

KEYSTONE SYMPOSIA

on Molecular and Cellular Biology

Innate Immunity: From Innate Sensing to Adaptive Responses (D2)

Scientific Organizers: Hao Wu, Russell E. Vance and Andrea Ablasser

Sponsored by (Cell Research), AbbVie Inc., Amgen Inc., Chinese Society for Cell Biology, Genentech, Inc., GlaxoSmithKline Biologicals and Merck & Co., Inc.

Myeloid Cells: Development, Diversity and Distinct Biological Roles (D1)

Scientific Organizers: Gwendalyn J. Randolph, Minsoo Kim, Roxane Tussiwand and Muzlifah A. Haniffa

April 16-19, 2023 • Snowbird Resort • Snowbird, UT, USA

Sponsored by (Cell Research), Chinese Society for Cell Biology, Merck & Co., Inc., Surface Oncology and Takeda Pharmaceutical Company Limited

Scholarship Deadline: January 12, 2023 / Abstract Deadline: January 12, 2023 / Discounted Registration Deadline: February 16, 2023

SUNDAY, APRIL 16

Arrival and Registration (4pm Start)

MONDAY, APRIL 17

Welcome and Keynote Address (Joint) (8am Start)

***Gwendalyn J. Randolph**, Washington University, USA

***Hao Wu**, Harvard Medical School, Boston Children's Hospital, USA

Vishva M. Dixit, Genentech, Inc., USA

Why So Many Ways to Die?

Evolutionary Origin of Innate Immunity (9:30am Start) (D2)

Rotem Sorek, Weizmann Institute of Science, Israel

Innate Immunity in Bacteria

***Emily Troemel**, University of California, San Diego, USA

Innate Immunity in C. Elegans

Sara R. Cherry, University of Pennsylvania, USA

Innate Antiviral Immunity and RNA Virus Recognition

Tianmin Fu, Ohio State University, USA

Short Talk: Structures and Functions of a Bacterial Inflammasome-like System

Profiling Human Myeloid Cells and Targeting them in Disease (9:30am Start) (D1)

***Muzlifah A. Haniffa**, Wellcome Sanger Institute, UK

Decoding Human Prenatal Myeloid Cell Development and Function

***Gwendalyn J. Randolph**, Washington University, USA

Human Peritoneal Macrophages in Health and Disease

Boris Reizis, NYU Grossman School of Medicine, USA

Human Dendritic Cell Subsets: Functional Analysis and Detection In Situ

Kevin Barry, Fred Hutchinson Cancer Center, USA

Short Talk: Innate Immune Regulation of Protective Immunity and Immunotherapy Responses in Melanoma

Workshop 1: Late-Breaking Research (2:30pm Start) (D2)

***Russell E. Vance**, University of California, Berkeley, USA

Pascal Devant, Harvard Medical School/Boston Children's Hospital, USA

Structural Insights into Cytokine Cleavage by an Inflammatory Caspase

Adam Lacy-Hulbert, Benaroya Research Institute, USA

LITAF Promotes Resistance to Cell Death Induced by Bacterial Pore-forming Toxins and Endogenous Membrane Pores

Natalia G. Sampaio, Hudson Institute of Medical Research, Australia
MDA5 Guards against Infection by Surveying Cellular RNA Homeostasis

Tian Tian, UConn Health, USA

Regulating GSDMB Pore Formation: To Ignite or Inhibit?

Jakub Began, University of Lausanne, Switzerland

Molecular Characterization of GBP1-driven Non-Canonical Inflammasome Assembly

Jazlyn P. Borges, Hospital for Sick Children, Canada

NINJ1 Forms Large Pore-Like Structures within the Plasma Membrane During Pyroptosis

Danyel Lee, Rockefeller University, USA

Inborn Errors of OAS-RNase L in SARS-CoV-2-related Multisystem Inflammatory Syndrome in Children

Carlos Donado, Harvard Medical School, USA

Granzyme K Activates a New Complement Pathway

Workshop 1: Single Cell Multiomics Analysis of Myeloid Cells (2:30pm Start) (D1)

***Muzlifah A. Haniffa**, Wellcome Sanger Institute, UK

***Shalin H. Naik**, Walter & Eliza Hall Institute, Australia

Amélie Collins, Columbia University Irving Medical Center, USA

Fetal Emergency Myelopoiesis is Restricted by Maternal Inflammation

Anthony Wong, University of Toronto, Canada

Epigenetic and Transcriptional Mechanisms Regulating Cardiac Macrophage Heterogeneity

Cathy Yea Won Sung, NIH, USA

Single Nucleus RNA Sequencing Identifies Two Unique Macrophage Subsets in Control and Cisplatin-treated Mouse Cochlea

Mia J. Phillipson, Uppsala University, Sweden

Macrophages Support Healing of Ischemic Injury by Transdifferentiating Towards Mural Cells and Adopting Functions Important for Vascular Support

Manuela Pereira Abrantes, Cancer Research Center of Lyon, France

The Multifaceted Neutrophils and their Partners on the Human Colorectal Cancer Road

Tim Willinger, Karolinska Institutet, Sweden

Tracking Macrophage Origin in Human Airway Disease Reveals Continuous Macrophage Differentiation and Expansion of GPR183+ Monocytes

Maximilian Nitschké, Genentech, Inc., USA

Notch2 Blockade Expands a Population of Recruited Macrophages in the Lung that Regulate Responses to Tissue Injury

Kalyn R. Thayer, Feinberg School of Medicine, Northwestern University, USA

Lineage-tracing and Single-cell Transcriptomics Identifies Marginal Zone, Metallophilic, and Tingible Body Macrophages in Mouse Spleen and their Human Homologs

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Innate Sensing I (5pm Start) (D2)

***Hao Wu**, Harvard Medical School, Boston Children's Hospital, USA
Inflammasomes

Veit Hornung, Ludwig-Maximilians-University Munich, Germany
Inflammasomes

Liman Zhang, Oregon Health & Science University, USA
From Sensitivity to Specificity: Assembly of the NAIP/NLRC4 Inflammasome

Cornelius Y. Taabazuing, University of Pennsylvania Perelman School of Medicine, USA
Sequence-dependent Regulation of Cytokine Processing by Inflammatory Caspases

Lineage Tracing and Lineage Reprogramming (5pm Start) (D1)

***Andreas Schlitzer**, University of Bonn, Germany

***Roxane Tussiwand**, NIDCR, National Institutes of Health, USA
Redefining the Myeloid-Lymphoid Split

Shalin H. Naik, Walter & Eliza Hall Institute, Australia
DC Lineage Mapping

Juliana Idoyaga, Stanford University, USA
Emerging Dendritic Cell Heterogeneity: The In-Betweens

Alissa J. Trzeciak, Sloan Kettering Institute, USA
Short Talk: WNK1 Enforces Macrophage Lineage Fidelity

Mark B. Headley, Fred Hutchinson Cancer Research Center, USA
Short Talk: A Division of Labor in Dendritic Cell-mediated Immunosurveillance of Lung Airway vs Vasculature

Poster Session 1 (7:30pm Start)

TUESDAY, APRIL 18

Innate Immunity and Disease (8am Start) (D2)

***Katrin D. Mayer-Barber**, NIAID, National Institutes of Health, USA
The Role of Eosinophils in Tuberculosis

Michael Crackower, Ventus Therapeutics, USA
Structure and Computation-Based Drug Discovery in Innate Immunity

Edward A. Miao, Duke University, USA
Caspase-7 Activates ASM to Repair Gasdermin and Perforin Pores

Sylvia Torres Odio, Texas A&M Health Science Center, USA
Short Talk: CMPK2 Governs Pro-inflammatory Responses in Myeloid Innate Immune Cells

Vivian Chih-Wei Chen, Duke-NUS Medical School, Singapore
Short Talk: Bat ASC2 Suppresses Inflammasomes and Ameliorates Inflammatory Diseases

Kevin MingJie Gao, UMass Chan Medical School, USA

Short Talk: STING Gain-of-function in Endothelial Cells Initiates Interstitial Lung Disease

Marcia Goldberg, Massachusetts General Hospital and Harvard Medical School, USA

Short Talk: Pattern Recognition Receptor for Bacterial Lipopolysaccharide in the Cytosol of Human Macrophages

Lineage Commitment, Identity, and Maintenance (8am Start) (D1)

Rosandra Natasha Kaplan, NCI, National Institutes of Health, USA
Reprogramming Myeloid Cells in Tumors

Sunkyung (Sunny) Kim, Washington University, USA
Ablation of cDC1 Development by IL-6-induced C/EBP β Support in the -165 kb Zeb2 Enhancer

Charlotte L. Scott, University of Ghent & VIB, Belgium
EMBO Young Investigator Lecture: Functional Heterogeneity of Hepatic Macrophages

***Christopher K. Glass**, University of California, San Diego, USA
Epigenetic Regulation of Macrophage Identity

Fabiola Osorio, University of Chile, Chile
Short Talk: Control of Intestinal Th17 Cell Homeostasis by the Unfolded Protein Response Sensor IRE1 in Dendritic Cells

Jian-Da Lin, National Taiwan University, Taiwan
Short Talk: Single-cell Multi-omics Analysis Reveals Regulatory Networks in Alternatively Activated Macrophages Derived from Different Origins

Justin Perry, Memorial Sloan Kettering Cancer Center, USA
Short Talk: Metabolic Adaptation Supports Enhanced Macrophage Efferocytosis in Limited-Oxygen Environments.

Career Roundtable (Joint) (3pm Start)

Katrin D. Mayer-Barber, NIAID, National Institutes of Health, USA

Veit Hornung, Ludwig-Maximilians-University Munich, Germany

Juliana Idoyaga, Stanford University, USA

Jeremie Decalf, Genentech, USA

Martha A. O'Brien, Promega Corporation, USA

Innate Immunity and Infection (5pm Start) (D2)

***Russell E. Vance**, University of California, Berkeley, USA
Innate Immunity and the Pathogenesis of Tuberculosis

Megan H. Orzalli, University of Massachusetts Medical School, USA
Regulation of the NLRP1 inflammasome by HSV-1

Feng Shao, National Institute of Biological Sciences, China
Pyroptosis and Infection

Qiankun Wang, Washington University in St. Louis, USA
Short Talk: CARD8 Inflammasome Drives CD4+ T Cell Depletion in HIV-1 Infection

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Harshad Ingle, Washington University in St. Louis, USA
Short Talk: IFN- γ Derived from Non-permissive Enterocytes Acts on Tuft Cells to Limit Norovirus Persistence

Charles L. Evavold, Massachusetts General Hospital, USA
Short Talk: Cellular Redox State Controls Gasdermin D Pore Formation and Pyroptosis

Myeloid Cells in Integrated Tissue Immunity (5pm Start) (D1)

***Charlotte L. Scott**, University of Ghent & VIB, Belgium
Yasmine Belkaid, NIAID, National Institutes of Health, USA
Remote Presentation: Microbiome / Myeloid Cell Interactions in Shaping Immunity
***Slava Epelman**, University of Toronto, Canada
A Common Starting Point to Understand Resident Macrophage Heterogeneity

Jesse Warren Williams, University of Minnesota, USA
CD4 T Cells Instruct Monocyte Differentiation in Pancreatic Cancer

Andreas Schlitzer, University of Bonn, Germany
Short Talk: GPR183 Targets Lung-resident CD301b+ Conventional Dendritic Cells Type 2 to a Subtissular TSLP – TSLP Receptor-mediated Survival Niche within the Adventitial Cuff

Anne B. Krug, Ludwig Maximilians University Munich, Germany
Short Talk: Yellow Fever Vaccination Induces Coordinated Activation of Human Blood Dendritic Cell and Monocyte Subpopulations Correlating with Plasma Cytokine Levels and Antibody Titers

Poster Session 2 (7:30pm Start)

WEDNESDAY, APRIL 19

Innate Leukocytes (8am Start) (D2)

Eric Vivier, Aix Marseille University and Innate Pharma, France
Leveraging Innate Lymphocytes for Anti-Tumor Therapy

Vincent Peng, Washington University School of Medicine, USA
Short Talk: Innate Lymphoid Cells (ILCs) in Mucosal Immunity

Ankit Malik, University of Chicago, USA
Short Talk: Compartmentalized Antigen Presentation between Epithelial Cells and Macrophages Orchestrates Gut Immunity

Andrew Oberst, University of Washington, USA
Short Talk: "Necroptosis" as an Innate Immune Signaling Pathway

Hannah E. Meibers, University of Cincinnati and Cincinnati Children's Hospital Medical Center, USA
Short Talk: Effector Memory T Cells Induce Innate Inflammation by Triggering DNA Damage and a Non-canonical STING Pathway in DCs

***Isabella Rauch**, OHSU, USA
Short Talk: Activation of the NAIP–NLRC4 Inflammasome in Tuft Cells Leads to a Prostaglandin D2 Mediated Antibacterial Response in the Small Intestine

Hsin-Che Huang, Memorial Sloan Kettering Cancer Center, USA
Short Talk: Protein Folding Stress Potentiates NLRP1 and CARD8 Inflammasome Activation

Myeloid Cell Dynamics in Health and Disease (8am Start) (D1)

***Gwendalyn J. Randolph**, Washington University, USA
Milka Sarris, University of Cambridge, UK
Myeloid Cell Dynamics in Zebrafish Wounds
Carole A. Parent, University of Michigan, USA
Cell Migration in Inflammation and Metastasis
***Minsoo Kim**, University of Rochester, USA
Dynamic Interaction of Myeloid Cells during the Initiation and Resolution of Infection
De' Broski R. Herbert, University of Pennsylvania, USA
Myeloid Cell-Derived IL-33
Kavita Rawat, Dartmouth College, USA
Short Talk: CCL5-producing Migratory Dendritic Cells Guide CCR5+ Monocytes into the Draining Lymph Nodes
Roarke A. Kamber, University of California, San Francisco, USA
Short Talk: CRISPR Screens Identify Regulators of Live and Dead Cell Phagocytosis by Macrophages

Workshop 2 (2:30pm Start) (D2)

***Andrew Oberst**, University of Washington, USA
Kennady Abbott, University of Texas Southwestern Medical Center, USA
Dynamic Regulation of STING Expression and Signaling in T Cells from Development to Maturity
Devon Jeltema, University of Texas Southwestern Medical Center, USA
Role of PARP7 in Negative Feedback Regulation of Type I Interferon Signaling
Yupeng Wang, Pyrotech Beijing Biotechnology Co., Ltd, China
Development of Selective and Potent ALPK1 Inhibitors for Treating Inflammatory Diseases
Adriana M. Mujal, Memorial Sloan Kettering, USA
Tissue-specific Determinants of NK Cell Responses
Iain D.C. Fraser, NIAID, National Institutes of Health, USA
The Two Phases of ROS: Biphasic MAPK Activation during Inflammasome Triggering Reveals Distinct MAP3K Complexes Licensing Inflammasome Formation and Pyroptosis

Workshop 2 (2:30pm Start) (D1)

***Juliana Idoyaga**, Stanford University, USA
***Boris Reizis**, NYU Grossman School of Medicine, USA
Jing Chen, Washington University in St. Louis, USA
The Role of EMT Transcription Factor ZEB2 in Fetal Hematopoiesis

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Ryan Marshall Devlin, Cancer Research UK Beatson Institute, UK
Long Term Consequences of Acute Influenza Infection for Tumour Development

Matthew D. Park, Icahn School of Medicine at Mount Sinai, USA
Cholesterol Mobilization Governs Dendritic Cell Maturation and the Immunogenic Response to Lung Cancer

Gavyn Chern Wei Bee, New York University School of Medicine, USA
Age-dependent Differences in Efferocytosis Determine the Outcome of CD11b-mediated Protection from Invasive Pathogens

Matous Voboril, University of Minnesota, USA
Type III Interferons Drive Thymic DC1 Activation to Promote Central Tolerance

Julia Gschwend, University of Zurich, Switzerland
Diverse Sources of GM-CSF Control Tissue Myeloid Cell Homeostasis

Katrina Lichauro, University of Washington, USA
Itaconate Mediated Control of Inflammatory Hemophagocyte Differentiation

THURSDAY, APRIL 20

Departure

Innate Sensing II (5pm Start) (D2)

***Andrea Ablasser**, Ecole Polytechnique Fédérale de Lausanne, Switzerland
cGAS-STING Pathway

Gregory M. Barton, University of California, Berkeley, USA
Toll-Like Receptors

Judy Lieberman, Harvard University, USA
Pyroptosis in Infection and Cancer

Zhijian James Chen, University of Texas Southwestern Medical Center, USA
cGAS-STING in Biology

Myeloid Cells in Cancer and Metastasis (5pm Start) (D1)

***Matthew F. Krummel**, University of California, San Francisco, USA
Immune Archetypes for Targeting Myeloid Cells in Cancer

***Natalia Gomez-Ospina**, Stanford University, USA
Targeting Tissue Myeloid Niches with Engineered Stem Cells to Treat Disease

Zemin Zhang, Peking University, China
Myeloid Cell Diversity in the Tumor Microenvironment

Randolph K. Larsen, St. Jude Graduate School of Biomedical Sciences, USA
Short Talk: NETosis Promotes DICER1 Syndrome-associated Rhabdomyosarcoma

Meeting Wrap-Up: Outcomes and Future Directions (Organizers) (7pm Start) (D2)

Meeting Wrap-Up: Outcomes and Future Directions (Organizers) (6:45pm Start) (D1)

Poster Session 3 (7:30pm Start)