Scientific Organizers:
Julie A. Segre, National Human Genome Research Institute, National Institutes of Health, USA
Ramnik Xavier, Massachusetts General Hospital and Broad Institute, USA
William Michael Dunne, bioMérieux, Inc., USA

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

Joint with the meeting on Inflammation-Driven Cancer: Mechanisms to Therapy organized by Fiona Powrie, Michael Karin and Alberto Mantovani

This Keystone Symposia meeting brings together experts in clinical medicine, clinical microbiology, microbial genomics and bacterial genetics to explore how both strain variation and underlying microbial community determine health and disease. Genomic advances provide higher-level resolution to both pathogen and host genetic determinants. This meeting aims to explore how monitoring and potentially altering the microbial community may modulate and predict disease risk.

Session Topics:
• Monitoring Microbiome to Predict Disease Risk
• Microbiome and Cancer (Joint)
• Complex Microbiome Analyses
• Panel: The Integrative Human Microbiome Project (iHMP)
• Human Microbiome Studies
• Genetic Diversity and Communication
• Microbiome and Disease
• Molecular Discovery of Novel Antimicrobials
• Systems Microbiology

Global Health Travel Award Application Deadline: September 6, 2016
Scholarship Application & Discounted Abstract Deadline: October 6, 2016
Abstract Deadline: November 3, 2016
Discounted Registration Deadline: December 7, 2016

Note: Scholarships are available for graduate students and postdoctoral fellows and are warded based on the abstract submitted. Global Health Travel Awards are for investigators from low and middle income countries.

Meeting Hashtag: #KSmicrobiome
www.keystonesymposia.org/17J8
Inflammation-Driven Cancer: Mechanisms to Therapy (J7)

Scientific Organizers: Fiona M. Powrie, Michael Karin and Alberto Mantovani

February 5-9, 2017 • Keystone Resort • Keystone, Colorado, USA

Sponsored by Incyte Corporation, Merck & Co., Inc. and Roche. Part of the Keystone Symposia Global Health Series, supported by the Bill & Melinda Gates Foundation.


Workshop 1: Inflammation-Driven Cancer (J7)

*Mathias Florian Heikenwälder, German Cancer Research Center, DKFZ, Germany
*Hua E. Yu, Beckman Research Institute, City of Hope, USA
Ryan Kolb, University of Iowa, USA
IL-1beta promotes obesity-driven breast cancer progression through the upregulation of ANGPTL4 in adipocytes

Sarah McCuaig, University of Oxford, UK
Cytokine-Oncogene Synergies in Colorectal Cancer

Seyed Javad Moghaddam, University of Texas MD Anderson Cancer Center, USA
Muc5ac Plays an Essential Role in Promotion of K-ras Mutant Lung Cancer by Inflammation

Karen Pickering, Beatson Institute, UK
Guanine Nucleotide Exchange Factor Vav1 Promotes Survival in Colorectal Cancer through T-Cell Activation

Na-Young Song, NCI, National Institutes of Health, USA
Determining the Signaling Pathway of Epithelial-JKα/β-Deletion-Mediated Symbiotic Bacterial and Fungal Infection in Carcinogenesis
Chunfeng Qu, Cancer Institute/Hospital, Chinese Academy of Medical Sciences, China
Liver Inflammatory Macrophages in Response to Hepatitis B Virus (HBV) Proteins Promote Hepatocellular Carcinoma by Enhancing Angiogenesis through IL23/IL23R Interaction

Martina Seiffert, German Cancer Research Center, Germany
Tumor Exosome-Derived Y RNA Activates TLR7/8 Signaling in Monocytes and Contributes to Cancer Inflammation and Immune Escape

Fiona M. Watt, King’s College London School of Medicine, UK
Contribution of Different Epidermal Cell Populations to Inflammation-Associated Cancers

Judith A. Varner, University of California, San Diego, USA
Talk Title to be Announced

Min-Kyung Choo, Massachusetts General Hospital/Harvard Medical School, USA
Short Talk: p38 MAPK Functions as a Tumor Suppressor in Skin Epithelial Cells, but as a Tumor Promoter in Myeloid Cells

Jelena Todoric, University of California, San Diego, USA
Short Talk: A Stress Activated p62-NRF2-MDM2 Axis Drives Pancreatic Tumorigenesis

Posters for the Keystone Symposia on Molecular and Cellular Biology

Microbiome in Health and Disease (J8)

Chunfeng Qu, Cancer Institute/Hospital, Chinese Academy of Medical Sciences, China
Liver Inflammatory Macrophages in Response to Hepatitis B Virus (HBV) Proteins Promote Hepatocellular Carcinoma by Enhancing Angiogenesis through IL23/IL23R Interaction

Martina Seiffert, German Cancer Research Center, Germany
Tumor Exosome-Derived Y RNA Activates TLR7/8 Signaling in Monocytes and Contributes to Cancer Inflammation and Immune Escape

Microbiome and Cancer (Joint)

*Arthur Kaser, University of Cambridge, UK
Laurence Zitvogel, Institut Gustave Roussy, France
Microbe Driven Anti-Tumor Immunity

Giorgio Trinchieri, NCI, National Institutes of Health, USA
Role of the Microbiota in Inflammation, Carcinogenesis and Cancer Therapy

Curtis Huttenhower, Harvard School of Public Health, USA
Functional Analysis of Strains in the Human Gut Metatranscriptome

Cynthia L. Sears, Johns Hopkins University School of Medicine, USA
The Carcinogenic Potential of Bacterial Biofilms

TUESDAY, FEBRUARY 7

Complex Microbiome Analyses (J8)

*Julie A. Segre, NHGRI, National Institutes of Health, USA
Rob Knight, University of California, San Diego, USA
Human Microbiome and Metabolome Dynamics

Eric J. Alm, Massachusetts Institute of Technology, USA
FMT Complex Analyses

Michael A. Fischbach, University of California, San Francisco, USA
Small Molecules from the Human Microbiota

Katherine S. Pollard, University of California, San Francisco, USA
Decoding Cryptic Variation in the Human Microbiome

Kelly Wen Li Chen, Massachusetts Institute of Technology, USA
Short Talk: Integrated Gut/Liver Microphysiological System Elucidates Cytokine/Chemokine Inter-Tissue Crosstalk under Endotoxin-Induced Stress

Inflammation and Cancer Stem Cells (J7)

*Owen J. Sansom, Beatson Institute for Cancer Research, UK
Florian R. Greten, Institute for Tumor Biology and Experimental Therapy, Germany
Stem Cells and Intestinal Tumorigenesis

Simon J. Leedham, University of Oxford, UK
Morphogen Signaling in Intestinal Inflammation and Carcinogenesis

Fiona M. Watt, King’s College London School of Medicine, UK
Contribution of Different Epidermal Cell Populations to Inflammation-Associated Cancers

Judith A. Varner, University of California, San Diego, USA
Talk Title to be Announced

Min-Kyung Choo, Massachusetts General Hospital/Harvard Medical School, USA
Short Talk: p38 MAPK Functions as a Tumor Suppressor in Skin Epithelial Cells, but as a Tumor Promoter in Myeloid Cells

Jelena Todoric, University of California, San Diego, USA
Short Talk: A Stress Activated p62-NRF2-MDM2 Axis Drives Pancreatic Tumorigenesis

Panel: The Integrative Human Microbiome Project (iHMP) (J8)

Giorgio Trinchieri, NCI, National Institutes of Health, USA
Immunoglobulin A Attenuates Colonic Tumorigenesis by Controlling Microbial Translocation and Tumor-Elicited Inflammation

Ankit Malik, St Jude Children's Research Hospital, USA
IL-33 Regulates the IgA-Microbiota Axis to Restrain IL-1alpha Dependent Colitis and Tumorigenesis

Andrea Ponzetta, Humanitas Clinical and Research Center, Italy
Neutrophils are Protective in Cancerogenesis by Altering Tumor Microenvironment and Controlling Intestinal Microbiota

Sabine Waebber, Université de Lausanne, Switzerland
Mesenchymal Stem Cells from Human Squamous Cell Lung Carcinoma Modulate Natural Killer (NK) Cell Phenotype and Function

Martina Molgora, Humanitas Research Hospital, Italy
Interleukin-1 Receptor 8 (IL-1R8) Plays a Crucial Role in Natural Killer Cell Differentiation and Function

Venuprasad K. Poojary, Baylor Institute for Immunology Research, USA
A Novel Role for Itch in Inhibition of IL-17-Mediated Colon Inflammation and Tumorigenesis by ROR-gammat Ubiquitination

Christoph Andreas Reichel, Walter Brendel Centre of Experimental Medicine, Germany
Complex Formation of uPA and PAI-1 Promotes Myeloid Leukocyte Trafficking

Workshop 2: Inflammation and Immunity Crosstalk (J7)

*Giorgio Trinchieri, NCI, National Institutes of Health, USA
Laurence Zitvogel, Institut Gustave Roussy, France
Microbe Driven Anti-Tumor Immunity

Giuseppe Di Caro, University of California, San Diego, USA
Immunoglobulin A Attenuates Colonic Tumorigenesis by Controlling Microbial Translocation and Tumor-Elicited Inflammation

Ankit Malik, St Jude Children's Research Hospital, USA
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Human Microbiome Studies (J8)

*Ramnik Xavier*, Massachusetts General Hospital and Broad Institute, USA

Andrew L. Goodman, Yale School of Medicine, USA

Cooperation and competition in the human gut microbiome

Julie A. Segre, NHGRI, National Institutes of Health, USA

Human Skin Microbiome: Topographic Functional Mapping of Healthy Volunteers and Patient Populations

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

Diet, the Gut Microbiome, and Inflammatory Bowel Disease

Renuka Nayak, University of California, San Francisco, USA

Short Talk: Methotrexate Is an Antibacterial Drug Metabolized by Human Gut Bacteria

Tumor Elicited Inflammation (J7)

*Ming O. Li*, Memorial Sloan-Kettering Cancer Center, USA

Yining Hu, National Cancer Institute at Frederick, USA

IKKalpha, Autoimmunity, and Chronic Fungal Infection in Esophageal and Skin Carcinogenesis

Hua E. Yu, Beckman Research Institute, City of Hope, USA

Stat 3 in Cancer Inflammation and as a Target in Cancer

Owen J. Sansom, Beatson Institute of Cancer Research, UK

Targeting Myeloid Cells in Epithelial Cancers

Elena Tosti, Albert Einstein College of Medicine, USA

Short Talk: Methyltransferase Is a Novel Target in Colorectal Tumorigenesis

Microbiome and Disease (J8)

*Timothy K. Lu*, Massachusetts Institute of Technology, USA

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

Microbial Metabolites that Modify Intestinal Wound Repair

Kathryn E. Holt, University of Melbourne, Australia

Klebsiella Pneumoniae and the Microbiome

Ami S. Bhatt, Stanford University, USA

Metagenomics and the Microbiome in Stem Cell Transplantation

Lindsay R. Kalan, University of Pennsylvania, USA

Short Talk: Multi-Kingdom Microbial Communities of Chronic Non-Healing Wounds and their Association with Clinical Outcomes

Inflammation and Immunity Crosstalk I (J7)

*Shannon J. Turley*, Genentech, Inc., USA

Michael Karin, University of California, San Diego, USA

Immune Crosstalk in Tumors

Alberto Mantovani, Humanitas University, Italy

Innate Immune Pathways and the Tumor Microenvironment

Ming O. Li, Memorial Sloan-Kettering Cancer Center, USA

Immunity and Tolerance in Cancer

Toby Lawrence, INSERM, France

Mechanisms of Tumour-Associated Macrophage (TAM) Polarisation

Sven Brandau, University Duisburg-Essen, Germany

Short Talk: Absence of Endogenous Toll-Like Receptor Sensing Unleashes Protective Anti-Tumor Immunity and Tumor Regression

George Pitas, Memorial Sloan Kettering Cancer Center, USA

Short Talk: CD177 Identifies a Novel Subset of Regulatory T Cells (Treg) Infiltrating Human Breast Cancer

Microbiome and Disease (J8)

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

Microbial Metabolites that Modify Intestinal Wound Repair

Kathryn E. Holt, University of Melbourne, Australia

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Short Talk: Multi-Kingdom Microbial Communities of Chronic Non-Healing Wounds and their Association with Clinical Outcomes

Stromal Cells and the Tumor Microenvironment (J7)

*Alberto Mantovani*, Humanitas University, Italy

Shannon J. Turley, Genentech, Inc., USA

Leukocyte Function and Positioning in Diverse Stromal Niches

Daniel L. Worthley, SAHMRI, Adelaide, Australia

Intestinal Mesenchyme in the Normal and Neoplastic Colon

Raghu Kalluri, University of Texas MD Anderson Cancer Center, USA

The Functional Role of Inflammation and Fibrosis in Pancreatic Cancer

*Session Chair † Invited but not yet accepted Program subject to change. Meal formats are based on meeting venue. For the most up-to-date details, visit www.keystonesymposia.org/17J8 and www.keystonesymposia.org/17J7.

* Thanassis K. Papanicolaou, Washington University School of Medicine, USA

* Ana D. Varela, National Institute of Diabetes and Digestive and Kidney Diseases, USA

* Matthew R. Sewell, National Human Genome Research Institute, USA

* John M. Hiscott, University of British Columbia, Canada

* Eunice N. Welliver, Tufts University, USA

* Kevin J. Kusmiesz, University of Pennsylvania, USA

* Raj Merchant, Scripps Research Institute, USA

* Peter W. Fox, University of British Columbia, Canada

* Katherine S. Pollard, University of California, San Francisco, USA

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

* Ramnik Xavier, Stanford University School of Medicine, USA

* Julie A. Segre, National Human Genome Research Institute, USA

* Karen Guillemin, Stanford University School of Medicine, USA

* Andrew L. Goodman, Yale University School of Medicine, USA

* Lynne P. Yen, University of Pennsylvania School of Medicine, USA

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

* Renuka Nayak, University of California, San Francisco, USA

* Katherine S. Pollard, University of California, San Francisco, USA
Gautam Dantas, Washington University School of Medicine, USA
Networks of Exchanging Antibiotic Resistance Between Commensal, Environmental, and Pathogenic Bacteria

William Michael Dunne, bioMérieux, Inc., USA
Next Generation Antimicrobial Susceptibility Testing

Andreas Peschel, University of Tübingen, Germany
Staphylococcus Aureus in the Human Nose - A Facultative Pathogen’s Interference with Microbiota

Silvio M. Vieira, Yale University, USA
Short Talk: A Gut Commensal Breaches Both Gut Lymphatic and Vascular Barriers to Drive Systemic Autoimmunity

Jonathan L. Linehan, NIAID, National Institutes of Health, USA
Short Talk: Cutaneous Commensal Bacteria Drive an Unconventional T Cell Response that Accelerates Wound Healing

Inflammation and Immunity Crosstalk II (J7)

*Jane L. Grogan, Genentech, Inc., USA
Weiping Zou, University of Michigan, USA
Metabolic Control of Effector T Cells and Regulatory T Cells in Tumor

Thomas Gajewski, University of Chicago, USA
Host Factors Controlling Anti-Tumor Immunity: Unexpected Impact of the Commensal Microbiota

E. John Wherry, University of Pennsylvania, USA
Molecular Basis of T Cell Exhaustion: Insights for Immunotherapy

Martin Oft, ARMO BioSciences, USA
Talk Title to be Announced

Bronislaw Pytwski, Eli Lilly, USA
Short Talk: The Effect of VEGFR2 Inhibition on Tumor Blood Vessels and Immune Landscape

Workshop 2: Metagenomic Analysis (J8)

*Gautam Dantas, Washington University School of Medicine, USA
Michael G. Constantinescu, NIAID, National Institutes of Health, USA
Mucosal-Associated Invariant T Cells Respond to Cutaneous Microbiota

Collin Edington, Massachusetts Institute of Technology, USA
Development of Bioreactor Devices for Microbiome and Multi-Organ Interaction Studies

Sho Kitamoto, University of Michigan Medical School, USA
Gut Inflammation-Driven Metabolic Reprogramming Regulates the Competitive Fitness of Pathogenic E. coli

David T. Riglar, Harvard Medical School, USA
Gut Feelings: Engineering Synthetic Bacterial Circuits to Functionally Probe the Mammalian Gut Microbiome

Neil Surana, Harvard Medical School, USA
Discovery of Disease-Modulating Microbiota Using Microbial Pedigree Analysis

Workshop 3: Prevention and Therapy (J7)

*Carola H. Ries, Roche Innovation Center Munich, Germany
E. John Wherry, University of Pennsylvania, USA
Eduardo Bonavita, Cancer Research UK Manchester Institute, University of Manchester, UK
COX-2 Expression Positively Associates with Tumor-Promoting Inflammatory Factors and Negatively with Anti-Tumor Immune Pathways in Human Cancer

David N. Brindle, University of Alberta, Canada
Blocking the Inflammatory Effects of Lysophosphatidate Signaling as a New Strategy for Decreasing Tumor Growth, Metastasis and Improving Chemotherapy

Feng Zhu, NCI, National Institutes of Health, USA
Fungal Infection and Immune Dysfunction Contribute to Esophageal Carcinogenesis

Kayla Knilans, NIAID, National Institutes of Health, USA
Type 2 Signaling Improves Survival and Reduces Tumor Growth in a Mouse Model of Colitis-Associated Cancer

Jeff Kwak, University of Colorado Denver, USA
Complement Activation Mediates Lung Cancer Progression and Metastasis through Alterations in CD4 T Lymphocytes

Max Wellenstein, Netherlands Cancer Institute, Netherlands
Loss of p53 Drives Systemic Neutrophilic Inflammation in Breast Cancer

Systems Microbiology (J8)

*Karen Guillemin, University of Oregon, USA
Timothy K. Lu, Massachusetts Institute of Technology, USA
Engineering the Microbiome

James Amos-Landgraf, University of Missouri, USA
Suppression of Tumor Growth using Biofilm Producing Sulfate-Reducing Bacteria in a Rat Model of Colon Cancer

Sean F. Brady, Rockefeller University, USA
Microbial Biosynthetic Diversity

Alexandra Zhernakova, University Medical Center Groningen, Netherlands
Short Talk: Interaction of Genetics and Food Intake Influences Gut Microbiota Composition

Prevention and Therapy (J7)

*Thomas Gajewski, University of Chicago, USA

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Carola H. Ries, Roche Innovation Center Munich, Germany
Combining Macrophage Targeting with Cancer Immunotherapies

Jane L. Grogan, Genentech, Inc., USA
The Inhibitory Immunoreceptor TIGIT Limits Anti-Tumor Immunity

Jen Morton, Cancer Research UK Beatson Institute, Scotland
Short Talk: Myeloid Cells as a Therapeutic Target in Pancreatic Cancer