mezzanine 2
	No registration fees are used to fund alcohol served at this function.	
19:30–22:00	Poster Session 1	Mezzanine 2
TUESDAY, MARCH 6		
07:00–08:00	Breakfast	Mezzanine 2

08:00–11:15	<p>The Microbiota of Early Life and Developmental Immunology</p> <p>Registered attendees can view abstracts starting on 02/04/2018</p> <p>Maria G. Dominguez-Bello, Rutgers University, USA <i>Effect of C-Section on the Microbiota and Host Phenotype</i></p> <p>* Andrew J.S. Macpherson, University of Bern, Switzerland <i>The Maternal Microbiota and Early Postnatal Innate Immune Development</i></p> <p>Coffee Break</p> <p>Gregory M. Barton, University of California, Berkeley, USA <i>The Microbiota, Immune Development and T Cell Responses in Early Life</i></p> <p>Michael D. Rosenblum, University of California, San Francisco, USA <i>Neonatal Regulatory T Cells and Immune Tolerance to Skin Commensals</i></p> <p>Brittany Needham, California Institute of Technology, USA <i>Short Talk: Gut Bacterial Production of a Single Metabolite Causes Behavioral Abnormalities Related to Anxiety and Autism Spectrum Disorder</i></p> <p>Michael G. Constantinides, NIAID, National Institutes of Health, USA <i>Short Talk: Mucosal-Associated Invariant T Cells Respond to Cutaneous Microbiota</i></p>	Van Horne A/B
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Following Session is for [Manipulation of the Gut Microbiota for Metabolic Health \(X3\)](#)

08:00–11:15	<p>Microbiota and Metabolic Disorders</p> <p>Registered attendees can view abstracts starting on 02/04/2018</p> <p>* Ruth E. Ley, Max Planck Institute for Developmental Biology, Germany</p> <p>Francois Leulier, Institut de Génomique Fonctionnelle de Lyon, France <i>Host-Microbiota Mutualism upon Chronic Undernutrition: Lessons from Gnotobiotic Animal Models</i></p> <p>Emily P. Balskus, Harvard University, USA <i>Chemical Transformation of Xenobiotics by the Human Gut Microbiota</i></p> <p>Coffee Break</p> <p>Herbert Tilg, Medical University Innsbruck, Austria <i>Microbiome and Liver Diseases</i></p> <p>Eran Elinav, Weizmann Institute of Science, Israel <i>Host Microbiome Interactions in Health and Disease</i></p> <p>Chenhong Zhang†, Shanghai Jiao Tong University, China <i>Short Talk: Predominant Gut Lactobacillus murinus Strain Mediates the Anti-Inflammatory Effects in Calorie-Restricted Mice</i></p> <p>Tim Hendriks, University of California, San Diego, USA <i>Short Talk: Engineered Lactobacillus reuteri that Secretes IL-22 in the Gut Ameliorates Alcohol-Induced Liver Damage in Mice by Inducing Antimicrobial Molecules Reg3B and Reg3γ</i></p>	Van Horne C
11:15–17:00	On Own for Lunch	
11:15–13:00	Poster Setup	Mezzanine 2
13:00–22:00	Poster Viewing	Mezzanine 2
14:30–16:30	<p>Workshop and Panel: Discovery, Translation and Commercialization in Microbiome Research and Development: Opportunities and Challenges</p> <p>David N. Cook, Seres Therapeutics, Inc., USA <i>Treating IBD with Multi-Species Bacterial Consortia</i></p> <p>Henry J. Haiser, Novartis Institutes for BioMedical Research, USA</p> <p>Thomas Gajewski, University of Chicago, USA <i>Prospect of Manipulating the Microbiota as a Cancer Immunotherapeutic</i></p> <p>Maria G. Dominguez-Bello, Rutgers University, USA <i>Challenges in Translation of Microbiome Research</i></p>	Van Horne A/B

16:30–17:00	Coffee Available	Van Horne Foyer
17:00–19:00	<p>Mechanistic Microbiome Function in Physiology and Aging</p> <p>Registered attendees can view abstracts starting on 02/04/2018</p> <p>Meghan A. Koch, University of California, Berkeley, USA <i>Maternal Antibodies Regulate Neonatal Health</i></p> <p>* Vishwa Deep Dixit, Yale University, USA <i>Dietary Restriction, Immunity and Aging</i></p> <p>Sarkis K. Mazmanian, California Institute of Technology, USA <i>Gut Microbiomes from Human Autism Spectrum Disorder Alter Behaviors in Mice</i></p> <p>Nicholas Bessman, Weill Cornell Medicine, USA <i>Short Talk: A Dendritic Cell-Derived Hormone Regulates Microbiome Colonization and Repair in the Intestine</i></p>	Van Horne A/B
Following Session is for Manipulation of the Gut Microbiota for Metabolic Health (X3)		
17:00–19:00	<p>Gut Barrier Alterations and Host Metabolic Disorders</p> <p>Registered attendees can view abstracts starting on 02/04/2018</p> <p>* Robert W. Karp, National Institutes of Health, USA</p> <p>Lora V. Hooper, University of Texas Southwestern Medical Center, USA <i>How the Microbiota, the Immune System and the Circadian Clock Interact to Regulate Metabolism</i></p> <p>Philippe Langella, Institut National de la Recherche Agronomique, France <i>Microbial Bioactive Metabolites and Gut Function</i></p> <p>Michiel Kleerebezem, Wageningen University, Netherlands <i>Small Intestine Microbiota and Host Metabolism</i></p> <p>Jun Sun, University of Illinois at Chicago, USA <i>Short Talk: Vitamin D Receptor Regulation of Microbiome in Inflammation and Obesity</i></p>	Van Horne C
19:00–20:00	<p>Social Hour with Lite Bites</p> <p>No registration fees are used to fund alcohol served at this function.</p>	Mezzanine 2
19:30–22:00	Poster Session 2	Mezzanine 2

WEDNESDAY, MARCH 7

07:00–08:00	Breakfast	Mezzanine 2
08:00–11:15	<p>The Microbiota and Resistance to Infectious Diseases</p> <p>Registered attendees can view abstracts starting on 02/04/2018</p> <p>* Sara R. Cherry, University of Pennsylvania School of Medicine, USA <i>The Microbiota and Viral Resistance in Drosophila</i></p> <p>Howard C. Hang, Rockefeller University, USA <i>Chemical Dissection of Gut Bacteria Protection Mechanisms</i></p> <p>Coffee Break</p> <p>Kerwyn Casey Huang, Stanford University, USA <i>Resilience of the Gut Microbiota to Perturbations</i></p> <p>Ken H. Cadwell, New York University School of Medicine, USA <i>Transkingdom Interactions and Colonization Resistance</i></p> <p>Jeffrey R. Singer, University of Alabama at Birmingham, USA <i>Short Talk: Intestinal Oxygen Regulates Primary Succession and Opportunistic Overgrowth in a Murine Model of Late-Onset Sepsis</i></p> <p>Shai Bel, University of Texas Southwestern Medical Center, USA <i>Short Talk: Paneth Cells Secrete Lysozyme via Secretory Autophagy during Bacterial Infection of the Intestine</i></p>	Van Horne A/B
Following Session is for Manipulation of the Gut Microbiota for Metabolic Health (X3)		
08:00–11:15	<p>Feeding the Gut Microbiota for Health</p> <p>Registered attendees can view abstracts starting on 02/04/2018</p>	Van Horne C

* **Liping Zhao**, Shanghai Jiao Tong University, China and Rutgers University, USA

Jens Walter, University of Alberta, Canada
Modulation of the Human Gut Microbiota with Non-Digestible Carbohydrates - An Ecological Perspective

Nathalie Delzenne, Université Catholique de Louvain, Belgium
Feeding the Gut Microbiota with Prebiotics: Which Consequence for Host Health?

Coffee Break

André Marette, Laval University Hospital Research Center, Canada
Exploring the Interaction between Dietary Polyphenols and the Gut Microbiota to Alleviate Obesity-Linked Diseases

Maria Carmen Collado, Institute of Agrochemistry and Food Technology-Spanish National Research Council, Spain
Maternal Microbiome and its Role in Infant Health

Long H. Nguyen, Massachusetts General Hospital, USA
Short Talk: The Influence of Dietary Patterns and Intake of Sulfur on Sulfate-Reducing Bacteria Abundance and Function

Jared D. Hoffman, University of Kentucky, USA
Short Talk: Prebiotics for the Gut Microbiota as an Intervention for Alzheimer's Disease Prevention in APOE4 Carriers

11:00–17:00

On Own for Lunch

11:00–13:00

Poster Setup

[Mezzanine 2](#)

13:00–22:00

Poster Viewing

[Mezzanine 2](#)

16:30–17:00

Coffee Available

[Van Horne Foyer](#)

17:00–19:00

Disease Tolerance, Pathology and the Microbiome

[Van Horne A/B](#)

[Registered attendees](#) can view abstracts starting on 02/04/2018

Yasmine Belkaid, NIAID, National Institutes of Health, USA
Control of Tissue Immunity and Repair by the Microbiota

Janelle S. Ayres, The Salk Institute for Biological Studies, USA
Muscle Wasting, the Microbiota and Defense Against Bacterial Infections

* **Denise M. Monack**, Stanford University, USA
Microbiota Regulation of Salmonella Persistence and Disease Transmission

Zhenrun Jerry Zhang, Rockefeller University, USA
Short Talk: Control of Salmonella Virulence by Microbiota-Derived Short-Chain Fatty Acids

Following Session is for [Manipulation of the Gut Microbiota for Metabolic Health \(X3\)](#)

17:00–19:15

Xenobiotics-Microbiota Interactions in Metabolic Diseases

[Registered attendees](#) can view abstracts starting on 02/04/2018

[Van Horne C](#)

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

Frederik-Jan Van Schooten, Maastricht University, Netherlands
Gas Production by Microbiota: Biomarkers of Health and Disease?

Mark R. Charbonneau, Synlogic, USA
A Genetically Engineered E. coli Nissle to Prevent Hyperammonemia in Urea Cycle Disorders (UCDs)

Leah Guthrie, Albert Einstein College of Medicine, USA
Short Talk: Human Microbiome Signatures of Differential Colorectal Cancer Drug Metabolism

Silke S. Heinzmann, Helmholtz Centre Munich, Germany
Short Talk: Endogenous and Host-Microbial Co-Metabolites in Human Biofluids to Investigate Gut Microbiome Functionality

James R. Brown, GlaxoSmithKline, USA
Short Talk: A Chemogenomics Approach for the Discovery of Human Host Receptor Interactions with Endogenous Microbial Metabolites

Leyuan Li, University of Ottawa, Canada
Short Talk: Rapid Assay of Individuals' Microbiome (RapidAIM) for Understanding Drug-Microbiome Interaction and High-Throughput Drug Screening

19:00–20:00	Social Hour with Lite Bites No registration fees are used to fund alcohol served at this function.	Mezzanine 2 19:30–22:00 THURSDAY, MARCH 8
Poster Session 3		Mezzanine 2
	07:00–08:00	
	Breakfast	Mezzanine 2
08:00–11:15	Cancer, Metabolism and the Microbiome Registered attendees can view abstracts starting on 02/04/2018 Laure Bindels , Université Catholique de Louvain, Belgium <i>The Gut Microbiota in Cancer Cachexia</i> * Ravid Straussman , Weizmann Institute of Science, Israel <i>The Tumor Microbiome and its Effect on Chemoresistance</i> Coffee Break Dimitra Lamprinaki , Quadram Institute Bioscience, UK <i>Short Talk: Fusobacterium Nucleatum Is Involved in Tumor Progression through Interaction with Lectins Expressed by Myeloid Cells</i> Clarissa Campbell , Memorial Sloan Kettering Cancer Center, USA <i>Short Talk: Extrathymically-Generated Regulatory T Cells Shape the Metabolic Function of the Intestinal Microbiota</i> Marc A. Sze , University of Michigan, USA <i>Short Talk: The Relationship between the Microbiota and Short-Chain Fatty Acid Levels in Individuals with and without Colorectal Lesion</i> Andriy Morgun , Oregon State University, USA <i>Short Talk: Transkingdom Network Reveals Bacterial Players Associated with Cervical Cancer Gene Expression Program</i> Stephanie A. Cevallos , University of California, Davis, USA <i>Short Talk: Investigating a Mechanistic Link Between ER Stress and Colorectal Cancer</i> Yan Yan , Harvard University, USA <i>Short Talk: Metagenomics of the Mucosal and Stool Microbiome in Lynch Syndrome</i>	Van Horne A/B
Following Session is for Manipulation of the Gut Microbiota for Metabolic Health (X3)		
08:00–11:15	Dealing with Microbiome Complexity Registered attendees can view abstracts starting on 02/04/2018 * Joël Doré , INRA / MetaGenoPolis, France Ruth E. Ley , Max Planck Institute for Developmental Biology, Germany <i>Sphingolipid Production by Gut Microbes Impacts Host Metabolism</i> Natalia Shulzhenko , Oregon State University, USA <i>Transkingdom Networks Uncovering Host-Microbiota Interactions</i> Coffee Break Peter J. Turnbaugh , University of California, San Francisco, USA <i>Editing the Microbiome for Precision Medicine</i> Colin Hill , University College Cork, Ireland <i>Phage - Drivers of Microbiome Structure</i> Brantley Hall , Broad Institute of Harvard and MIT, USA <i>Short Talk: Invertible DNA Dynamics in Healthy Individuals Mediates Microbial Adaptation to the Human Gut</i> Penny Oh , Nanyang Technological University, Singapore <i>Short Talk: Friends with Benefits: Gram-Positive Bacteria Keeping Hepatic Clock in Sync</i>	Van Horne C
11:15–17:00	On Own for Lunch	
16:30–17:00	Coffee Available	Van Horne Foyer
17:00–18:45	The Microbiota in Cancer Treatment Toxicities and Immune Response Registered attendees can view abstracts starting on 02/04/2018 * Matthew R. Redinbo , University of North Carolina at Chapel Hill, USA <i>Targeted Inhibitors for the Gut Microbiome</i>	Van Horne A/B

Kristen M. Larsen, University of South Carolina, USA
Short Talk: The Role of the Microbiome in Colorectal Cancer Development and Response to 5-Fluoruracil (5-FU) in ApcMin/+ Mice

Thomas Gajewski, University of Chicago, USA
Anti-Tumor Immune Responses and the Commensal Microbiota

Patricia Diaz, University of Connecticut Health Center, USA
Short Talk: Disruption of Oral Homeostasis by Chemotherapeutic Cancer Treatment

Following Session is for [Manipulation of the Gut Microbiota for Metabolic Health \(X3\)](#)

17:00–18:45

Panel: Faculty and Industry Working Together for Innovation

[Van Horne C](#)

* **Nathalie Delzenne**, Université Catholique de Louvain, Belgium

David N. Cook, Seres Therapeutics, Inc., USA
Bugs as Drugs

Henry J. Haiser, Novartis Institutes for BioMedical Research, USA
Talk Title to be Announced

Joël Doré, INRA / MetaGenoPolis, France
Preserving and Restoring Man-Microbes Symbiosis

18:45–19:00

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

[Van Horne A/B](#)

[Registered attendees](#) can view abstracts starting on 02/04/2018

Following Session is for [Manipulation of the Gut Microbiota for Metabolic Health \(X3\)](#)

18:45–19:00

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

[Registered attendees](#) can view abstracts starting on 02/04/2018

[Van Horne C](#)

19:00–20:00

Social Hour with Lite Bites

No registration fees are used to fund alcohol served at this function.

[Mezzanine 2](#)

20:00–23:00

Entertainment

Entertainment is not subsidized by conference registration fees nor any U.S. federal government grants. Funding for this expense is provided by other revenue sources.

[Mezzanine 2](#)

FRIDAY, MARCH 9

Departure

*Session Chair †Invited, not yet responded.

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