

Immune Mechanisms of Protection Against TB

Innovations for Tackling Tuberculosis in the Time of COVID-19
September 15, 2021
Rhea Coler



Seattle Children's
HOSPITAL • RESEARCH • FOUNDATION



DEPARTMENT OF PEDIATRICS
UNIVERSITY of WASHINGTON

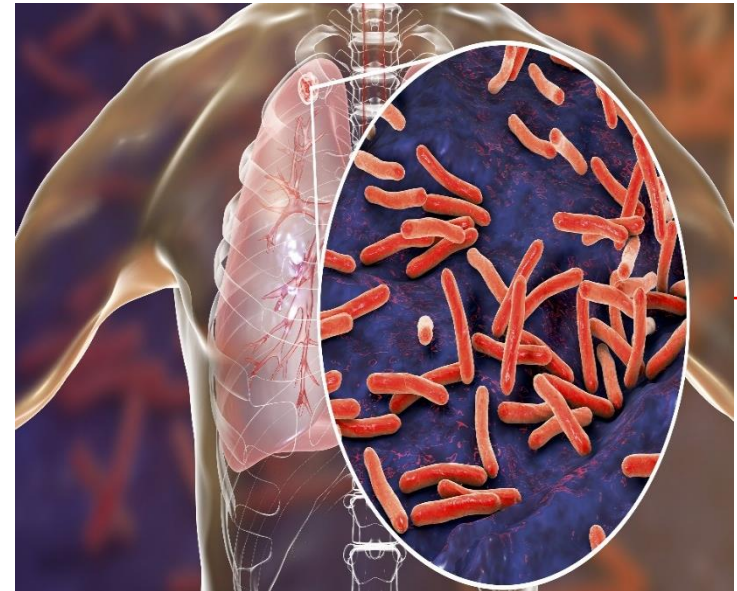
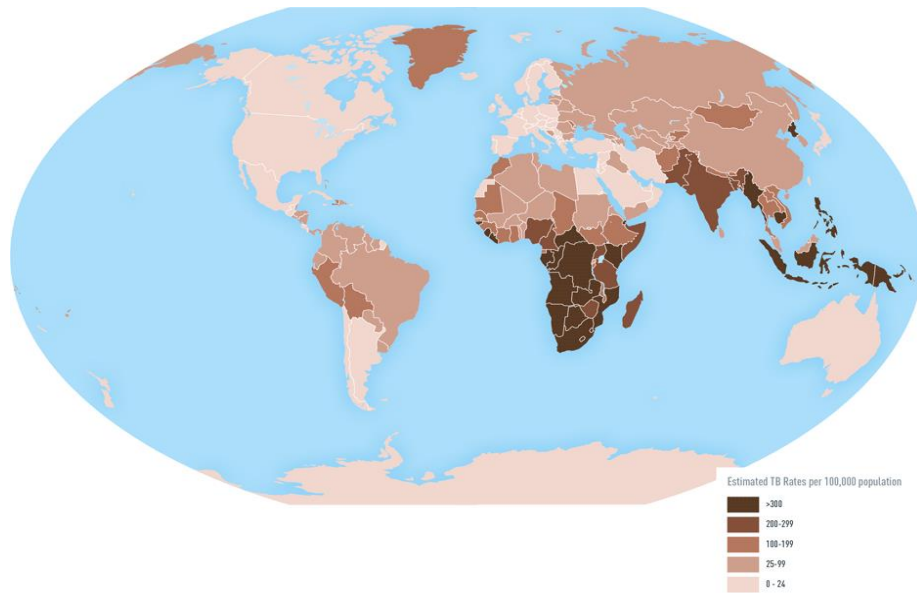
Presentation Overview

- Introduction
- Immune Response to *Mycobacterium tuberculosis*
- Correlates of Protection
- Immune Mechanisms of Protection against *Mycobacterium tuberculosis* Center (IMPAC-TB).



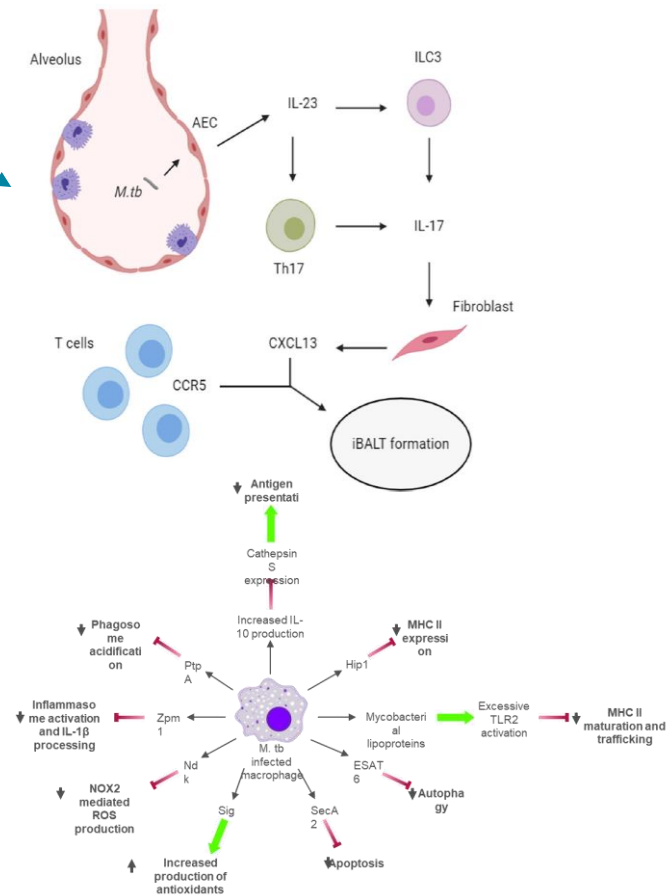
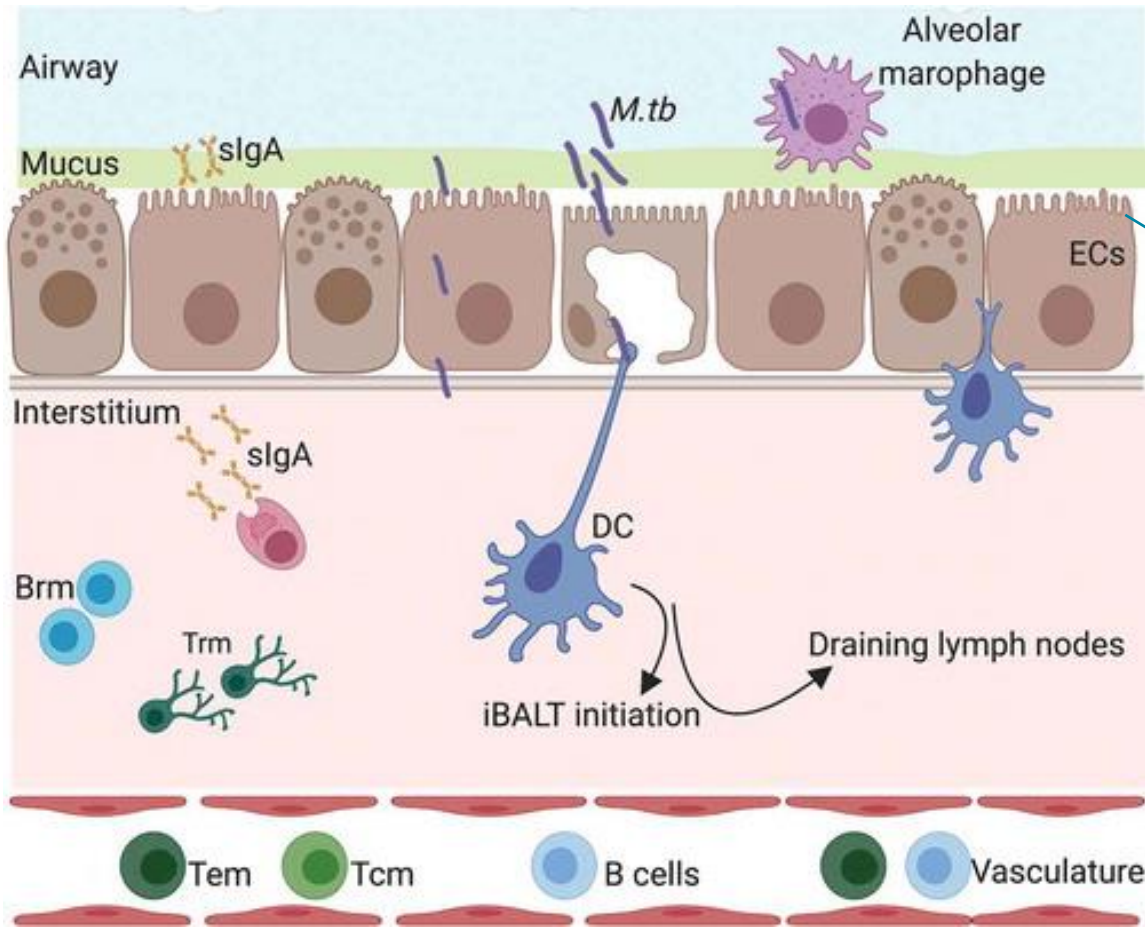
Fundamentals

Pathogen:



- In 2020 ~10M people developed TB, 1.4M died
- 90% were adults, 65% were male, 56% were in five countries: India, Indonesia, China, the Philippines, and Pakistan.

Respiratory Mucosal Responses following *Mtb* Infection of Airway Epithelial Cells



Immune Mechanisms of Protection against Mycobacterium tuberculosis Center (IMPac-TB)

TECHNICAL PROPOSAL

BAA Number: BAA-NIAID-
NIHA1201700104

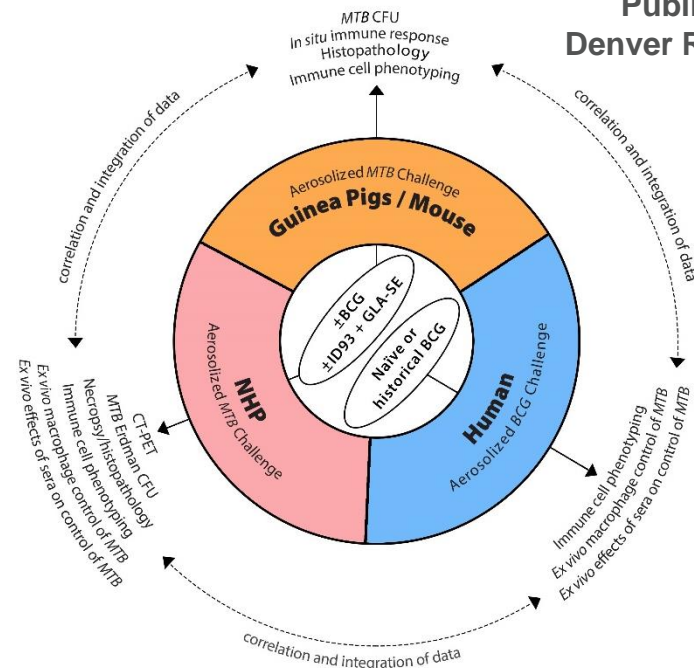
Contract Title: A cross species
mechanistic interrogation of
mycobacterial and vaccine-induced
immunity

Investigator: Rhea Coler, PhD
Telephone #: 206-884-3336

Applicant Information:
Seattle Children's Research Institute
307 Westlake Ave N, Seattle, WA
98109



Seattle Children's Research Institute
Fred Hutch Cancer Research Center
La Jolla Institute of Allergy and Immunology
Colorado State University
University of Oxford
Public Health England
Denver Research Institute
Ragon Institute



A cross-species mechanistic interrogation of mycobacterial and vaccine-induced immunity



Rhea Coler
SCRI



Susan Baldwin
SCRI



Sasha Larsen Akins
SCRI



Helen McShane
Oxford



Sally Sharpe
PHE



Marcela Henao-Tamayo
CSU



Andrew Fiore-Gartland
FHCRC/SCHARP



Galit Alter
Ragon



Edward Chan
DRI / NJH



Brendan Podell
CSU



Cecelia Lindestam Arleham
LJI

Meet the Coler Team



Rhea Coler
Professor/
Senior Investigator



Susan Baldwin
Senior Research
Scientist



Sasha Akins
Research Scientist III



Bryan Berube
Research Scientist III



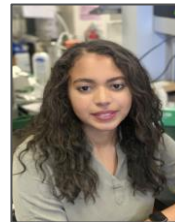
Zhiyi Zhu
Research Scientist IV



Valerie Reese
Research Associate III



Tiffany Pecor
Research Associate III



Brittany Williams
Grad Research Assistant



Emma Johnson
Research Tech II



Carmen Zapata & Wade
Washington
URM Summer interns



Suhavi Kaur
Research Tech II



Thomas Smytheman
Research Tech I



Maham Rais
Postdoctoral Scientist

Collaborative Efforts and Synergies

- Plug and Play
- Shared control PBMC/serum samples for the cellular and humoral assays that serve as standardization sets for in vitro studies
- Bridging preclinical studies with different M.tb challenge strains (Rv, Erdman, SA161, CDC1551)
- Barcoded M.tb for competition assays, allowing a larger scale assessment of generalizability (Fortune)
- BCG Danish (Coler), BCG Pasteur (Urdahl)
- Additional vaccine candidates
- SLACK for sharing of SOPs, protocols

Summary

- Identification and validation of common protective correlates of immunity against Mtb
- Escalating preclinical animal models of TB, NTM exposure, and human challenge experimental medicine clinical studies
- Rational design and development of candidate vaccines that generate robust levels of durable, protective immunity against TB



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Suhavi Kaur
Zhiyi Zhu
Maham Rais

Adjuvants, Formulations and RNA vaccines

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Darrick Carter
Jesse Erasmus
Amit Khandhar
Sean Gray



FHCRC / SHARP

Andrew Fiore-Gartland



Colorado State University

Marcella Henao-Tamayo
Brenden Podell
Diane Ordway



University of Oxford

Helen McShane



Public Health England

Sally Sharpe
Simon Clark
Andrew White



Ragon

Galit Alter



La Jolla Institute

Cecelia Lindestam Arleham



Denver Research Institute

Edward Chan



London School of Hygiene and Tropical Medicine

Hannah Painter
Helen Fletcher



Contract
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Center for Global Infectious Disease Research (CGIDR)
Seattle Children's Research Institute
206-884-3336 OFFICE
Rhea.Coler@seattlechildrens.org
OFFICE 307 Westlake Ave N, Suite 500 (#421) Seattle, WA 98109

Affiliate Professor
Department of Global Health
University of Washington