



Translational Systems Immunology

January 28–February 1, 2018 | Cliff Lodge | Snowbird, Utah | USA

Scientific Organizers:

Sally John, Biogen, USA

Soumya Raychaudhuri, Brigham and Women's Hospital, Harvard Medical School, USA

Michael Vincent, Pfizer Inc., USA

Mark M. Davis, Stanford University, USA

Advances in large-scale data acquisition, immune phenotyping and computational biology are transforming immunology research and allowing unprecedented insights into the networks, pathways and systems that influence human health and disease. This conference will cover the exciting technology advances that are enhancing our ability to elucidate human immune function and networks as well as practical applications in drug and biomarker discovery and patient stratification. The meeting begins with a look at progress in human genetics and the use of sequencing to assign functional mutations to rare human immune phenotypes. The impact of common variants on immune function requires larger sample sizes, and speakers will cover how genome-wide high-throughput genomics in combination with detailed phenotyping and physiologically relevant perturbations are providing foundational data sets that allow an unbiased view of immune function in cells and tissues. Also discussed will be emerging computational and analytical methods that enable integration and interpretation of high-content molecular data. The meeting will then move on to look at the application of these technological advances, expanding investigation to study the immune response in tissues and organs to enable a deeper understanding of interaction between immune and non-immune cells and their respective roles in disease states. Critical to clinical progress is the translation of systems immunology research into novel therapies and diagnostic or prognostic tests. Sessions themed around infectious disease and vaccine development advances in immune-oncology and patient stratification in complex disease and treatment response aim to provide depth from foundational science to clinical translation. Finally, a key goal is fostering collaboration across disciplines and the development of novel ideas. The meeting will be relevant for immunologists, computational biologists and clinicians with an interest in molecular characterization of the immune system.

Session Topics:

- Human Phenotypic Validation via Rare Genetic Mutations
- Workshop 1: Friendly Debate
- Genetics and Epigenetics Variation in Human Immune Traits
- Advancing our Understanding of Immune Cell Repertoires
- Integrative Analysis, Dynamic Networks and Systems Immunology
- Systems Immunology at the Tissue Level
- Human Immune Response to Infectious Disease
- Immuno-Oncology from Basic Science to Clinical Practice
- Workshop 2: CyTOF
- Clinical Immunoprofiling and Patient Stratification

Scholarship Application & Discounted Abstract Deadline: October 2, 2017

Abstract Deadline: October 31, 2017

Discounted Registration Deadline: November 30, 2017



Note: Scholarships are available for graduate students and postdoctoral fellows and are awarded based on the abstract submitted. Submitting an abstract is an excellent opportunity to gain exposure for your work. Abstracts submitted by the abstract deadline will also be considered for short talks on the program.

Upper image of group A streptococcus bacteria on human neutrophil courtesy of the National Institute of Allergy and Infectious Diseases, NIH

Meeting Hashtag: #KSsysimm

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KEYSTONE SYMPOSIA

on Molecular and Cellular Biology

Translational Systems Immunology (A9)

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SUNDAY, JANUARY 28

Arrival and Registration

MONDAY, JANUARY 29

Welcome and Keynote Address

Sarah Teichmann, Wellcome Trust Sanger Institute, UK
Immunogenomics One Cell at a Time

Human Phenotypic Validation via Rare Genetic Mutations

Danish Saleheen, University of Pennsylvania, USA
Human Knockout Program

Helen C. Su, NIAID, National Institutes of Health, USA
Elucidating Molecular Mechanisms of a Novel Inherited Immunodeficiency-Immunodysregulation Disorder

Hakon Hakonarson, Children's Hospital of Philadelphia, USA
Exome Sequencing to Diagnosis and Treat Pediatric Immune Disease

Short Talk(s) Chosen from Abstracts

Workshop 1: Friendly Debate

Short Talks Chosen from Abstracts

Genetics and Epigenetics Variation in Human Immune Traits

Julian C. Knight, University of Oxford, UK
Genetic and Epigenetic Modulators of Monocyte Activation in Health and Disease

Anjana Rao, La Jolla Institute for Allergy and Immunology, USA
Transcriptional and Epigenetic Regulation in Cancer and Cancer Immunotherapy

Nicole Soranzo, Wellcome Trust Sanger Institute, UK
Human Genetic Variation of Hematological Parameters

Short Talk Chosen from Abstracts

Poster Session 1

TUESDAY, JANUARY 30

Advancing our Understanding of Immune Cell Repertoires

Aleksandra Walczak, Ecole Normale Supérieure, France
Diversity of Immune Receptor Repertoires

Mark M. Davis, Stanford University, USA
T-Cell Repertoires and How to Read Them

Harlan Robins, Fred Hutchinson Cancer Research Center, USA
Reading the Cellular Adaptive Immune System to Diagnose Disease

George Georgiou, University of Texas at Austin, USA
The Human Serological and BCR Antibody Repertoires in Cancer, Autoimmunity or Following Vaccination

Short Talk(s) Chosen from Abstracts

Integrative Analysis, Dynamic Networks and Systems Immunology

Kasper Lage, Massachusetts General Hospital, USA
Human Gene and Protein Networks Perturbed by Genetics to Identify Therapeutics

Manolis Kellis, Massachusetts Institute of Technology, Broad Institute, USA

Talk Title to be Announced

Shai S. Shen-Orr, Technion, Israel
Connect the Dots – An Integrative Cell Centered View of Immunity

Short Talk Chosen from Abstracts

Poster Session 2

WEDNESDAY, JANUARY 31

Systems Immunology at the Tissue Level

Betty Diamond, Feinstein Institute for Medical Research, USA
Deconstructing Lupus Nephritis through a Single Analysis of Immune Cells in the Kidney

Soumya Raychaudhuri, Brigham and Women's Hospital, Harvard Medical School, USA

Single Cell Sequencing in Rheumatoid Synovial Tissue

Carolyn B. Coyne, University of Pittsburgh, USA
Immunology of the Human Placenta

Elham Azizi, Memorial Sloan Kettering Cancer Center, USA
Computational Approaches to Understanding Cellular Heterogeneity in the Tumor-Immune Microenvironment

Short Talk(s) Chosen from Abstracts

Human Immune Response to Infectious Disease

Bali Pulendran, Emory University, USA
Microbiome and B-Cell Responses

Wendy Broom, Genocea Biosciences, USA
Neoantigen Identification using ATLAS Across Multiple Tumor Types Highlights Limitations of Prediction Algorithms

Purvesh Khatri, Stanford University, USA
Adventures of a "Data Parasite": Translational Medicine using Heterogeneous Public Data

Short Talk Chosen from Abstracts

Poster Session 3

THURSDAY, FEBRUARY 1

Immuno-Oncology from Basic Science to Clinical Practice

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

Speaker to be Announced

Cassian Yee, University of Texas MD Anderson Cancer Center, USA
Terminators: No Fate But What You Make

Short Talk(s) Chosen from Abstracts

Workshop 2: CyTOF

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Short Talks Chosen from Abstracts

Clinical Immunoprofiling and Patient Stratification

Holden T. Maecker, Stanford School of Medicine, USA
Comprehensive Immune Profiling and Functional Analysis of Human Aging / Response to Therapy

Michael Vincent, Pfizer Inc., USA
Systems Approaches to Compare the Effects of Selective Immunokinase Inhibitors in Humans

Alexandra Snyder, Memorial Sloan Kettering Cancer Center, USA
T-cell Receptor Sequencing (TCR) in Immuno-Oncology: Systemic, Intratumoral and Antigen-Specific Immunity

Sally John, Biogen, USA
A Network Approach to Understanding the Role of the Immune System in Neurodegenerative Disease

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

FRIDAY, FEBRUARY 2

Departure