Scientific Organizers:
Fiona M. Powrie, University of Oxford, UK
Michael Karin, University of California, San Diego, USA
Alberto Mantovani, Humanitas University, Italy

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

Joint with the meeting on Microbiome in Health and Disease

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.

Session Topics:
• Inflammation-Driven Cancer
• Microbiome and Cancer (Joint)
• Inflammation and Cancer Stem Cells
• Tumor-Elicited Inflammation
• Inflammation and Immunity Crosstalk I & II
• Stromal Cells and the Tumor Microenvironment
• Prevention and Therapy

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 awarded based on the abstract submitted. Global Health Travel Awards are for investigators from low and middle income countries.

Meeting Hashtag: #KSinflamcancer
www.keystonesymposia.org/17J7
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

Welcome and Keynote Address (J8)
*William Michael Dunne, bioMérieux, Inc., USA
Sarkis K. Mazmanian, California Institute of Technology, USA

Inflammation Driven Cancer (J7)
*Micahel 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

Inflammation Driven Cancer: Mechanisms to Therapy (J7)
*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.

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
Sponsored by Intercept Pharmaceuticals, Inc., Merck & Co., Inc. and Novartis Institutes for BioMedical Research. 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-Oncoogene 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

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 Epithelium 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

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

NIH Institutes’ Interests in Microbiome Research (J8)
*Rober 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

* 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.
Microbiome and Cancer (Joint)

*Arthur Kaser, University of Cambridge, UK
Laurence Zitvogel, Institut Gustave Roussy, France
Giorgio Trinchieri, NCI, National Institutes of Health, USA
Jelena Todoric, University of California, San Diego, USA
Min-Kyung Choo, Massachusetts General Hospital, USA
Judith A. Varner, King's College London School of Medicine, UK
Fiona M. Watt, Beatson Institute of Cancer Research, UK
Simon J. Leedham, University of Oxford, UK
Julie A. Segre, NHGRI, National Institutes of Health, USA
Anup Mahurkar, The Jackson Laboratory, USA

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
Owen J. Sansom, Beatson Institute of Cancer Research, UK
Ankit Malik, St Jude Children's Research Hospital, USA
Christoph Andreas Reichel, Walter Brendel Centre of Experimental Medicine, Germany

Complex Microbiome Analyses (J8)

*Julie A. Segre, NHGRI, National Institutes of Health, USA
Rob Knight, University of California, San Diego, USA

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
Andrea Ponzetta, Humanitas Clinical and Research Center, Italy
Sabine Waaber, Université de Lausanne, Switzerland
Martina Molgora, Humanitas Research Hospital, Italy

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

Gregory A. Buck, Virginia Commonwealth University, USA
*Curtis Huttenhower, Harvard School of Public Health, USA
George M. Weinstock, The Jackson Laboratory, USA

For the most up-to-date details, visit www.keystonesymposia.org/17J7 and www.keystonesymposia.org/17J8.
Tumor Elicited Inflammation (J7)

*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)

*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

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

Genetic Diversity and Communication (J8)

*Thaddeus S. Stappenbeck, Washington University School of Medicine, USA
Karen Guillemie, 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
Robert E.W. Hancock, University of British Columbia, Canada
Network Biology Approaches to Understanding Inflammation
James M. Musser, Methodist Hospital Research Institute, USA
Interdisciplinary Studies of Select Major Human Bacterial Pathogens
Mahesh S. Desai, Luxembourg Institute of Health, Luxembourg
Short Talk: A Dietary Fiber-Deprived Gut Microbiota Degrades the Colon Mucus Barrier and Enhances Pathogen Susceptibility

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

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 II (J7)

*Jane L. Grogan, Genentech, Inc., USA
Weiiping 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 Pytowski. Eli Lilly, USA
Short Talk: The Effect of VEGFR2 Inhibition on Tumor Blood Vessels and Immune Landscape

Molecular Discovery of Novel Antimicrobials (J8)

*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

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. Brindley. 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

Workshop 2: Metagenomic Analysis (J8)

*Gautam Dantas. Washington University School of Medicine, USA
Michael G. Constantines. 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

Prevention and Therapy (J7)

*Thomas Gajewski. University of Chicago, USA
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

Kristen M. Larsen. University of South Carolina, USA
Short Talk: The Role of Interleukin 33/ST2 Axis in Liver Metastasis of Colorectal Cancer

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

Meeting Wrap-Up: Outcomes and Future Directions (Organizers) (J7)

Meeting Wrap-Up: Outcomes and Future Directions (Organizers) (J8)

FRIDAY, FEBRUARY 10

Departure
Systems Microbiology (J8)

*Karen Guillemin*, University of Oregon, USA
*Timothy K. Lu*, Massachusetts Institute of Technology, USA
*James Amos-Landgraf*, University of Missouri, USA

Engineering the Microbiome

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