KEYSTONE SYMPOSIA
on Molecular and Cellular Biology

HIV Vaccines (EK42)

Scientific Organizers: Persephone Borrow, Georgia D. Tomaras and Rogier W. Sanders

Sponsored by Merck & Co., Inc.

HIV Pathogenesis and Cure (EK43)

Scientific Organizers: Romas Geleziunas, Carine M. Van Lint and Janet Siliciano

June 1-4, 2021 • Virtual at your computer

Supported by the Directors' Fund

TUESDAY, JUNE 1

Welcoming Remarks and Keynote Session (Joint) (7am Denver/Mountain Time Start)

*__Persephone Borrow__, University of Oxford, UK

*__Carine M. Van Lint__, University of Brussels, Belgium

__M. Juliana McElrath__, Fred Hutchinson Cancer Research Center, USA
Accelerating HIV Vaccine Development to Prevent HIV Infection

__Bruce D. Walker__, Ragon Institute of MGH, MIT and Harvard, USA
I Am Nothing Without You: The Rationale for T Cell Plus B Cell Vaccines for HIV

Breakthrough Technologies (Joint) (8:10am Denver/Mountain Time Start)

*__Robert F. Siliciano__, Johns Hopkins University School of Medicine, USA

*__Michael R. Betts__, University of Pennsylvania, USA

__Mark M. Davis__, Stanford University School of Medicine, Howard Hughes, USA
Tonsil Organoid Culture System

__Guillaume J. Filion__, University of Toronto Scarborough, Canada
What Have We Learned from HIV-Barcoding Technologies?

__Collin Kieffer__, University of Illinois at Urbana-Champaign, USA
Short Talk: Spatial Profiling of HIV-1 Transmission in Lymphoid Tissues from Humanized Mice and Human Patients with Single-Cell to Single-Virus Resolution

__Fredrick Kizito__, Case Western Reserve University, USA
Short Talk: Visualization of HIV Integration and Latency by CasFISH: In situ Imaging System for Localization of the Provirus and its Transcriptional Regulators in Infected Cells

__Matthew Osborn__, Ragon Institute of MGH, MIT and Harvard, USA
Short Talk: Evolutionary Dynamics of HIV-1 Reservoir Cells Revealed by a Novel Multi-Dimensional Single-Cell Assay

Insights from Preclinical and Clinical Trials (10:05am Denver/Mountain Time Start) (EK42)

*__M. Juliana McElrath__, Fred Hutchinson Cancer Research Center, USA

*__Barton F. Haynes__, Duke University Medical Center, USA

__Lawrence Corey__, Fred Hutchinson Cancer Research Center, USA
AMP Trial Results

__Sandhya Vasan__, US Military HIV Research Program / Henry Jackson Foundation, USA
Optimizing Adjuvants for Clinical Vaccine Development

__William Schief__, International AIDS Vaccine Initiative and The Scripps Research Institute, USA
Human Clinical Test of Germline Targeting: Preliminary Report on B-Cell Responses in the IAVI G001 Trial of eOD-GT8 60mer

__Robin Shattock__, Imperial College London, UK
Accelerated Experimental Medicine Trials for Iterative Vaccine Design

__Marie-Claire E. Gauduin__, Texas Biomedical Research Institute, USA
Short Talk: Efficacy of a Novel Epithelial Stem Cell-based AIDS Vaccine to Induce Mucosal Immune Responses and Control SIV Transmission in Macaques

New Insights into HIV Virology (10:05am Denver/Mountain Time Start) (EK43)

*__Bryan R. Cullen__, Duke University Medical Center, USA
Epitranscriptomic Regulation of HIV-1 Gene Expression

*__Marina Lusic__, University Clinic Heidelberg, Germany
Navigating through the Nucleus with HIV-1

__Xu Yu__, Massachusetts General Hospital, USA
Proviral Landscape of HIV-1 in Elite Controllers

__Felipe Diaz-Griffero__, Albert Einstein College of Medicine, USA
Short Talk: Nuclear Import of the HIV-1 Core Precedes Reverse Transcription and Uncoating

__Olivia Munoz Monje__, Lausanne University Hospital, Switzerland
Short Talk: PD-L1 Incorporation within HIV Virions Contribute to Functionally Impair T-Follicular Helper Cells

__Ciputra Adijaya Hartana__, Ragon Institute of MGH, MIT and Harvard, USA
Short Talk: Long Noncoding RNA MIR4435-2HG Enhances Metabolic Function of Myeloid Dendritic Cells from HIV-1 Elite Controllers

__Amara Plaza-Jennings__, Icahn School of Medicine at Mount Sinai, USA
Short Talk: Brain-specific Patterns of HIV Integration are Associated with Transcriptomic and 3D-genomic Alterations

__Winiffer Conce Alberto__, Weill Cornell Medicine, USA
Short Talk: Naïve CD4+ T-Cells Provide a CTL-Resistant Sanctuary for Intact HIV Proviruses

Career Roundtable (Joint) (1pm Denver/Mountain Time Start)

__Devi SenGupta__, Gilead Sciences, Inc., USA

__Kevin O. Saunders__, Duke University, USA

__Bruce D. Walker__, Ragon Institute of MGH, MIT and Harvard, USA

WEDNESDAY, JUNE 2

Immunogen Design for Broadly Neutralizing Antibody Induction (7am Denver/Mountain Time Start) (EK42)

*__Wilton B. Williams__, Duke University School of Medicine, USA

*__Christine N. Daniels__, Duke University, USA

__Rogier W. Sanders__, University of Amsterdam, Netherlands
Induction of Neutralizing HIV Antibodies by Native-Like SOSIP Trimers

Gabriel Ozorowski, The Scripps Research Institute, USA
Cryo-EM Polyclonal Epitope Mapping as a Tool to Accelerate Immunogen Design

Priyamvada Acharya, Duke University, USA
Structural Details of Antibody Interactions with the HIV-1 Glycan Shield and Implications for Vaccine Design

Kevin O. Saunders, Duke University, USA
Vaccine Elicitation of CD4 Binding Site Neutralizing Antibodies in Macaques

Rory Henderson, Duke University, USA
Short Talk: Structural Characterization of Affinity Maturation in the HIV-1 Glycan-V3 DH270 Broadly Neutralizing Antibody B Cell Lineage

Srirupa Chakraborty, Los Alamos National Laboratory, USA
Short Talk: Exploiting the HIV Glycan Shield Network Topology Towards Immunogen Design

Ronnie M. Russell, University of Pennsylvania, USA
Short Talk: Elicitation of V2 Apex Targeting Neutralizing Antibodies by SIVcpz Envs

New Insights into Restriction Factors (7am Denver/Mountain Time Start) (EK43)

*__Frank Kirchhoff__, University of Ulm, Germany
Novel Restriction Factors Targeting HIV-1 Dependencies

*__Reuben S. Harris__, University of Minnesota, USA
Unexpected Discoveries from Attempting to Apply Lessons from HIV-1 to SARS-CoV-2

Liang Shan, Washington University in St. Louis, USA
CARD8 Mediates Pyroptosis of HIV-Infected Cells by Sensing Viral Protease Activity

Inducing/Modulating Antibody Effector Functions (9:45am Denver/Mountain Time Start) (EK42)

*__Georgia D. Tomaras__, Duke University Medical Center, USA

*__Jay A. Berzofsky__, NCI, National Institutes of Health, USA

Hugo Mouquet, Institut Pasteur, France
Broadly HIV-1 Neutralizing IgA Antibodies

Margaret E. Ackerman, Dartmouth College, USA
Optimizing Antibodies for Antiviral Activity in vivo

Rasmi Thomas, U.S. Military HIV Research Program, USA
Single Cell Technologies Indicate Monocyte Expression Profiles Influence HIV Reservoir Size and Vaccine Efficacy

Meredith Phelps, Harvard University, USA
Short Talk: Broadly Neutralizing Antibody Recognition of HIV Envelope Epitopes Modulates Effector Function

Maria Victoria Filsinger Interrante, Stanford University, USA
Short Talk: The High-affinity Immunoglobulin Receptor FcgRI Potentiates HIV-1 Neutralization via Antibodies against the gp41 N-heptad Repeat: Implications for Vaccine Development

Marc Ehlers, University of Luebeck, Germany
Short Talk: IgG Fc Sialylation is Regulated during the Germinal Center Reaction Following Immunization with Different Adjuvants

Rebekah T. Sherburn, Uniformed Services University of the Health Sciences, USA
Short Talk: Incorporating the Cluster A and V1V2 Targets into a Minimal Structural Unit of HIV-1 Envelope to Elicit Cross-Clade Response with Potent Fc-effector Functions

LRAs and Immunomodulatory Agents (8:35am Denver/Mountain Time Start) (EK43)

Devi SenGupta, Gilead Sciences, Inc., USA
Immune-Based Strategies for HIV Cure

*__Jerome A. Zack__, University of California, Los Angeles, USA
Controlling HIV Rebound in Humanized Mice

*__Melanie M. Ott__, Gladstone Institutes, USA
SMYD Methyltransferases are Versatile Regulators of HIV Transcription

Mary Ann Checkley, Case Western Reserve University, USA
Short Talk: Reduction of HIV Reservoirs in CD4+ T Cells from Well-Suppressed HIV+ Participants by Autologous Expanded NK Cells

Jonathan Richard, Centre de Recherche du CHUM, Canada
Short Talk: Modulating HIV-1 Envelope Glycoprotein Conformation to Decrease the HIV-1 Reservoir

Hannah King, U.S. Military HIV Research Program, Walter Reed Army Institute of Research, USA
Short Talk: bNAb Administration Spanning ATI Does Not Alter the Endogenous Env-specific Humoral Response in SIV-infected Macaques

Poster Session 1 (Joint) (1pm Denver/Mountain Time Start)

Meet the Editors (Joint) (2:30pm Denver/Mountain Time Start)

Montserrat Cols-Vidal, Journal of Experimental Medicine, USA

Zeljko Durdevic, EMBO Press, Germany

Sara Hamilton, Cell Press, USA

Alison Farrell, Nature Medicine, USA

THURSDAY, JUNE 3

Optimizing Germinal Center Responses for Broadly Neutralizing Antibody Induction (7am Denver/Mountain Time Start) (EK42)

*__Rogier W. Sanders__, University of Amsterdam, Netherlands

*__Kevin O. Saunders__, Duke University, USA

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Michel C. Nussenzweig, HHMI/Rockefeller University, USA
GC Regulation Learning from Mice and Men

Persephone Borrow, University of Oxford, UK
Exploiting the Immunological Environment Supporting HIV-1 BnAb Induction During Infection to Inform Vaccine Design

Darrell J. Irvine, Massachusetts Institute of Technology, USA
Designing Immunization Regimens to Promote the Germinal Center Response

Facundo D. Batista, Massachusetts Institute of Technology and Harvard University, USA
Targeting HIV-1 ENV V2-apex bNAb Precursors in Human Ig Knock-in Mouse Models

Jacob K. Files, University of Alabama Birmingham, USA
Short Talk: HLA-II Associated Viral Adaptation Impacts the Quantity and Quality of CD4+ T-Cell Responses in HIV-1 Vaccine Recipients

Amelia Escolano, Rockefeller University, USA
Short Talk: Sequential Immunization Strategies To Elicit Anti HIV-1 Broadly Neutralizing Antibodies

Angela Corrigan, Vaccine Research Center, NIAID, National Institutes of Health, USA
Short Talk: Fusion Peptide Priming and Long Trimer Interval Reduces Off-target Antibody Responses Toward the HIV-1 Trimer Base Region

New Insights into HIV Latency and Reservoirs (7am Denver/Mountain Time Start) (EK43)

*__Janet Siliciano__, Johns Hopkins University School of Medicine, USA

Carine M. Van Lint, University of Brussels, Belgium
The Molecular Basis of HIV-1 Latency

Robert F. Siliciano, Johns Hopkins University School of Medicine, USA
Understanding Viral Rebound

Maria J. Buzon, Vall d´Hebron Research Institute, VHIR, Spain
Characterization of the Active HIV Reservoir during ART

*__Angela Ciuffi__, Institute of Microbiology - CHUV/UNIL, Switzerland
HIV and Single-Cell Analyses

Tomas Raul Wiche Salinas, CRCHUM, Canada
Short Talk: Th17 Cell Master Transcription Factor RORC2 Regulates HIV-1 Gene Expression and Latency

Johannes C.M. Schlachetzki, University of California, San Diego, USA
Short Talk: HIV Persistence in Microglia

Saba Valadkhan, Case Western Reserve University, USA
Short Talk: An HIV-induced Mechanism for T Cell Quiescence and Proviral Latency

Gérémy Sannier, Centre de Recherche du CHUM, Canada
Short Talk: Combined Single-Cell Transcriptional, Translational and Genomic Profiling Reveal HIV-1 Reservoir Diversity

Konstantin S. Leskov, Case Western Reserve University, USA
Short Talk: HIV Latency: Single-Cell Transcriptome Analysis

Sizun Jiang, Stanford University, USA
Short Talk: Uncovering Virus-Dependent Immune Conditioning of Tissue Microenvironments Through High-Dimensional Imaging

CD8 T Cell Inducing Vaccines (9:45am Denver/Mountain Time Start) (EK42)

*__Persephone Borrow__, University of Oxford, UK

*__Bruce D. Walker__, Ragon Institute of MGH, MIT and Harvard, USA

Louis J. Picker, Oregon Health & Science University, USA
Latest Developments in CMV-Vectored HIV/SIV Vaccines

Andrew J. McMichael, Oxford University, UK
Understanding HLA-E Mediated Antigen Presentation to Inform Vaccine Design

Bette Korber, Los Alamos National Laboratory, USA
Design of Vaccines to Elicit Conventional (Ia)-restricted CD8 T Cell Responses

Michael R. Betts, University of Pennsylvania, USA
CD8+ T Cell Tissue Recirculation and Residency in HIV Infection

Immunotherapy in Animal Models and Clinical Trials (10:40am Denver/Mountain Time Start) (EK43)

Sharon R. Lewin, University of Melbourne, Australia
Immune Checkpoint Blockers and HIV Cure Strategies

*__Steven G. Deeks__, University of California, San Francisco, USA
Immunotherapy and HIV Control

*__Afam Okoye__, Oregon Health & Science University, USA
Evaluating Strategies for Post-ART Viral Control

Christiaan H. van Dorp, Los Alamos National Laboratory, USA
Short Talk: A Participant-Derived Xenograft Model for Long-Term Evaluation of Autologous Immunotherapies for HIV

Matthew R. Reynolds, University of Wisconsin-Madison, USA
Short Talk: Adoptive Transfer of Autologous in vitro Generated SIV Latently Infected Cells into an SIV-naïve Rhesus Macaque Results in Viral Rebound After Stopping ART

Poster Session 2 (Joint) (1pm Denver/Mountain Time Start)

FRIDAY, JUNE 4

Therapeutic Vaccines (Joint) (7am Denver/Mountain Time Start)

*__Michael R. Betts__, University of Pennsylvania, USA

*__Bonnie J. Howell__, Merck & Co., Inc., USA

Barbara K. Felber, NCI, National Institutes of Health, USA
Therapeutic Vaccines – Preclinical to Clinical Trials

Dan H. Barouch, Beth Israel Deaconess Medical Center, USA
Therapeutic Antibody and Vaccine Strategies

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Julie Ake, Walter Reed Army Institute of Research, USA
HIV Remission in Acutely Treated Populations

Brad Jones, Weill Cornell Medicine, USA
Target-Intrinsic CTL Resistance, A Role in Reservoir Persistence?

Beatriz Mothe, IrsiCaixa AIDS Research Institute-HIVACAT, Spain
AELIX-002: A RCT with HTI Therapeutic Vaccines in Early-Treated HIV

Leonard Mvaya, Malawi-Liverpool Wellcome Trust Clinical Research Programme, Malawi
Short Talk: Duodenal Tissue-Resident CD8+ T Cells Exhibit Low Cytolytic Molecule Expression and Spatially Localise Away from HIV-Susceptible CD4+ T Cells

Amit Kumar Singh, National Institute for Research in Reproductive Health, India
Short Talk: Non-Cytotoxic Signatures Dominate HIV Specific T Cell Responses in Viremic Non-Progression

Deanna A. Kulpa, Emory University, USA
Short Talk: The Contribution of CD8+ T Lymphocytes to HIV/SIV Persistence during ART

Considerations in Future Vaccine Design (10:10am Denver/Mountain Time Start) (EK42)

***Sandhya Vasan**, US Military HIV Research Program / Henry Jackson Foundation, USA

***Georgia D. Tomaras**, Duke University Medical Center, USA

Keith Reeves, Duke University School of Medicine, USA
HIV-Specific NK Cells Responses and their Potential for Harnessing in Vaccine Design

Erica Andersen-Nissen, Cape Town HVTN Immunology Laboratory, South Africa
Innate Immune Signatures Associated with HIV Vaccine Immunogenicity

Nichole R. Klatt, University of Minnesota, USA
Potential Role of the Microbiome in HIV Vaccination

Ashley N. Nelson, Duke University, USA
Short Talk: Induction of Neutralizing Antibody Responses in BG505 SOSIP Immunized Infant Rhesus Macaques

Immunotherapeutic and Gene Therapy Approaches Targeting the HIV Reservoirs (10:10am Denver/Mountain Time Start) (EK43)

Rafick Sekaly, Emory University, USA
A Novel T Cell Stem Cell Leads to HIV Control and HIV Persistence

***Paula M. Cannon**, University of Southern California, Keck School of Medicine, USA
Gene Editing the Ig Locus of B Cells to Produce Single-Chain Antibodies against HIV

***Petronela Ancuta**, Centre de Recherche de l'Universite de Montreal, Canada
Targeting Th17 Cells in HIV Cure/Remission Strategies

Beatrice H. Hahn, University of Pennsylvania, USA
Varying Susceptibility of HIV-1 to Type 1 Interferon Inhibition During Infection

Closing Remarks (11:40am Denver/Mountain Time Start) (EK42)

Closing Remarks (11:50am Denver/Mountain Time Start) (EK43)

Networking Lounge (Joint) (12pm Denver/Mountain Time Start)