



Join Keystone Symposia
for the 2016 conference on:

Cell Biology and Immunology of Persistent Infection

January 31–February 4, 2016

Fairmont Banff Springs | Banff, Alberta | Canada

Scientific Organizers: Herbert (Skip) W. Virgin, E. John Wherry,
Anne O'Garra and Andrea Lynn Cox

Persistent infections are a major source of morbidity and mortality around the world. However, it is increasingly clear that the bacterial microbiome, the virome and the mycobiome can have beneficial roles for the host. Chronic infections with pathogens represent a failure of sterilizing immunity, but the mechanisms responsible for persistence and the balance between host health and disease resulting from infection are not completely understood. This meeting is designed to bring together diverse communities of researchers at the cutting edge of their fields to understand whether and how to manipulate persistent infections to prevent disease and enhance health.

Session Topics:

- Genetics and Systems Biology of Persistent Infection
- Co-Infection and Microbiome in Persistent Infection
- Cell Biology of Persistent Infection
- Nutrition and Metabolism and Persistent Infection
- Humoral Immunity and Persistent Infection
- Pharmacologic and Biologic Manipulation of Persistent Infection
- T Cell-Mediated Immunity and Persistent Infection
- Vaccination Against Persistent Viral Infection



Submitting an abstract is a great way of participating in the conference through poster presentation and possible selection for a short talk.

Scholarship & Discounted Abstract Deadline: Oct 1, 2015

Abstract Deadline: Nov 3, 2015

Discounted Registration Deadline: Dec 1, 2015

For additional details, visit www.keystonesymposia.org/16A8.

KEYSTONE SYMPOSIA™
on Molecular and Cellular Biology
Accelerating Life Science Discovery

www.keystonesymposia.org/meetings | 1.800.253.0685 | 1.970.262.1230

a 501(c)(3) nonprofit educational organization

KEYSTONE SYMPOSIA

on Molecular and Cellular Biology

Cell Biology and Immunology of Persistent Infection (A8)

January 31-February 4, 2016 • Fairmont Banff Springs • Banff, Alberta, Canada

Scientific Organizers: Herbert (Skip) W. Virgin, E. John Wherry, Anne O'Garra and Andrea Lynn Cox

Supported by the Directors' Fund

Abstract & Scholarship Deadline: October 1, 2015 / Abstract Deadline: November 3, 2015 / Discounted Registration Deadline: December 1, 2015

SUNDAY, JANUARY 31

Arrival and Registration

MONDAY, FEBRUARY 1

Welcome and Keynote Address

***Herbert (Skip) W. Virgin**, Vir Biotechnology, USA

Anne O'Garra, Francis Crick Institute, UK

Systems Approaches to Studying the Immune Response in Tuberculosis

Genetics and Systems Biology of Persistent Infection

***Herbert (Skip) W. Virgin**, Vir Biotechnology, USA

Ramnik Xavier, Massachusetts General Hospital and Broad Institute, USA

Genetics, Autophagy and Checkpoints for Intracellular Pathogen Defense

W. Nicholas Haining, Dana-Farber Cancer Institute, USA

Epigenetic Landscape of T Cell Exhaustion

Elina I. Zuniga, University of California, San Diego, USA

Immune Adaptation During Chronic Viral Infection

Brad Rosenberg, Rockefeller University, USA

Short Talk: Transcriptomic Characterization of the Immune Response to Acute Hepatitis C Virus Infection

Workshop 1

***Elina I. Zuniga**, University of California, San Diego, USA

Anneliese S. Ashhurst, Centenary Institute, Australia
CXCR6 Deficiency Alters Control of Chronic Mycobacterium tuberculosis Infection and the Inflammatory Kinetics of Acute Respiratory Infection

Katelyn D. Miller, University of Pennsylvania, USA
Persistent Measles Virus in the Brain After Resolution of Acute Infection

Eugene Drokhlyansky, Broad Institute, USA
Type I Interferon Response Can Limit Virus Spread in the Brain

Michael Eschbaumer, Oak Ridge Institute for Science and Education, USA
Host Factors Associated with Acute and Persistent Foot-and-Mouth Disease Virus Infection

Charles Grose, University of Iowa, USA
Varicella Virus Envelopment Pathway Intersects and Redirects the Autophagy Pathway

Hanne Marcella Dubois, VIB - Ghent University, Belgium
A Novel Innate Immune Response Induced by Murine Norovirus Infection

Eui-Cheol Shin, Graduate School of Medical Science and Engineering, Korea Advanced Institute of Science and Technology, South Korea
IFN- λ 4 Potently Induces ISG15/USP18-Mediated IFN- α Unresponsiveness

Victor H. Carpio, University of Texas Medical Branch at Galveston, USA

IFN-gamma and IL-21 Double Producing T Cells are Bcl6-Independent and Survive into the Memory Phase in Plasmodium chabaudi Infection

Co-Infection and Microbiome in Persistent Infection

***Andrea Lynn Cox**, Johns Hopkins University, USA

Herbert (Skip) W. Virgin, Vir Biotechnology, USA
Transkingdom Interactions within the Metagenome Regulate Virus Infection and Immunity

Lora V. Hooper, University of Texas Southwestern Medical Center, USA

Microbiota-Immune System Interactions in the Intestine

George Kassiotis, Francis Crick Institute, UK
Immunity to Exogenous and Endogenous Retroviruses

Taylor S. Cohen, MedImmune LLC, USA

Short Talk: S. aureus Alpha Toxin Renders Macrophages Incapable of Defending Against Gram-Negative Lung Infections

Poster Session 1

TUESDAY, FEBRUARY 2

Cell Biology of Persistent Infection

***Yasmine Belkaid**, NIAID, National Institutes of Health, USA

Christina L. Stallings, Washington University School of Medicine, USA

Role of Autophagy Proteins in Controlling Mycobacterium tuberculosis Infection

Andrea Lynn Cox, Johns Hopkins University, USA
Inflammasome Regulation in Chronic HIV and HCV Infection

John W. Schoggins, University of Texas Southwestern Medical Center, USA

Type I and III IFN Interactions and Effector Functions in Chronic Viral Infection

Cheryl L. Day, Emory University, USA

Short Talk: Differential NK Cell Reactivity to Mycobacterial Antigens in Mycobacterium tuberculosis-Infected and Uninfected Individuals in a TB-Endemic Setting

Ulf Dittmer, University of Duisburg-Essen, Germany
Short Talk: PD-L1 Expression on Retrovirus-Infected Cells Mediates Immune Escape from CD8+ T Cell Killing

Nutrition and Metabolism and Persistent Infection

***Christina L. Stallings**, Washington University School of Medicine, USA

Yasmine Belkaid, NIAID, National Institutes of Health, USA
Long-Term Consequences of Infection for Tissue Immunity and Metabolism

Katja Simon, University of Oxford, UK
Autophagy in the Immune Response to Infection

Edward S. Mocarski, Emory University, USA
Necroptosis in Host Defense and Species Restriction of Herpesviruses

KEYSTONE SYMPOSIA

on Molecular and Cellular Biology

Cell Biology and Immunology of Persistent Infection (A8)

January 31-February 4, 2016 • Fairmont Banff Springs • Banff, Alberta, Canada

Scientific Organizers: Herbert (Skip) W. Virgin, E. John Wherry, Anne O'Garra and Andrea Lynn Cox

Supported by the Directors' Fund

Abstract & Scholarship Deadline: October 1, 2015 / Abstract Deadline: November 3, 2015 / Discounted Registration Deadline: December 1, 2015

Debattama Sen, Harvard Medical School, USA
Short Talk: CD8+ T Cell Exhaustion is Associated with a Distinct Epigenetic Landscape

Poster Session 2

WEDNESDAY, FEBRUARY 3

Pharmacologic and Biologic Manipulation of Persistent Infection

***Katja Simon**, University of Oxford, UK

Man-Wah Tan, Genentech, Inc., USA
Using Antibody-Antibiotic Conjugates as Therapeutics against Persistent Intracellular Pathogens

Jennifer Philips, Washington University School of Medicine, USA
Mycobacterium Tuberculosis Inhibits Macrophage Autophagy and Lipid Catabolism

Ashwin Balagopal, Johns Hopkins University, USA
HIV-1 Control Decreases Intrahepatic Hepatitis C: A Study of Twin Viruses that Chronically Reside in the Liver

Rick L. Tarleton, University of Georgia, USA
Silent Invasion and Misdirected Immune Responses Allow for Parasite Persistence in Chagas Disease

Megan T. Baldrige, Washington University School of Medicine, USA
Short Talk: Transkingdom Metagenomic Interactions and IFN- λ Determine Persistence of Enteric Norovirus Infection

Mary F. Fontana, University of Washington, USA
Short Talk: Insights into Human Malaria from a Novel Model of Asymptomatic Plasmodium Infection

Humoral Immunity and Persistent Infection

***E. John Wherry**, University of Pennsylvania, USA

Dennis R. Burton, The Scripps Research Institute, USA
Broadly Neutralizing Antibodies to HIV and Vaccine Design and Evaluation

Galit Alter, Ragon Institute of MGH, MIT and Harvard, USA
Non-Neutralizing Antibodies for Protection from Chronic Infection

Peter D. Crompton, National Institutes of Health, USA
Insights into the B Cell and Tfh Cell Biology Underlying the Inefficient Acquisition of Humoral Immunity to Malaria

Katherine Y. King, Baylor College of Medicine, USA
Short Talk: Chronic Infection Depletes Hematopoietic Stem Cells Through Apoptosis and Differentiation

Poster Session 3

THURSDAY, FEBRUARY 4

T Cell-Mediated Immunity and Persistent Infection

***Derek T. O'Hagan**, GSK Vaccines, USA

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

Barbara Rehmann, NIDDK, National Institutes of Health, USA
Innate and Adaptive Immune Responses in Viral Hepatitis

Lawrence Corey, Fred Hutchinson Cancer Research Center, USA
Local Immunity to Chronic Herpesvirus Infection

Mala Maini, University College London, UK
Innate/Adaptive Immune Interactions in the Hepatitis B-Infected Liver

Kristen Elaine Pauken, Harvard Medical School, USA
Short Talk: Epigenetic and Transcriptional Reprogramming of Exhausted CD8 T Cells Following PD-1 Pathway Blockade

Angela Pack, University of Georgia, USA
Short Talk: Trypanosoma cruzi Specific CD8+ T Cells Continue to Mediate Parasite Control Despite Chronic Antigen Exposure

Workshop 2

***Christina L. Stallings**, Washington University School of Medicine, USA

Luka Cicin-Sain, Helmholtz Centre for Infection Research, Germany
Peptide Expression Context within Viral Genes Determines Direct T-Cell Responsiveness, Memory Inflation and Immune Protection by CMV Vectors

Isabel Barnstorf, ETH Zurich, Switzerland
Impact of Persistent Viral Infections on Immune Homeostasis in Mice

Nadia Martinez-Martin, Genentech, Inc., USA
Discovery of Host Receptors for Human Cytomegalovirus Immunomodulatory Proteins Using a Comprehensive Extracellular Protein library

Robert Orchard, Washington University School of Medicine, USA
Genome-Wide CRISPR Screen Identifies CD300lf as a Receptor for Murine Norovirus

Jernej Godec, Apple Tree Life Sciences, USA
CD39 Expression Identifies Terminally Exhausted CD8+ T Cells and Limits Immunopathology in Chronic Infection

Birendra Kumar Prusty, Institute of Life Sciences, India
Immunomodulation during Murine Chronic Malaria

Simon Peter Preston, Walter and Eliza Hall Institute of Medical Research, Australia
Bim Deficiency Prevents PD-1 Mediated T Cell Attrition and Rescues CD8 T Cell Exhaustion

Pamela Marie Odorizzi, University of California, San Francisco, USA
Investigating the Effects of in utero Malaria Exposure on CD4+ T Cell Immunity in Infants

Vaccination Against Persistent Viral Infection

***Anne O'Garra**, Francis Crick Institute, UK

Derek T. O'Hagan, GSK Vaccines, USA
Opportunities and Challenges for Vaccines

Tiffany A. Reese, University of Texas Southwestern Medical Center, USA
Short Talk: Infection History of Mice Dictates Vaccine-Induced Gene Expression and Antibody Response

Paul Klenerman, University of Oxford, UK
Hepatitis C Virus Vaccines

KEYSTONE SYMPOSIA

on Molecular and Cellular Biology

Cell Biology and Immunology of Persistent Infection (A8)

January 31-February 4, 2016 • Fairmont Banff Springs • Banff, Alberta, Canada

Scientific Organizers: Herbert (Skip) W. Virgin, E. John Wherry, Anne O'Garra and Andrea Lynn Cox

Supported by the Directors' Fund

Abstract & Scholarship Deadline: October 1, 2015 / Abstract Deadline: November 3, 2015 / Discounted Registration Deadline: December 1, 2015

Louis J. Picker, Oregon Health & Science University, USA
Vaccination against Lentivirus Infection

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

FRIDAY, FEBRUARY 5

Departure