

Keystone Symposia in Keystone

Molecular Approaches to Vaccines and Immune Monitoring

Keystone Conference Center | Keystone, Colorado, USA | February 10–14, 2019

Joint with the conference on **B Cell-T Cell Interactions**

Scientific Organizers:

Peter D. Kwong, NIAID, National Institutes of Health, USA

Brandon DeKosky, University of Kansas, USA

Jeffrey B. Ulmer, GSK Vaccines, USA

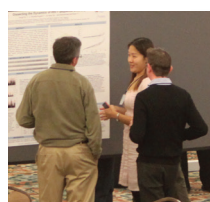
Vaccines address public health issues ranging from pandemic outbreaks to childhood disease. Despite this diversity, molecular approaches are beginning to find broad application. This Keystone Symposia conference seeks to bring together antibody aficionados, B cell immunologists, structural biologists and vaccine developers from government, academia, biotechnology and major pharmaceutical companies to review the utility of structure-based vaccine design and antibody-based immune monitoring, with the ultimate aspiration of transforming standard approaches of vaccine development. More specifically, the conference aims to: 1) Provide examples of the “antibody-to-vaccine” paradigm for RSV, CMV and other pathogens that have resisted standard vaccinology; 2) Detail procedures whereby B cells can be taught to make the right antibodies; 3) Describe molecular approaches for vaccine improvement; and 4) Discuss how molecular approaches can be used to speed development (as may be needed, for example, in the case of pandemics) and to reduce developmental and regulatory costs (for vaccines in general and in particular to enable provision to the developing world). Overall, the conference seeks to integrate molecular approaches for vaccine development and read-out with other transformative advances including mRNA delivery, next-generation sequencing of B cell transcripts, and control of B cell-T cell interactions, the topic of the jointly held Keystone Symposia conference.

Plenary Session Topics:

- Targeting Appropriate Immune Responses for Structure-Based Design
- Workshop 1: Molecular Characteristics of Serum Responses which Could Serve as Appropriate Templates for Vaccine Design
- Clinical Results from Structure-Based Vaccines
- B Cell Ontogenies as Vaccine Templates
- Workshop 2: Antibody Isolation and B Cell Sequencing
- Tackling Difficult Pathogens with Antibody-Based Vaccine Design
- Immune Monitoring of B Cell Responses
- Workshop 3: Molecular Approaches to Probe the Elicited Vaccine Response
- Optimizing Vaccine Responses
- Vaccines: Better, Faster and Less Expensive!
- Workshop 4: Molecular Approaches for Rapid Identification/Optimization of Target Antigens
- Reducing Vaccine Risks and Costs

Scholarship/Discounted Abstract Deadline: Oct 23, 2018; Abstract Deadline: Nov 7, 2018; Discounted Registration Deadline: Dec 6, 2018

Visit www.keystonesymposia.org/19J5 for more details.



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

on Molecular and Cellular Biology

Molecular Approaches to Vaccines and Immune Monitoring (J5)

Scientific Organizers: Peter D. Kwong, Brandon DeKosky and Jeffrey B. Ulmer

Supported by the Directors' Fund

B Cell-T Cell Interactions (J6)

Scientific Organizers: Gabriel D. Victora and Carola G. Vinuesa

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SUNDAY, FEBRUARY 10

Arrival and Registration

MONDAY, FEBRUARY 11

Welcome and Keynote Address (Joint)

Antonio Lanzavecchia, Institute for Research in Biomedicine, Switzerland

The B Cell Immune Response to Infection and Vaccination

Targeting Appropriate Immune Responses for Structure-based Design (J5)

Dennis R. Burton, The Scripps Research Institute, USA
From Antibody to Vaccine

George Georgiou, University of Texas at Austin, USA
Molecular Definition of Protective Serum Responses from Vaccination and for Immune Monitoring

Peter D. Kwong, NIAID, National Institutes of Health, USA
Iterative Structure-Based Optimization of Antibody-Guided Vaccines

Short Talk(s) Chosen from Abstracts

Tfh Biology (J6)

Carola G. Vinuesa, Australian National University, Australia
Human Tfh Biology

Hai Qi, Tsinghua University, China
Guidance Cues for Tfh Cells

Shane Crotty, La Jolla Institute for Allergy and Immunology, USA
Tfh Cell and Germinal Center B Cell Responses in the Context of Vaccines

Short Talk(s) Chosen from Abstracts

Workshop 1: Molecular Characteristics of Serum Responses Which Could Serve as Appropriate Templates for Vaccine Design (J5)

Short Talks Chosen from Abstracts

Workshop 1: B Cell Biology in T-Dependent Responses (J6)

Short Talks Chosen from Abstracts

Clinical Results from Structure-based Vaccines (J5)

Sumana Chandramouli, GSK Vaccines, USA
A Structural Biology Approach to Developing an HCMV Vaccine

Amy S. Espeseth, Merck & Co., Inc., USA
mRNA Vaccines Expressing Forms of RSV-F Protein are Immunogenic and Protective in Preclinical Models of Respiratory Syncytial Virus Infection

Barney S. Graham, NIAID, National Institutes of Health, USA
Clinical Results from the Prefusion-Stabilized RSV F (DS-Cav1) Subunit Vaccine

Short Talk(s) Chosen from Abstracts

Regulation of the GC Response (J6)

Andre Ballesteros-Tato, University of Alabama at Birmingham, USA
Regulation of IL-2 Responses in the GC

Michelle A. Linterman, Babraham Institute, UK
Ageing and the Germinal Centre Response

Di Yu, Australian National University, Australia
Follicular Cytotoxic T Cells: Friends or Foes?

Short Talk(s) Chosen from Abstracts

Poster Session 1

TUESDAY, FEBRUARY 12

Keynote Address (Joint)

Michel C. Nussenzweig, HHMI/Rockefeller University, USA
Antibody Responses and Antibodies

B Cell Ontogenies as Vaccine Templates (J5)

Lynn Morris, National Institute for Communicable Diseases, South Africa

V2-directed vaccine-like antibodies from HIV-1 infection mediate ADCC and block $\alpha 4\beta 7$ interactions

William Schief, IAVI and The Scripps Research Institute, USA
Germline-Targeting Vaccine Design

Frederick W. Alt, Boston Children's Hospital, USA
Mouse Models for Lineage-Based Vaccines

Short Talk(s) Chosen from Abstracts

Germinal Center Biology (J6)

Gabriel D. Victora, Rockefeller University, USA
Clonal Dynamics of the Antibody Response

Jason G. Cyster, HHMI/University of California, San Francisco, USA
Guidance Cues in the B Cell Response

Tomohiro Kurosaki, WPI Immunology Frontier Research Center, Osaka University, Japan
Memory Cell Differentiation in the Germinal Center

Short Talk(s) Chosen from Abstracts

Workshop 2: Antibody Isolation and B Cell Sequencing (J5)

Short Talks Chosen from Abstracts

Workshop 2: Tfh/Tfr Differentiation and Function (J6)

Short Talks Chosen from Abstracts

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Tackling Difficult Pathogens with Antibody-Based Vaccine Design (J5)

Ian A. Wilson, The Scripps Research Institute, USA
Towards a Universal Influenza Virus Vaccine: Is it Better to Target the HA Head or Stem?

Sarah F. Andrews, National Institutes of Health, USA
Identifying Common Antibody Lineages to Evaluate Clinical Responses to Influenza Vaccination

Erica Ollmann Saphire, The Scripps Research Institute, USA
Vaccine Design from a Prefusion-Stabilized Lassa Virus Trimer Structure

Short Talk(s) Chosen from Abstracts

Programming T Cells to Help B Cells (J6)

Virginia Pascual†, Cornell University, USA
Talk Title to be Announced

Casey T. Weaver, University of Alabama at Birmingham, USA
Programming the Early Bifurcation of Tfh and Non-Tfh Effector Responses

Philippa C. Marrack, HHMI/National Jewish Health, USA
Tfh Memory

Short Talk(s) Chosen from Abstracts

Poster Session 2

WEDNESDAY, FEBRUARY 13

Keynote Session (Joint)

Facundo D. Batista, Ragon Institute of MGH, MIT and Harvard, USA
Importance of B Cell-T Cell Interactions in Mouse Vaccine Models

Hedda Wardemann, German Cancer Research Center, Germany
Development and Clonal Evolution of Human Memory B Cell Antibody Responses

Immune Monitoring of B Cell Responses (J5)

Michael Joseph Mina, Brigham and Women's Hospital, USA
Reading the Record of Immunity: Profiling the Anti-Virome Antibody Repertoire with Phage Display and Deep Neural Networks

Margaret Ellen Ackerman, Dartmouth College, USA
Measuring and Mining Serum Antibody Responses to Understand Protection from Infection

Short Talk(s) Chosen from Abstracts

B Cell Responses in Infectious Disease (J6)

Patrick C. Wilson, University of Chicago, USA
The B Cell Response to Influenza and Vaccination

Frances E. Lund, University of Alabama at Birmingham, USA
T Cell Dependent Memory B Cell Responses in Influenza Infection and Vaccination

Short Talk(s) Chosen from Abstracts

Workshop 3: Molecular Approaches to Probe the Elicited Vaccine Response (J5)

Short Talks Chosen from Abstracts

Workshop 3: B Cell-T Cell Interactions in Disease (J6)

Short Talks Chosen from Abstracts

Optimizing Vaccine Responses (J5)

Neil P. King, University of Washington, USA
Atomic-Level Design to Increase the Magnitude of B Cell Responses

Günther Staffler, AFFIRIS AG, Austria
Towards a Heart Attack Vaccine: PCSK9 as a Immunogen

Speaker to be Announced

Short Talk(s) Chosen from Abstracts

Memory Humoral Responses (J6)

Marc K. Jenkins, University of Minnesota Medical School, USA
Memory T and B Cell Responses

Mark J. Shlomchik, University of Pittsburgh School of Medicine, USA
Memory B Cell Subsets

Marion Pepper, University of Washington, USA
Memory B Cells in Plasmodium Infection

Short Talk(s) Chosen from Abstracts

Poster Session 3

THURSDAY, FEBRUARY 14

Vaccines: Better, Faster, and Less Expensive! (J5)

Rino Rappuoli, GlaxoSmithKline Vaccines, Italy
Developing Vaccines against Pandemics and for the Developing World

Laura M. Walker, Adimab, USA
Rapid Antibody Identification to Speed Pandemic Responses

Brandon DeKosky, University of Kansas, USA
Paired Heavy-Light Chain Sequencing and Display to Optimize Immune Readout from Vaccination and for Immune Monitoring

Julie Ledgerwood, NIAID, National Institutes of Health, USA
Immune Monitoring to Increase the Likelihood of Phase 2 Success

Short Talk(s) Chosen from Abstracts

Humoral Autoimmunity and Allergic Responses (J6)

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Rachel Ettinger, Viela Bio, USA

VIB4920, a Novel CD40L Antagonist, Decreased Disease Activity and Improved Biomarkers of Immune Activation in a Phase 1b, Proof-of-Concept Study in Rheumatoid Arthritis

Michael C. Carroll, Boston Children's Hospital, Harvard Medical School, USA

Epitope Spreading in Autoimmune Germinal Centers

Maria A. Curotto de Lafaille, NYU School of Medicine, USA
Biology of IgE Affinity Maturation

Christopher C. Goodnow, Garvan Institute of Medical Research, Australia

Progression from benign to pathogenic autoantibody by somatic mutation in a rogue clone: single cell RNA & DNA sequencing

Short Talk(s) Chosen from Abstracts

Workshop 4: Molecular Approaches for Rapid Identification/Optimization of Target Antigens (J5)

Short Talks Chosen from Abstracts

Reducing Vaccine Risks and Costs (J5)

Jeffrey B. Ulmer, GSK Vaccines, USA

Molecular Approaches to Streamlining Vaccine Discovery and Development

Katalin Karikó, BioNTech RNA Pharmaceuticals, Germany
Advantages of an mRNA Vaccine Approach

Gary J. Nabel, Sanofi, USA

How Appropriate Choice of a Human Antibody Template Reduces Vaccine Development Risks

Short Talk Chosen from Abstracts

T-Dependent B Cell Differentiation (J6)

Klaus Rajewsky, Max Delbrück Center for Molecular Medicine, Germany

Transcriptional Programming of GC B Cell Differentiation

Meinrad Busslinger, Research Institute of Molecular Pathology, Austria

Ikaros Prevents Autoimmunity by Promoting Anergy Induction and Restraining Toll-like Receptor Signaling in B cells

Robert Brink, Garvan Institute of Medical Research, Australia
Constant Region-Based Selection in the Germinal Center Reaction

Short Talk Chosen from Abstracts

Meeting Wrap-Up: Outcomes and Future Directions (Organizers) (J5)

Meeting Wrap-Up: Outcomes and Future Directions (Organizers) (J6)

FRIDAY, FEBRUARY 15

Departure