

Keystone Symposia in Taos

Host and the Environment in IBD: Scientific Advances Leading to New Therapeutics

Sagebrush Inn & Suites | Taos, New Mexico, USA | January 13–17, 2019

Scientific Organizers:

Gary D. Wu, Perelman School of Medicine, University of Pennsylvania, USA

Scott Snapper, Boston Children's Hospital, USA

Judy H. Cho, Icahn School of Medicine at Mount Sinai, USA

Aida Habtezion, Stanford School of Medicine, USA

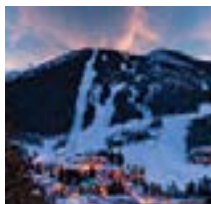
Inflammatory bowel diseases (IBD), which afflict millions of patients, are rapidly increasing in incidence world-wide in parallel with industrialization. Pathogenesis involves both host genetic as well environmental factors, with the most currently utilized therapeutics focusing on long-term host immunosuppression. Despite tremendous advances in our understanding of IBD genetics, the mucosal immune system, and environmental factors such as the gut microbiome, currently available therapeutic modalities for IBD remain suboptimal. The overall goal of this conference is to bring together world-class investigators and clinicians to discuss the latest scientific knowledge relevant to the pathogenesis of IBD and facilitate an interactive discussion to accelerate development of new opportunities to prevent and/or treat IBD. The specific aims of this conference are to: 1) Bring together a combination of clinical and basic investigators from both academia and industry to facilitate cross-disciplinary discussions focused on IBD; 2) Identify both opportunities and gaps in current knowledge in the pathogenesis of IBD important for the development of new diagnostics and therapeutics; and 3) Create a multidisciplinary environment that will inspire both young and established investigators by highlighting the currently available opportunities in IBD research. The anticipated outcome will be a better understanding of the advances and challenges in developing new therapies for patients with IBD.

Plenary Session Topics:

- Clinical Considerations of IBD – What's the Goal?
- Workshop 1: Host Factors in IBD
- Advances in the Genetics of IBD
- The Mucosal Immune System in IBD: Innate Immunity
- The Mucosal Immune System in IBD: Adaptive Immunity
- The Environment in IBD Pathogenesis (Microbiome)
- Workshop 2: Environmental Factors in IBD
- Barrier Function in IBD
- Translational Opportunities (Bench to Bedside and Back Again)
- New Technologies and Collaborations between Industry and Academia

Scholarship/Discounted Abstract Deadline: Sep 20, 2018; Abstract Deadline: Oct 16, 2018; Discounted Registration Deadline: Nov 13, 2018

Visit www.keystonesymposia.org/19A2 for more details.



KEYSTONE SYMPOSIA™
on Molecular and Cellular Biology
Accelerating Life Science Discovery
a 501(c)(3) nonprofit educational organization

HOST AND THE ENVIRONMENT IN IBD: SCIENTIFIC ADVANCES LEADING TO NEW THERAPEUTICS

SUNDAY, JANUARY 13

Arrival and Registration

MONDAY, JANUARY 14

Welcome and Keynote Address

Fiona M. Powrie, University of Oxford, UK
Gut Reactions: Immune Pathways in the Intestine in Health and Disease

Clinical Considerations of IBD – What's the Goal?

Gilaad Kaplan, University of Calgary, Canada
Clinical Epidemiology with the Rising Incidence of IBD Associated with Industrialization

Dermot P. B. McGovern, Cedars-Sinai Medical Center, USA
Using Genomics to Explain the Clinical Heterogeneity of IBD

Séverine Vermeire, KU Leuven, Belgium
Current and Future Therapeutics with Companion Diagnostics in IBD

Speaker to be Announced

Patient Advocate: Living with IBD and the Hope for a Better Tomorrow

Short Talk(s) Chosen from Abstracts

Workshop 1: Host Factors in IBD

Short Talks Chosen from Abstracts

Advances in the Genetics of IBD

Judy H. Cho, Icahn School of Medicine at Mount Sinai, USA
Precision IBD and Population Differences in Innate Immunity

Jeffrey Barrett, Wellcome Trust Sanger Institute, UK
Fine-Mapping Inflammatory Bowel Disease Loci to Single-Variant Resolution

Ramnik Xavier, Massachusetts General Hospital and Broad Institute, USA

From IBD-Associated Genotypes to Altered Cellular and Organismal Function

Short Talk Chosen from Abstracts

Poster Session 1

TUESDAY, JANUARY 15

The Mucosal Immune System in IBD – Innate Immunity

Richard S. Blumberg, Brigham and Women's Hospital, USA
nKT Cells and IBD

Clara Abraham, Yale University, USA
Modulation of Innate Immune Responses by IBD-Associated Genes

Gérard Eberl, Institut Pasteur, France
Innate Lymphoid Cells in Defense, Immunopathology and Immunotherapy

Gabriel Nuñez, University of Michigan, USA
Modeling Innate Immune Interactions with the Gut Microbiota as a Paradigm for IBD Pathogenesis

The Mucosal Immune System in IBD – Adaptive Immunity

Kenneth Smith, University of Cambridge, UK
T-Cell Exhaustion, Co-Stimulation and Clinical Outcome in Autoimmunity and Infection

Vijay K. Kuchroo, Brigham and Women's Hospital, Harvard Medical School, USA

Phenotypes and Differentiation of Pathogenic Th17 Cells

Aida Habtezion, Stanford School of Medicine, USA
Trafficking and Immune Response in IBD

Short Talk(s) Chosen from Abstracts

Poster Session 2

WEDNESDAY, JANUARY 16

The Environment in IBD Pathogenesis (Microbiome)

Andreas J. Bäuml, University of California, Davis, USA
The Genesis of Dysbiosis in IBD: Functional Consequences

June L. Round, University of Utah, USA
The Role of Fungi in IBD

Andrew J.S. Macpherson, University of Bern, Switzerland
The Outer Mucus Layer Hosts a Distinct Intestinal Microbial Niche

David N. Cook, Seres Therapeutics, Inc., USA
A Novel Approach to Treating Active Ulcerative Colitis using Microbial Consortia

Short Talk(s) Chosen from Abstracts

Workshop 2: Environmental Factors in IBD

Short Talks Chosen from Abstracts

Barrier Function in IBD

Thaddeus S. Stappenbeck, Washington University School of Medicine, USA

The Intestinal Epithelium in IBD

Lora V. Hooper, University of Texas Southwestern Medical Center, USA
Antimicrobial Peptides at the Intestinal Mucosal Interface

Andrew T. Gewirtz, Georgia State University, USA
Impacting Intestinal Mucus Barrier via Diet and Microbiota

Short Talk Chosen from Abstracts

Poster Session 3

THURSDAY, JANUARY 17

Translational Opportunities (Bench to Bedside and Back Again)

Gary D. Wu, Perelman School of Medicine, University of Pennsylvania, USA
Engineering the Gut Microbiome in IBD

Scott Snapper, Boston Children's Hospital, USA
Identifying Novel Immune Therapeutics through Studying Rare Diseases

Gregory C. Gibson, Georgia Institute of Technology, USA
Integrative Genomics in Discriminating IBD Disease Progression

Markus F. Neurath, University Hospital Erlangen, Germany
Bridging the Gap between IBD Pathogenesis and the Development of New Therapeutics

Short Talk(s) Chosen from Abstracts

New Technologies and Collaborations between Industry and Academia

Speaker to be Announced

Scott Plevy, Janssen, USA
Preventing IBD through Disease Interception

Chas Bountra, University of Oxford, UK
Big Data in Pharma-Academic Collaborations

KEYSTONE SYMPOSIA

on Molecular and Cellular Biology

Host and the Environment in IBD: Scientific Advances Leading to New Therapeutics (A2)

January 13-17, 2019 • Sagebrush Inn & Suites • Taos, New Mexico, USA

Scientific Organizers: Gary D. Wu, Scott Snapper, Judy H. Cho and Aida Habtezion

Sponsored by Boehringer Ingelheim Pharmaceuticals, Inc., Janssen R&D: Pharmaceutical Companies of Johnson & Johnson, Takeda Pharmaceutical Company Limited and Theravance Biopharma

Abstract & Scholarship Deadline: October 4, 2018 / Abstract Deadline: October 16, 2018 / Discounted Registration Deadline: November 13, 2018

SUNDAY, JANUARY 13

Arrival and Registration

MONDAY, JANUARY 14

Welcome and Keynote Address

***Gary D. Wu**, Perelman School of Medicine, University of Pennsylvania, USA

Fiona M. Powrie, University of Oxford, UK
Gut Reactions: Immune Pathways in the Intestine in Health and Disease

Clinical Considerations of IBD—What's the Goal?

***Gary D. Wu**, Perelman School of Medicine, University of Pennsylvania, USA

Gilad Kaplan, University of Calgary, Canada
Clinical Epidemiology: The Rising Incidence of IBD Associated with Industrialization

Dermot P. B. McGovern, Cedars Sinai Medical Center, USA
Using Genomics to Explain the Clinical Heterogeneity of IBD

Séverine Vermeire, KU Leuven, Belgium
Current and Future Therapeutics with Companion Diagnostics in IBD

John Y. Kao, University of Michigan, USA
Short Talk: Congenital Hypothyroidism Is a Risk Factor for Inflammatory Bowel Disease

Angela Mo, Georgia Institute of Technology, USA
Short Talk: An Expression Based Risk Score for Prediction of Disease Course in Pediatric Ulcerative Colitis

Workshop 1: Host Factors in IBD

***Scott Snapper**, Boston Children's Hospital, USA

***Aida Habtezion**, Stanford School of Medicine, USA

June-Yong Lee, New York University School of Medicine, USA
Pathogenic Role of Serum Amyloid A Proteins in Th17-Mediated Chronic Inflammation

Phi Luong, Boston Children's Hospital, USA
C1ORF106/INAVA-ARNO Complexes Bridge Mucosal Barrier Function with Inflammatory Signaling

Kairui Mao, NIAID, National Institutes of Health, USA
Sequential Innate and Adaptive Immunity Establishes Non-Inflammatory Gut Commensalism and Physiologic Host Lipid Metabolism

Vu Ngo, Georgia State University, USA
IL-36 Receptor Signaling Orchestrates IL-23-Mediated Gut Barrier Repair and Defense

Samuel Rubin, Stanford University School of Medicine, USA
Mass Cytometry Reveals Systemic and Local Immune Signatures that Distinguish Inflammatory Bowel Diseases

Advances in the Genetics of IBD

***Carl Anderson**, Sanger Institute, UK

Judy H. Cho, Icahn School of Medicine at Mount Sinai, USA
Precision IBD and Population Differences in Innate Immunity

Jeffrey Barrett, Genomics plc, UK

Using Human Genetics to Give the Right IBD Patient the Right Drug
Ramnik Xavier, Massachusetts General Hospital and Broad Institute, USA
From IBD-Associated Genotypes to Altered Cellular and Organismal Function

Olga Sazonova, 23andMe, USA
Short Talk: Polygenic Modeling Identifies Individuals whose Genetic Risk for IBD Is Comparable to Positive Family History

Poster Session 1

TUESDAY, JANUARY 15

The Mucosal Immune System in IBD—Innate Immunity

***Aida Habtezion**, Stanford School of Medicine, USA

Richard S. Blumberg, Brigham and Women's Hospital, USA
FcRn Defines Immune Responses to IgG-Containing Immune Complexes

Clara Abraham, Yale University, USA
Modulation of Innate Immune Responses by IBD-associated Genes

Gérard Eberl, Institut Pasteur, France
Type 3 Innate Lymphoid Cells Facing Dietary and Microbial Perturbations

Gabriel Nuñez, University of Michigan, USA
Specific NOD2-Microbiota Interactions Drive Crohn's-Like Disease

Randy S. Longman, Weill Cornell Medical College, USA
Short Talk: Intestinal Mononuclear Phagocyte-Derived TL1A Is a Central Regulator of Group 3 Innate Lymphoid Cells in Inflammatory Bowel Disease

William McAlpine, University of Texas Southwestern, USA
Short Talk: Loss of SMCR8 or WDR41 Results in Immune Dysregulation and Colitis Susceptibility

Naresh Singh Redhu, Boston Children's Hospital, USA
Short Talk: Deletion of STAT1 Ameliorates Early-Onset Colitis in IL10R-deficient Mice

The Mucosal Immune System in IBD—Adaptive Immunity

***Scott Snapper**, Boston Children's Hospital, USA

Eoin McKinney, Cambridge University, UK
T-Cell Exhaustion, Co-Stimulation and Clinical Outcome in Autoimmunity and Infection

Vijay K. Kuchroo, Brigham and Women's Hospital, Harvard Medical School, USA
Induction of Effector and Regulatory T Cells

Aida Habtezion, Stanford School of Medicine, USA
Trafficking and Immune Response in IBD

Wei Yang, University of Alabama at Birmingham, USA
Short Talk: Protein Kinase 2 (CK2) Is Required for CD4+ T Cell Function in the Pathogenesis of Colitis

KEYSTONE SYMPOSIA

on Molecular and Cellular Biology

Host and the Environment in IBD: Scientific Advances Leading to New Therapeutics (A2)

January 13-17, 2019 • Sagebrush Inn & Suites • Taos, New Mexico, USA

Scientific Organizers: Gary D. Wu, Scott Snapper, Judy H. Cho and Aida Habtezion

Sponsored by Boehringer Ingelheim Pharmaceuticals, Inc., Janssen R&D: Pharmaceutical Companies of Johnson & Johnson, Takeda Pharmaceutical Company Limited and Theravance Biopharma

Abstract & Scholarship Deadline: October 4, 2018 / Abstract Deadline: October 16, 2018 / Discounted Registration Deadline: November 13, 2018

Yu Hui Kang, Boston Children's Hospital, USA
Short Talk: STAT1 Signaling Shields T Cells from NK Cell-Mediated Cytotoxicity to Enable Intestinal Inflammation

Poster Session 2

WEDNESDAY, JANUARY 16

The Environment in IBD Pathogenesis (Microbiome)

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

***June L. Round**, University of Utah, USA
A Role for Fungi in IBD

Andrew J.S. Macpherson, University of Bern, Switzerland
Microbial Network Disturbances in Relapsing Refractory Crohn's Disease

David N. Cook, Seres Therapeutics, Inc., USA
A Novel Approach to Treating Active Ulcerative Colitis using Microbial Consortia

Samantha Hsieh, Washington University School of Medicine, USA
Short Talk: Diet Modulates T Cell Immune Responses by Regulating the Expression of a Dominant Antigen from a Gut Symbiont

Eric C. Martens, University of Michigan Medical School, USA
Short Talk: Combined Low Dietary Fiber and Mucus-Degrading Symbiotic Gut Bacteria Cause Lethal Colitis in IL-10 Deficient Mice

Amira Metwally, Technical University of Munich, Germany
Short Talk: Integrative Multi-Omics Identification of Biomarker Microbial Signatures

Workshop 2: Environmental Factors in IBD

***Judy H. Cho**, Icahn School of Medicine at Mount Sinai, USA

***Gary D. Wu**, Perelman School of Medicine, University of Pennsylvania, USA

Roberta Caruso, University of Michigan, USA
Specific Host-Microbiota Interactions Drive the Development of Crohn's Disease-Like Colitis in Mice

Benoit Chassaing, Georgia State University, USA
Dietary Emulsifiers Directly Impact Adherent and Invasive E. coli, Promoting Intestinal Inflammation

Uri Gophna, Tel Aviv University, Israel
Prolonged Antibiotic Treatment of Pouchitis Generates Broad Microbiome-Wide Resistance to Fluoroquinolones as well as Collateral Resistance

Nobuhiko Kamada, University of Michigan, USA
Adherent-Invasive Escherichia coli Employs Diet-Derived Amino Acids to Maximize its Fitness in the Inflamed Gut

Serre-Yu Wong, Mount Sinai Hospital, USA
Host Microbe and Intra-Microbiome Interactions Leading to Small Intestinal Inflammation in Nod2^{-/-} Mice

Sungwhan F. Oh, Brigham and Women's Hospital/Harvard Medical School, USA
Structure and Immunoprotective Functions of Gut Symbiotic Glycosphingolipids: Direct Impact of the Host Diet

Hao Tran, Georgia State University, USA
Flagellin-Elicited Adaptive Immunity Suppresses Flagellated Microbiota and Vaccinates against Chronic Inflammatory Diseases

Emilie Viennois, Georgia State University, USA
Fecal miRNAs, Mediators of the Host-Microbiota Interaction, Can Restore Intestinal Health

Barrier Function in IBD

***Dirk Haller**, Technical University of Munich, Germany

Thaddeus S. Stappenbeck, Washington University School of Medicine, USA
The Intestinal Epithelium in IBD

Lora V. Hooper, University of Texas Southwestern Medical Center, USA
Interactions among the Microbiota, the Immune System and the Circadian Clock

Andrew T. Gewirtz, Georgia State University, USA
Gut microbiota, Diet and Chronic Inflammation

Pradipta Ghosh, University of California, San Diego, USA
Short Talk: Network-Based Approaches to Improve Precision and Prediction in IBD Therapeutics

Jordi M. Lanis, University of Colorado Anschutz Medical Campus, USA
Short Talk: Contributions of Creatine Kinase to Mucosal Immune Responses in Murine Colitis

Poster Session 3

THURSDAY, JANUARY 17

Translational Opportunities (Bench to Bedside and Back Again)

***Judy H. Cho**, Icahn School of Medicine at Mount Sinai, USA

Gary D. Wu, Perelman School of Medicine, University of Pennsylvania, USA
Engineering the Gut Microbiome in IBD

Scott Snapper, Boston Children's Hospital, USA
Identifying Novel Immune Therapeutics through Studying Rare Diseases

Gregory C. Gibson, Georgia Institute of Technology, USA
Integrative Genomics in Discriminating IBD Progression

Markus F. Neurath, University Hospital Erlangen, Germany
Bridging the Gap between IBD Pathogenesis and the Development of New Therapeutics

Dominic Boardman, University of British Columbia, Canada
Short Talk: Engineering Flagellin-Specific Regulatory T Cells to Restore Intestinal Homeostasis in IBD

Ting Fu, The Salk Institute, USA
Short Talk: Nutritional Modulation of Intestinal Innate Immunity by BA-FXR Axis

New Technologies and Collaborations between Industry and Academia

***Clara Abraham**, Yale University, USA

KEYSTONE SYMPOSIA

on Molecular and Cellular Biology

Host and the Environment in IBD: Scientific Advances Leading to New Therapeutics (A2)

January 13-17, 2019 • Sagebrush Inn & Suites • Taos, New Mexico, USA

Scientific Organizers: Gary D. Wu, Scott Snapper, Judy H. Cho and Aida Habtezion

Sponsored by Boehringer Ingelheim Pharmaceuticals, Inc., Janssen R&D: Pharmaceutical Companies of Johnson & Johnson, Takeda Pharmaceutical Company Limited and Theravance Biopharma

Abstract & Scholarship Deadline: October 4, 2018 / Abstract Deadline: October 16, 2018 / Discounted Registration Deadline: November 13, 2018

Scott Plevy, Janssen, USA

*Restoration of Immune and Microbial Homeostasis by a Live Bacterial
Therapeutic: Investigations into Mechanisms and Development of
VE202*

Chas Bountra, University of Oxford, UK

Big Data in Pharma-Academic Collaborations

Elizabeth Wiellette, Draper Laboratory, USA

*Short Talk: A High-Throughput Microphysiologic System to Accurately
Model Human Colon and Ileum*

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

FRIDAY, JANUARY 18

Departure