Carcinogenesis is the result of a complex interplay of cell intrinsic and extrinsic processes that promote genomic instability, sustained proliferation, resistance to apoptosis, reprogramming and reorganization of the stromal environment. An immune cell infiltrate is a characteristic feature of many tumors, and it is increasingly appreciated that immunity and inflammation are key determinants of tumor development and progression. This meeting will consider the molecular and environmental factors that shape the extensive cross-talk between immune, stromal and cancer cells in the tumor microenvironment. Positioned at the interface of cancer cell signaling, stem cells, inflammatory pathways and microbial drivers, this meeting should provide new insights into the factors that control the balance between tumor-promoting and tumor-suppressive immunity and inflammation and how this can be applied in the prevention and treatment of cancer. The meeting will attract a multi-disciplinary group of cancer cell biologists, immunologists and inflammation biologists and will be of interest to basic and clinical scientists alike.
SUNDAY, FEBRUARY 5
Arrival and Registration

MONDAY, FEBRUARY 6
Welcome and Keynote Address (J7)
*Fiona M. Powrie, University of Oxford, UK
Lisa M. Coussens, Oregon Health & Science University, USA
The Microbiome in Health and Disease

Welcome and Keynote Address (J8)
*William Michael Dunne, bioMérieux, Inc., USA
Sarkis K. Mazmanian, California Institute of Technology, USA
The Gut-Microbiome-Brain Connection in Neurological Diseases

Inflammation-Driven Cancer (J7)
*Michael Karin, University of California, San Diego, USA
Fiona M. Powrie, University of Oxford, UK
Mathias Florian Heikenwälder, German Cancer Research Center, DKFZ, Germany
On the Role of Immune Cells in NASH and NASH to HCC Transition
Arthur Kaser, University of Cambridge, UK
ER Stress and Colorectal Cancer

Jeonghyun Ahn, University of Miami, USA
Short Talk: The Role of STING in Suppressing Inflammation-Driven Intestinal Tumorigenesis

Matthias Ernst, Olivia Newton-John Cancer Research Institute, Australia
Short Talk: Excessive HCK Kinase Activity in the Tumor Stroma Polarizes Macrophages and Promotes Solid Malignancies

Monitoring Microbiome to Predict Disease Risk (J8)
*William Michael Dunne, bioMérieux, Inc., USA
Ramnik Xavier, Massachusetts General Hospital and Broad Institute, USA
IBD, Crohn’s Microbiome

Dan R. Littman, HHMI, New York University School of Medicine, USA
Regulation of T Cell Responses by Microbiota

Curtis C. Harris, NCI, National Institutes of Health, USA
Microbiome-TP53 Gene Interaction in Human Lung Cancer

NIH Institutes’ Interests in Microbiome Research (J8)
*Robert W. Karp, National Institutes of Health, USA
Ryan Ranallo, NIAID, National Institutes of Health, USA
Phil J. Daschner, NCI, National Institutes of Health, USA
Elisabet Caler, NHLBI, National Institutes of Health, USA
Ricardo Cibotti, NIAMS, National Institutes of Health, USA
Francesca Macchiarini, NIA, National Institutes of Health, USA

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-IKKalpha-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

Workshop 1: Microbiome in Health and Disease (J8)
*Ami S. Bhatt, Stanford University, USA
Michael C. Abt, Sloan Kettering Institute, USA
Host Immune Response Supports Fecal Microbiota Transplant-Mediated Clearance of Clostridium Difficile Infection
Dingding An, Harvard Medical School, USA
Microbial Sphingolipids Modulate Host Epithelial Homeostasis and Disease
Naama Geva-Zatorsky, Harvard Medical School, USA
Gut Microbiota-Host Interactions and their Immune Modulations
Yun-Gi Kim, Keio University, Japan
Neonatal Acquisition of Clostridia Species Controls Colonization Resistance Against Bacterial Pathogens
Monica Viladomiu, Weill Cornell Medicine, USA
Functional Characterization of IgA-Targeted E. coli in Crohn’s Disease-Associated Spondyloarthritis Links Mucosal Immunity with Systemic Inflammation
Xochitl Morgan, University of Otago, New Zealand
Gut Microbiota Acquisition in New Zealand Children in Relation to Early Life Exposures Including Probiotics: A Longitudinal Analysis
Ana Weil, Massachusetts General Hospital, USA
The Human Gut Microbiota and Susceptibility to Vibrio cholerae O1 Infection

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

Poster Session 1

TUESDAY, FEBRUARY 7

Inflammation and Cancer Stem Cells (J7)
*Owen J. Sansom, Beatson Institute of Cancer Research, UK
Florian R. Greten, Institute for Tumor Biology and Experimental Therapy, Germany
Stem Cells and Intestinal Tumorogenesis
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

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

Workshop 2: Inflammation and Immunity Crosstalk (J7)
*Giorgio Trinchieri, NCI, National Institutes of Health, USA
Laurence Zitvogel, Institut Gustave Roussy, France
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
IL-33 Regulates the IgA-Microbiota Axis to Restrains IL-1alpha Dependent Colitis and Tumorigenesis
Andrea Ponzetta, Humanitas Clinical and Research Center, Italy
Neutrophils are Protective in Carcinogenesis by Altering Tumor Microenvironment and Controlling Intestinal Microbiota
Sabine Waeger, 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-gammaqutubinisation
Christoph Andreas Reichel, Walter Brendel Centre of Experimental Medicine, Germany
Complex Formation of uPA and PAI-1 Promotes Myeloid Leukocyte Trafficking

Panel: The Integrative Human Microbiome Project (iHMP) (J8)
Gregory A. Buck†, Virginia Commonwealth University, USA
Pregnancy and Preterm Birth
*Curtis Huttenhower, Harvard School of Public Health, USA
Inflammatory Bowel Disease
George M. Weinstock, The Jackson Laboratory, USA
Prediabetes
Anup Mahurkar, University of Maryland Baltimore, USA

* Session Chair † Invited but not yet accepted Program current as of January 15, 2017. Program subject to change. Meal formats are based on meeting venue. For the most up-to-date details, visit www.keystonesymposia.org/17J7 and www.keystonesymposia.org/17J8.
Inflammation-Driven Cancer: Mechanisms to Therapy (J7)
Scientific Organizers: Fiona M. Powrie, Michael Karin and Alberto Mantovani

Microbiome in Health and Disease (J8)
Scientific Organizers: Julie A. Segre, Ramnik Xavier and William Michael Dunne

**Inflammation and Immunity Crosstalk I (J7)**

*T. Ming O. Li,* Memorial Sloan-Kettering Cancer Center, USA  
**Yinling 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: CD177 Identifies a Novel Subset of Regulatory T Cells Unleashes Protective Anti-Tumor Immunity and Tumor Regression**

**Human Microbiome Studies (J8)**

*R. Ramnik Xavier,* Massachusetts General Hospital and Broad Institute, USA  
**Andrew L. Goodman,** Yale School of Medicine, USA  
**K合作与竞争在人类肠道微生物**  
**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**

**Poster Session 2**

**Inflammation and Immunity Crosstalk II (J7)**

*Shannon J. Turley,* Genentech, Inc., USA  
**Leukocyte Function and Positioning in Diverse Stromal Niches**

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

**Raghuram Kalluri,** University of Texas MD Anderson Cancer Center, USA  
**Short Talk: A Dietary Fiber-Deprived Gut Microbiota Degrades the Colonic Mucus Barrier and Enhances Pathogen Susceptibility**

**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  
**Short Talk: Interdisciplinary Studies of Select Major Human Bacterial Pathogens**

**Owen J. Sansom,** Beatson Institute of Cancer Research, UK  
**Short Talk: Network Biology Approaches to Understanding Inflammation**

**Renuka Nayak,** University of California, San Francisco, USA  
**Short Talk: Personalized Nutrition using Gut Microbiome and Clinical Data**

**Karen Guillemin,** University of Oregon, USA  
**Modulation of Host Innate Immune Responses by Individual Microbiota Members**

**Eran Segal,** Weizmann Institute of Science, Israel  
**Personalized Nutrition using Gut Microbiome and Clinical Data**

**James M. Musser,** Methodist Hospital Research Institute, USA  
**Short Talk: Intestinal Metagenomics and the Microbiome in Stem Cell Transplantation**

**Lindsay R. Kalan,** University of Pennsylvania School of Medicine, USA  
**Short Talk: Metagenomics and the Microbiome in Stem Cell Transplantation**

**Mahesh S. Desai,** Luxembourg Institute of Health, Luxembourg

**Elizabeth M. Johnston,** University of British Columbia, Canada  
**Short Talk: Targeting Myeloid Cells in Epithelial Cancers**

**James M. Musser,** Methodist Hospital Research Institute, USA  
**Interdisciplinary Studies of Select Major Human Bacterial Pathogens**

**Karen Guillemin,** University of Oregon, USA  
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Inflammation-Driven Cancer: Mechanisms to Therapy (J7)

Scientific Organizers: Fiona M. Powrie, Michael Karin and Alberto Mantovani
Sponsored by Incyte Corporation, Merck & Co., Inc. and Roche. Part of the Keystone Symposia Global Health Series, supported by the Bill & Melinda Gates Foundation.

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

*Carola H. Ries, Roche Innovation Center Munich, Germany

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

Microbiome in Health and Disease (J8)

Scientific Organizers: Julie A. Segre, Ramnik Xavier and William Michael Dunne
February 5-9, 2017 • Keystone Resort • Keystone, Colorado, USA
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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*