Save the Date for the 2014 Keystone Symposia meeting on:

**Exploiting and Understanding Chemical Biotransformations in the Human Microbiome**

*April 1–6, 2014*  
*Big Sky Resort, Big Sky, Montana, USA*

Scientific Organizers: Peter J. Turnbaugh, Curtis Huttenhower and Michael A. Fischbach

*The conference will:*

- Cover key topics and challenges such as resistance to therapeutics as a result of changes in the microbiome, host-microbial signaling mechanisms, and the consequences of microbial biotransformations and toxicity on health and disease;
- Explore exciting new areas including the discovery of natural products from microorganisms, the potential for synthetic biology to engineer microbiomes, and computational approaches to understand microbial metabolism and biosynthesis;
- Foster long-lasting collaborative partnerships between individuals with wide-ranging expertise from both academia and industry.

For more information and to view the full program, visit [www.keystonesymposia.org/14D1](http://www.keystonesymposia.org/14D1)
**KEYSTONE SYMPOSIA**

**on Molecular and Cellular Biology**

**Exploiting and Understanding Chemical Biotransformations in the Human Microbiome (D1)**

*April 1-6, 2014 • Big Sky Resort • Big Sky, MT, USA*

**Scientific Organizers:** Peter J. Turnbaugh, Curtis Huttenhower and Michael A. Fischbach

*Supported by the Directors’ Fund*

---

**TUESDAY, APRIL 1**

Arrival and Registration

---

**WEDNESDAY, APRIL 2**

**Keynote Address**

*Michael A. Fischbach*, Stanford University, USA

Elaine Holmes, Imperial College London, UK

Trans-Omic Communication in Development and Control of Obesity

**Microbial Interactions with Therapeutics**

Gerry D. Wright, McMaster University, Canada

_Bacterial Inactivation of Anticancer Drugs_

Matthew R. Redinbo, University of North Carolina at Chapel Hill, USA

_Safely and Selectively Modulating the Mammalian Microbiome_

Peter J. Turnbaugh, University of California, San Francisco, USA

_Contributions of the Human Gut Microbiome to Drug Metabolism_

Arik Alper, Yale University, USA

_Short Talk: The Impact of Human Gut Microbial Community Variation on 5-ASA Metabolism_

Libusha Kelly, Albert Einstein College of Medicine, USA

_Short Talk: Diverse and Mobile beta-Glucuronidases Populate Healthy Human Guts_

**NIH Resources and Funding Opportunities to Support Microbiome-Related Research**

*Padma Maruvada*, NIDDK, National Institutes of Health, USA

**Biosynthesis of Small Molecules and Drug Discovery**

*Gerry D. Wright*, McMaster University, Canada

_Energy and Resource Recovery from the Human Gut Microbiome_

Emily P. Strandwitz, Northeastern University, USA

_Short Talk: GABA Is a Growth Factor for Uncultured Bacteria from the Human Gut Microbiome_

**NIH Resources and Funding Opportunities to Support Microbiome-Related Research**

*Padma Maruvada*, NIDDK, National Institutes of Health, USA

---

**THURSDAY, APRIL 3**

**Computational Approaches to Understanding Microbial Metabolism and Biosynthesis**

*Aleksandar David Kostic*, Broad Institute, USA

_Energy and Resource Recovery from the Human Gut Microbiome_

Elhanan Borenstein, University of Washington, USA

_Metagenomic Systems Biology: Toward a Predictive Systems-Level Model of the Human Microbiome_

João B. Xavier, Memorial Sloan-Kettering Cancer Center, USA

_Modeling Intestinal Microbiota Dynamics during Antibiotic Treatment_

Curtis Huttenhower, Harvard School of Public Health, USA

_Multi’omic Characterization of the Gut Microbial Ecosystem for Diagnosis and Therapy in Inflammatory Disease_

Rob Knight, University of California, San Diego, USA

_Microbial Communities Viewed Over Time and Space_

Patrick H. Bradley, Gladstone Institutes, USA

_Short Talk: Assessing the Stability of Protein Family Abundance in the Gut Microbiome_

Dan B. Knights, University of Minnesota, USA

_Short Talk: Linking Complex Host Genetics to Bacterial Dysbiosis in Inflammatory Bowel Disease_

---

**FRIDAY, APRIL 4**

**Engineering Microbiomes**

*Curtis Huttenhower*, Harvard School of Public Health, USA

_Diagnostic Microbes and the Role of the Human Gut Microbiome in Disease Diagnosis and Therapy_

Sean Davies, Vanderbilt University, USA

_Genetically Engineered Therapeutic Bacteria_

Christopher Voigt, Massachusetts Institute of Technology, USA

_Synthetic Metagenomics_

Tom Van de Wiele, Ghent University, Belgium

_Simulating the Human Gut Microbiome_

Liang Ma, California Institute of Technology, USA

_Short Talk: Using Microfluidics for Genetically Targeted Cultivation Validated by Isolation of a “Most Wanted” Microbe from the Human Gut_

* Session Chair † Invited but not yet accepted     Program current as of May 23, 2020. Program subject to change. Meal formats are based on meeting venue. For the most up-to-date details, visit https://www.keystonesymposia.org.
Yannan Zhao, The Scripps Research Institute, USA
*Short Talk: Self-Assembling Cyclic Peptides for Modulating the Gut Microbiome to Treat Atherosclerosis*

**Therapeutics Approaches to Manipulating the Microbiome**

*Matthew R. Redinbo*, University of North Carolina at Chapel Hill, USA

Nathalie Delzenne, Université Catholique de Louvain, Belgium
*Prebiotic Approach: A Nutrition-Based Therapy to Tackle Metabolic Diseases Related to Malnutrition*

Alexander Khoruts, University of Minnesota, USA
*Human Fecal Microbiota Transplantation in Treatment of Clostridium difficile Infection: Metabolic Effects of Engraftment*

Petra Louis, University of Aberdeen, UK
*Dietary Modulation of the Gut Microbiota and Metabolism*

Liping Zhao, Shanghai Jiao Tong University, China and Rutgers University, USA
*Can We Follow Koch's Postulates for Hunting Down Human Obesity Bugs in Gut Microbiota?*

**Poster Session 3**

**SUNDAY, APRIL 5**

**Host-Microbial Interactions**

*Elaine Y. Hsiao*, University of California, Los Angeles, USA
*Heidi H. Kong*, National Institutes of Health, USA
*Host-Microbial Interactions in Healthy Skin and Dermatologic Disorders*

Margaret J. McFall-Ngai, University of Hawai‘i at Mānoa, USA
*Evolutionarily Conserved Signals of Host-Microbe Interaction: Lessons from the Squid-Vibrio Symbiosis*

Katherine P. Lemon, Forsyth Institute, USA
*Nose Picking for Progress: Mining Nasal Microbiota for New Insights into Pathobionts*

Sven Pettersson, Nanyang Technological University, Singapore
*The Maternal Microbiome Influence Placenta Development and Function which can Influence Brain Function Later in Life*

Charisse Petersen, University of Utah, USA
*Short Talk: Direct Detection of the Microbiota by T Cells Prevents Pathobiont Expansion to Maintain Homeostasis*

Tim D. Spector, King’s College London, UK
*Short Talk: Host Genetic Control of the Human Gut Microbiome: A Twin Study*

**Unintended Consequences of Antibiotic Use**

*Peter J. Turnbaugh*, University of California, San Francisco, USA
*Tami Lieberman*, Massachusetts Institute of Technology, USA
*Genomic Evolution and Diversification of a Pathogen within the Patient*

Martin J. Blaser, New York University School of Medicine, USA
*Early Life Exposure to Antibiotics Changes Developmental Phenotypes*