SUNDAY, JANUARY 23
Arrival and Registration

MONDAY, JANUARY 24
Welcoming Remarks (Organizers) and Keynote Address
Barry R. Bloom, Harvard University, USA
Remote Presentation: A Half Century of Research on Tuberculosis: Successes and Continued Challenges

When, How and Who Does Mtb Infect?
*Chetan Seshadri, University of Washington, USA
*Reinout van Crevel, Radboud University Nijmegen Medical Centre, Netherlands
Robin Wood, University of Cape Town, South Africa
Detection of Mycobacterium Tuberculosis in Paucibacillary Bioaerosols
Richard F. Silver, Case Western Reserve University School of Medicine, USA
Infection and Immunity in the Lung
Lalita Ramakrishnan, University of Cambridge, UK
Latent TB: Does it Exist and if so what is it?
Rein Houben, LSHTM, UK
Short Talk: Quantifying the Thresholds and Pathways Following Mtb Infection
Hanif Esmail, University College London, UK
Short Talk: A 5-year Follow-up Study of Subclinical TB Identified by FDG-PET/CT in Asymptomatic, HIV Uninfected Household Contacts of Drug-resistant TB
Nadege Nziza, Ragon Institute, USA
Short Talk: Discriminatory Antibody Footprints Across Active and Latent Tuberculosis

Workshop 1: Novel Approaches to TB Therapy
*Alan Sher, NIAID, National Institutes of Health, USA
*Jennifer Philips, Washington University School of Medicine, USA
Monique Theriault, Cornell University, USA
Metabolic Crosstalk and its Impacts on M. Tuberculosis Pathogenesis and Drug Discovery
Sadiya Parveen, Johns Hopkins School of Medicine, USA
A Novel Glutamine Metabolism Antagonist Inhibits Mtb Proliferation in Mice by a Mechanism Involving Immune Cell Metabolic Reprogramming
Conor Grant, Trinity College Dublin, Ireland
Tuberculosis Infection Reduces Macrophage Expression of Vitamin A Metabolism and Transport Genes
Kathryn Rahlewes, UT Southwestern ME, USA
The Role of Deubiquitinating Enzymes During Mycobacterium tuberculosis Infection of Macrophages
Harim Won, Harvard T.H. Chan School of Public Health, USA
Targeted Protein self-degradation as a Novel Therapeutic Strategy for Tuberculosis

Jennie Ruelas Castillo, Johns Hopkins School of Medicine, USA
The Heme Oxygenase-1 Metalloporphyrin Inhibitor Stannsorfin Enhances the Activity of a Novel Regimen for Multidrug-Resistant Tuberculosis in a Murine Model
Arnaud Machelart, Pasteur Institut of Lille, France
Intrinsic Antibacterial Activity of Beta-cyclodextrins Potentiates their Effect as Drug Nanocarriers Against Tuberculosis
Vivek V. Thacker, École Polytechnique Fédérale de Lausanne, Switzerland
Microphysiological Systems as New Infection Models for Tuberculosis

TB Lessons from Co-Morbidities and Susceptible Hosts
*Robert J. Wilkinson, University of Cape Town, South Africa
Lele Rangaka, University College London, UK
How HIV Co-Infection Changed our Perspective on TB
Blanca I. Restrepo, University of Texas HSC Houston, Brownsville Campus, USA
TB-Diabetes in Adults vs Elderly: Unexpected Interactions
*Joseph Keane, Trinity College Dublin, Ireland
Cytokines Blockers and Tuberculosis Susceptibility
Brendan K. Podeil, Colorado State University, USA
Short Talk: The Impact of Vitamin A Deficiency on Tuberculosis Progression
Annie Mayer Bridwell, Washington University School of Medicine, USA
Short Talk: Altered Diabetic Neutrophil Function as a Driver of Increased Susceptibility to M. Tuberculosis

Poster Session 1

TUESDAY, JANUARY 25
Breakthroughs in TB Chemotherapy, Drug Resistance and Assessing Therapeutic Outcome
*Clifton E. Barry III, NIAID, National Institutes of Health, USA
Clinical Trials, from the British Medical Research Council to PreDictTB
Valerie Mizrahi, University of Cape Town, South Africa
Opportunities and Challenges in Early-Stage TB Drug Discovery: Targeting DNA Replication as a Case Study
David Barros, GlaxoSmithKline, Spain
Current Clinical Candidates for TB Treatment
Veronique Anne Dartois, Hackensack Meridian Health, USA
Re-Imagining Tuberculosis Pharmacology Can We Predict Drug Penetration at Key Sites of TB Disease?
Francesca Tomasi, Harvard T. H. Chan School of Public Health, USA
Short Talk: Peptidyl tRNA Hydrolyase is Required to Maintain Pools of Charged tRNA in Mycobacterium tuberculosis
Divya Tiwari, Queen Mary University of London, UK
Short Talk: Characterizing Antimicrobial and Immunomodulatory Effects of Inhibiting M. Tuberculosis Biotin Protein Ligase
Gregory H. Babunovic, Harvard T.H. Chan School of Public Health, USA
Short Talk: Carrots and Consumption - How Retinoic Acid Elicits Macrophage Control of Mycobacterium tuberculosis

* Session Chair † Invited but not yet accepted  Program current as of December 22, 2021. Meal formats are based on meeting venue. For the most up-to-date details, visit https://www.keystonesymposia.org.
Workshop 2: Young Investigator Workshop

*Shabaana A. Khader, Washington University School of Medicine, USA
*Amanda J. Martinot, Tufts Cummings School of Veterinary Medicine, USA
Stephen M. Carpenter, Case Western Reserve University, USA
Human Memory CD4+ T cells that Directly Recognize Macrophages Infected with Mycobacterium Tuberculosis are a Distinct and Smaller Subset of those that are Antigen-specific

Munyaradzi Nyasha Musvosvi, University of Cape Town, South Africa
Distinct Specificities in the αβ T cell Response to Mycobacterium Tuberculosis Infection: Control Versus Disease Progression

Tyler D. Bold, University of Minnesota, USA
Human Immunology at the Site of HIV-Associated Tuberculosis Meningitis Infection Reveals Interferon Signatures Associated with Impaired Bacterial Control

Riti Sharan, Texas Biomedical Research Institute, USA
Impact of Timing of Antiretroviral Therapy on LTBI Reactivation in TB/SIV Co-Infection Model

Alissa C. Rothchild, University of Massachusetts Amherst, USA
Vacination Modulates Early Innate Responses by Alveolar Macrophages to Mycobacterium Tuberculosis

Mark R. Cronan, Max Planck Institute for Infection Biology, Germany
A New Role for Type 2 Immunity in Tuberculosis Pathogenesis

Sladjan Prisic, University of Hawaii at Manoa, USA
Two-in-one: Zinc Limitation Triggers Formation of a Distinct Subpopulation of Mycobacterium tuberculosis

Shuyi Ma, University of Washington, USA
Network-centric Functional Dissection of Ser/Thr Kinase Regulation in Mycobacterium Tuberculosis

The Host-Pathogen Interaction: An Emerging Focus on Immunometabolism

Larry S. Schlesinger, Texas Biomedical Research Institute, USA
Shabaana A. Khader, Washington University School of Medicine, USA
Role of Immunometabolism in MDR TB

David G. Russell, Cornell University, USA
The Causes and Consequences of Macrophage Diversity in Tuberculosis in Vivo.

Adrie J. C. Steyn, Africa Health Research Institute, South Africa
Metabolic Mechanisms and Clinical Phenotypes

Eduardo Pinheiro Amaral, NIAID, National Institutes of Health, USA
Short Talk: GPX4/BACH1 Axis Regulates Necrotic Cell Death and Host Resistance in Mycobacterium Tuberculosis Infection in vivo by Modulating both Glutathione and Iron Metabolism

Pallavi Chandra, Washington University School of Medicine, USA
Short Talk: Macrophage Global Metabolomics Identifies Cholestenone as a Mycobacterium Tuberculosis-host Co-metabolite Present in Human Tuberculosis Infection

*Thomas J. Scriba, University of Cape Town, South Africa
Elisa Nemes, University of Cape Town, South Africa
Immune Correlates of Protection in Human BCG and M72:AS01E Trials
Frank Verreec, Biomedical Primate Research Center, Netherlands
Mucosal Revaccination after Intradermal BCG Prevents TB Disease in Rhesus macaques
Anne O’Garra, Francis Crick Institute, UK
Cross-Host Species Immune Correlates

Rosemary V. Swanson, Washington University in St. Louis, USA
Short Talk: Antigen-Specific B Cells Direct T Follicular-like Helper Cells into Lymphoid Follicles to Mediate Mycobacterium Tuberculosis Control

Ben Gern, Seattle Children’s Research Institute, USA
Short Talk: Dissecting the Immune Regulation of Tuberculosis Granuloma Structure

Taylor Foreman, National Institutes of Health, USA
Short Talk: Rapid Depletion of CD4 T Cells in Tuberculosis Granulomas Following SIV co-infection

Special Lecture

*Thomas J. Scriba, University of Cape Town, South Africa
Sara Suliman, University of California, San Francisco, USA
Opportunities and Challenges in TB Research from a Young Investigator’s Perspective

Workshop 3: Vaccination and Immune Correlates

*Thomas R. Hawn, University of Washington, USA
Patricia A. Darrah, NIAID, National Institutes of Health, USA
Fergal Duffy, Seattle Children’s Research Institute, USA
A Mouse-Derived Transcriptional Signature of Mtb Containment Predicts Human Outcomes

Dylan Sheerin, WEHI, Australia
Relationship of Blood Transcriptomic Signatures to Radiographic and Microbiologic Phenotype in a Cohort of Asymptomatic Tuberculosis Household Contacts

Michaela Reichmann, University of Southampton, UK
Investigating Tuberculosis Pathogenesis through Integrated Transcriptomic Analysis of Human Granulomas and a Biomimetic Model

Allison Nicole Bucsan†, NIH, USA
IV-BCG Dose Ranging Study in Non-human Primates to Investigate Correlates of Vaccine-Mediated Protection against Tuberculosis

Joshua M. Peters, Massachusetts Institute of Technology, USA
Intervened BCG Protection is Associated with Primed Cell Circuits Activated upon Secondary Challenge

Maphe Mthembu, Africa Health Research Institute, South Africa
Discrepancy Between Mtb-specific IFNγ and Mtb-specific IgG Responses in HIV+ People with Low CD4 Counts

Kievershen Nargan, Africa Health Research institute, South Africa
RNAscope and Immunohistochemistry Reveals Bacilli Previously Undetected in Human Pulmonary TB Tissue Samples

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Poster Session 2

WEDNESDAY, JANUARY 26

Recent Advances in Understanding Immune Correlates of Protection
Marjorie Nakibuule, MRC/UVRI and LSHTM, Uganda
B Cell Frequency in the Lungs of Active TB Patients with HIV. A TB Postmortem Study

Moving TB Vaccine Research Forward in the Next 50 Years: New Perspectives and Opportunities
*Christina L. Stallings, Washington University School of Medicine, USA
*Daniel L. Barber, NIAID, National Institutes of Health, USA
Thomas J. Scriba, University of Cape Town, South Africa
Clinical Development of TB Vaccines: What We Know and What We Don’t Know

Maziar Divangahi, McGill University, Canada
Immune Mechanism in TB vs Respiratory Virus Infection: Learning from Each Other

Rocky Lai, University of Massachusetts Medical School, USA
Short Talk: Vaccine-Mediated Protection in Genetically Diverse Collaborative Cross - A Model for Pre-Clinical Vaccine Testing

Closing Keynote Address
*Joseph Keane, Trinity College Dublin, Ireland
Eric J. Rubin, Harvard T.H. Chan School of Public Health, USA
The Future of TB Research and Control in an Age of Viral Pandemics

Meeting Wrap-Up: Outcomes and Future Directions
Anne O’Garra, Francis Crick Institute, UK

Poster Session 3

THURSDAY, JANUARY 27

Departure