



## Louis Hopkins

Herz Global Impact Award  
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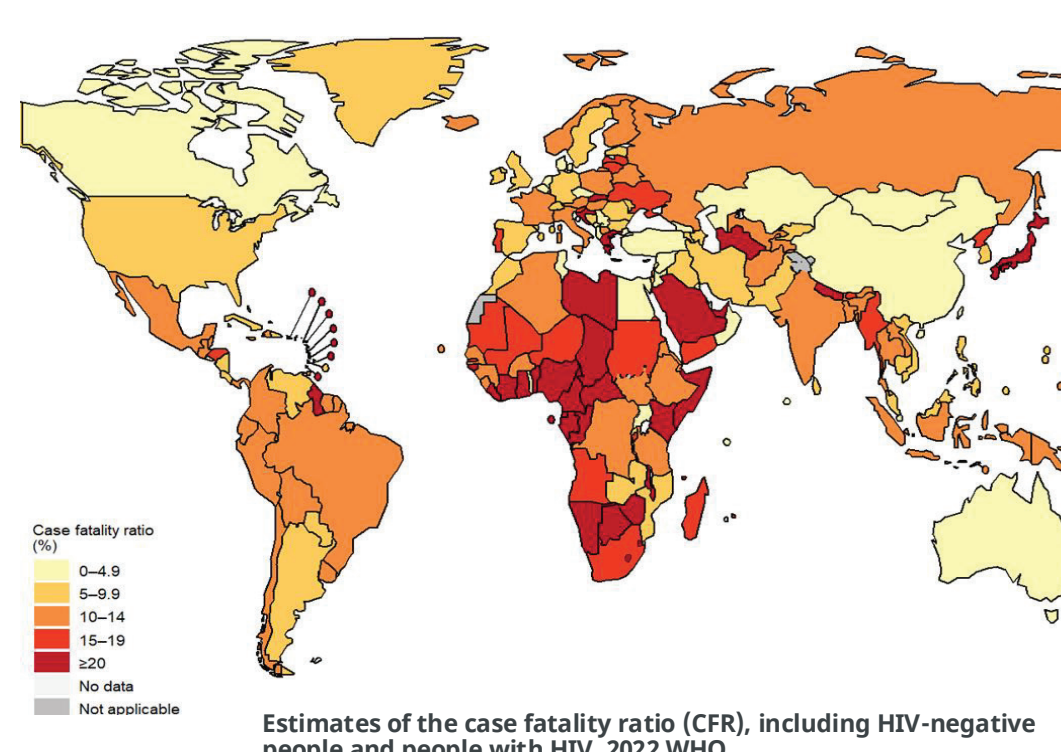


EMORY  
UNIVERSITY

# Dendritic cell immunometabolism and regulation of anti-Mycobacterium tuberculosis (Mtb) immune responses through CD155 pathways

By integrating data across different models, we can better understand Mtb immune suppression at the metabolic and cellular level to identify targets to improve vaccines and therapies for tuberculosis (TB).

### Tuberculosis (TB): A global health crisis



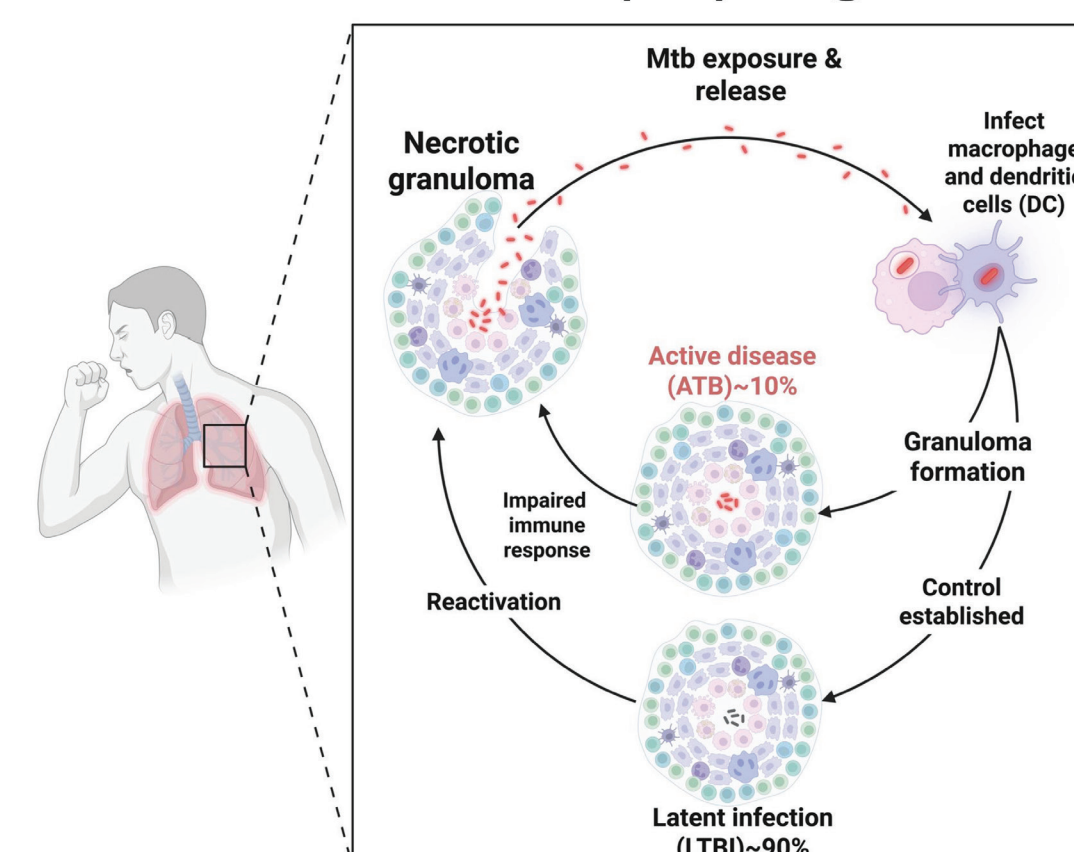
About a quarter of the global population is estimated to have been infected with TB bacteria worldwide

In 2023, an estimated 10.8 million people fell ill with TB

TB is the world's leading cause of death from a single infectious agent (1.3M deaths in 2023)

TB is present in all countries and age groups.

### Tuberculosis (TB): A global health crisis



Urgently need new vaccines

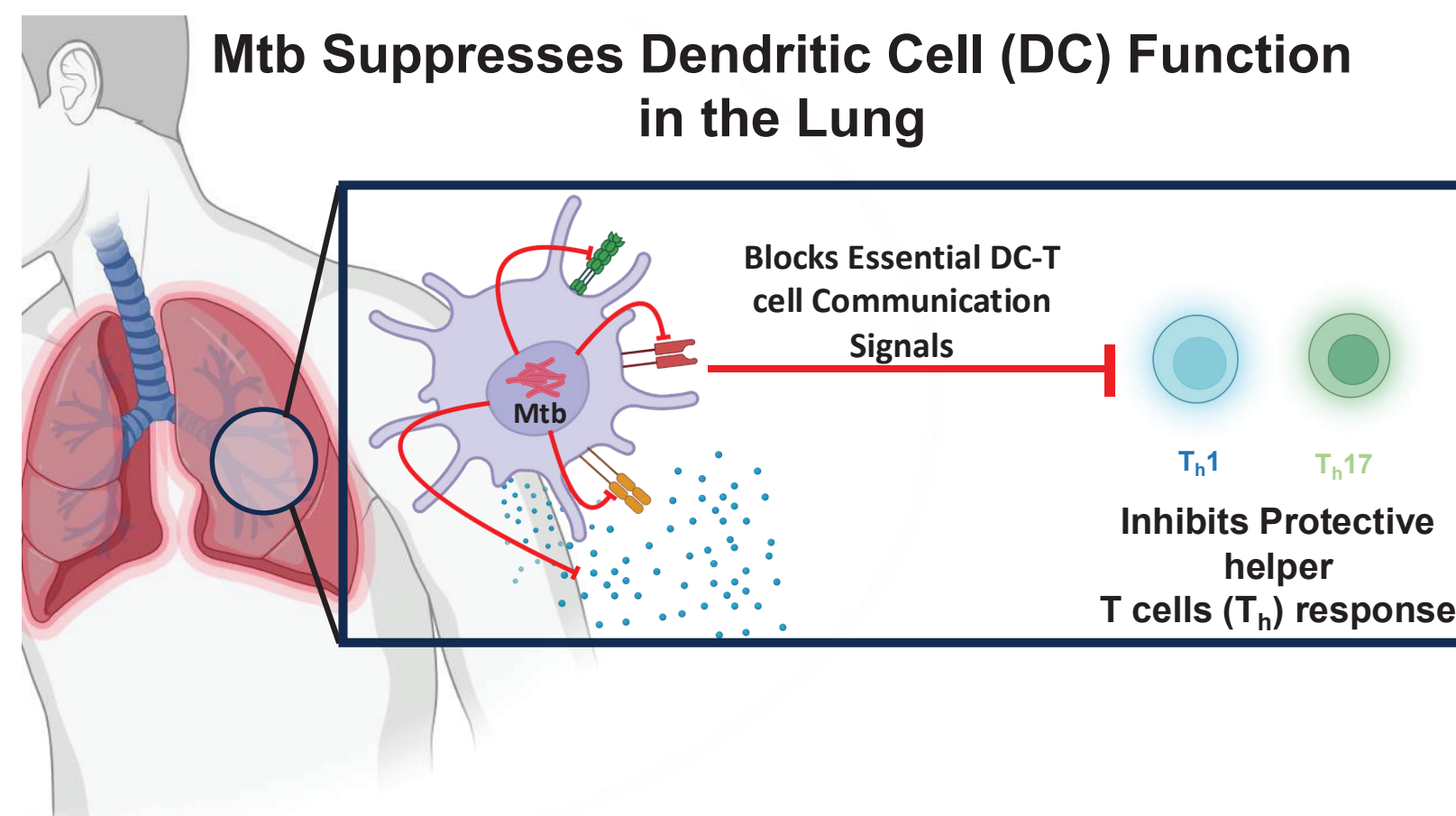
The only available TB vaccine (BCG) is not effective

Need better understanding of basic TB biology:

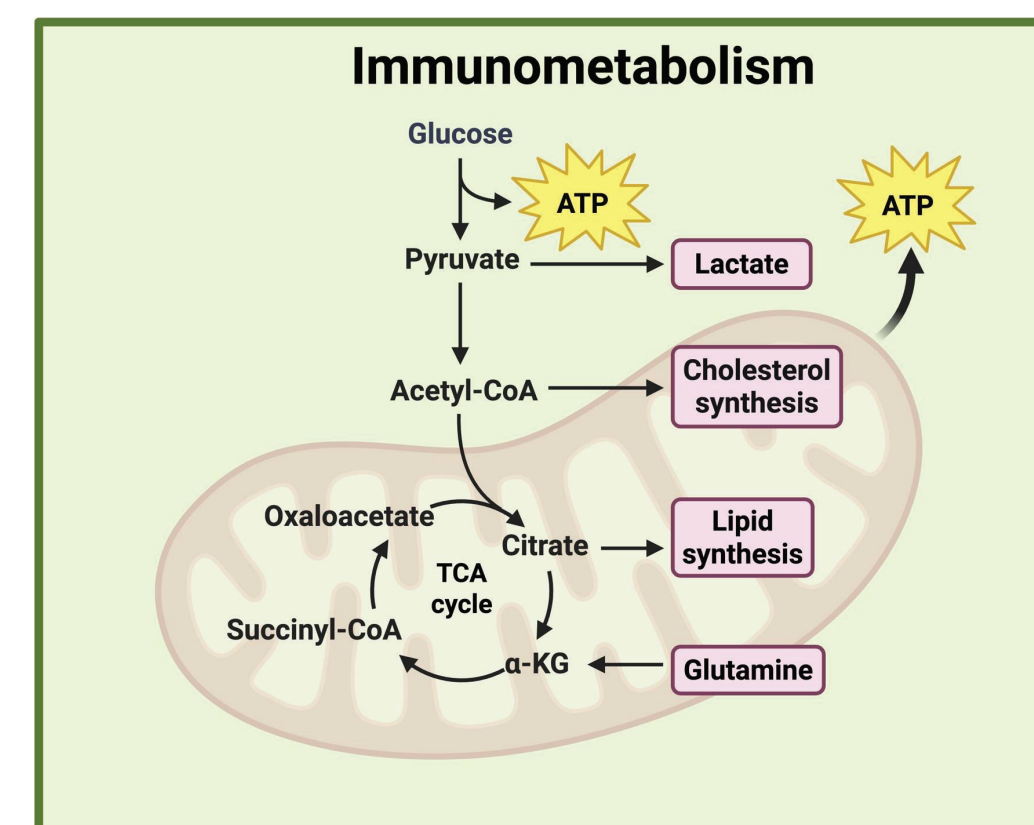
How do early infection events shape the disease?

How do we induce the protective cell types?

### Mtb Suppresses Dendritic Cell (DC) Function in the Lung



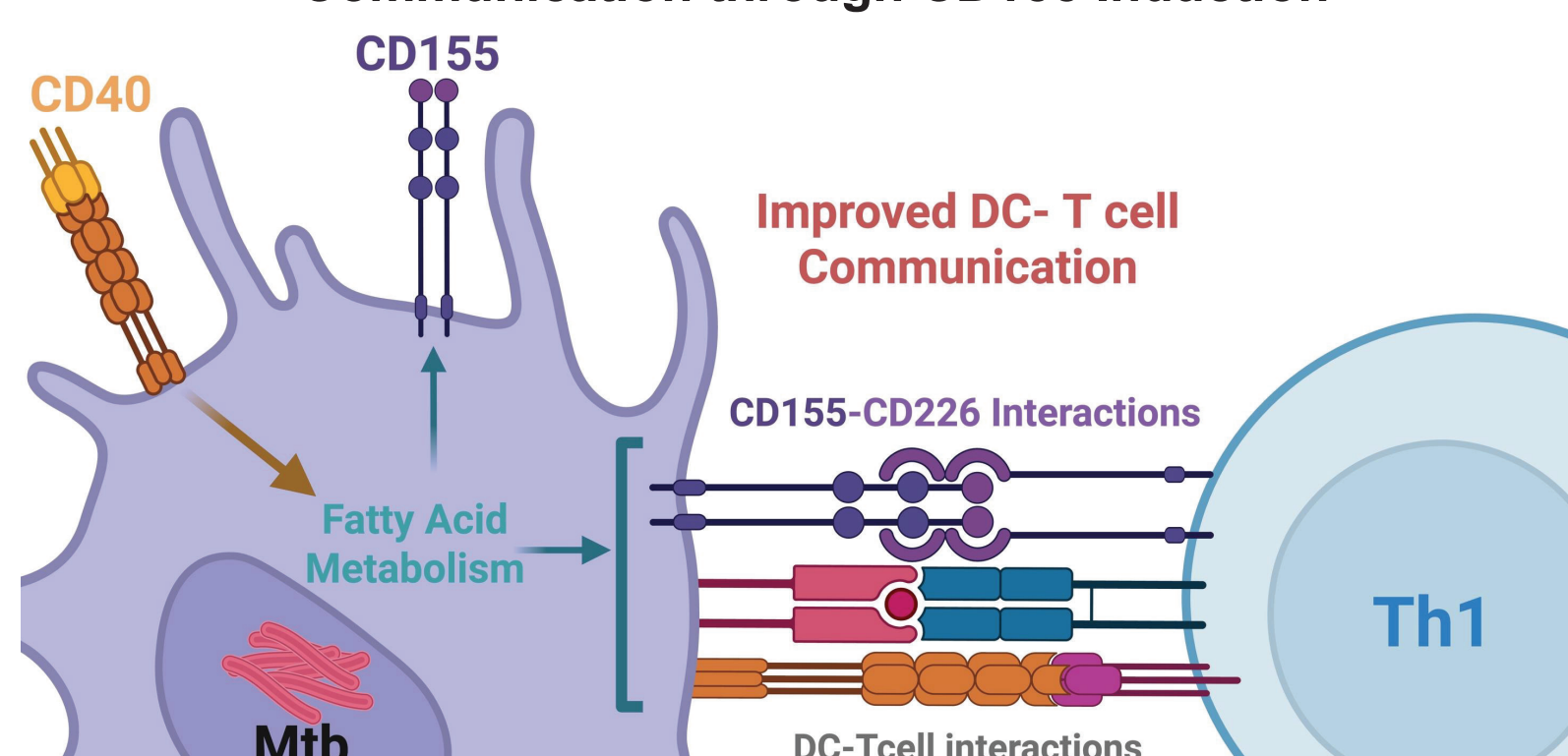
### Metabolism Dictates Immune Cell Function



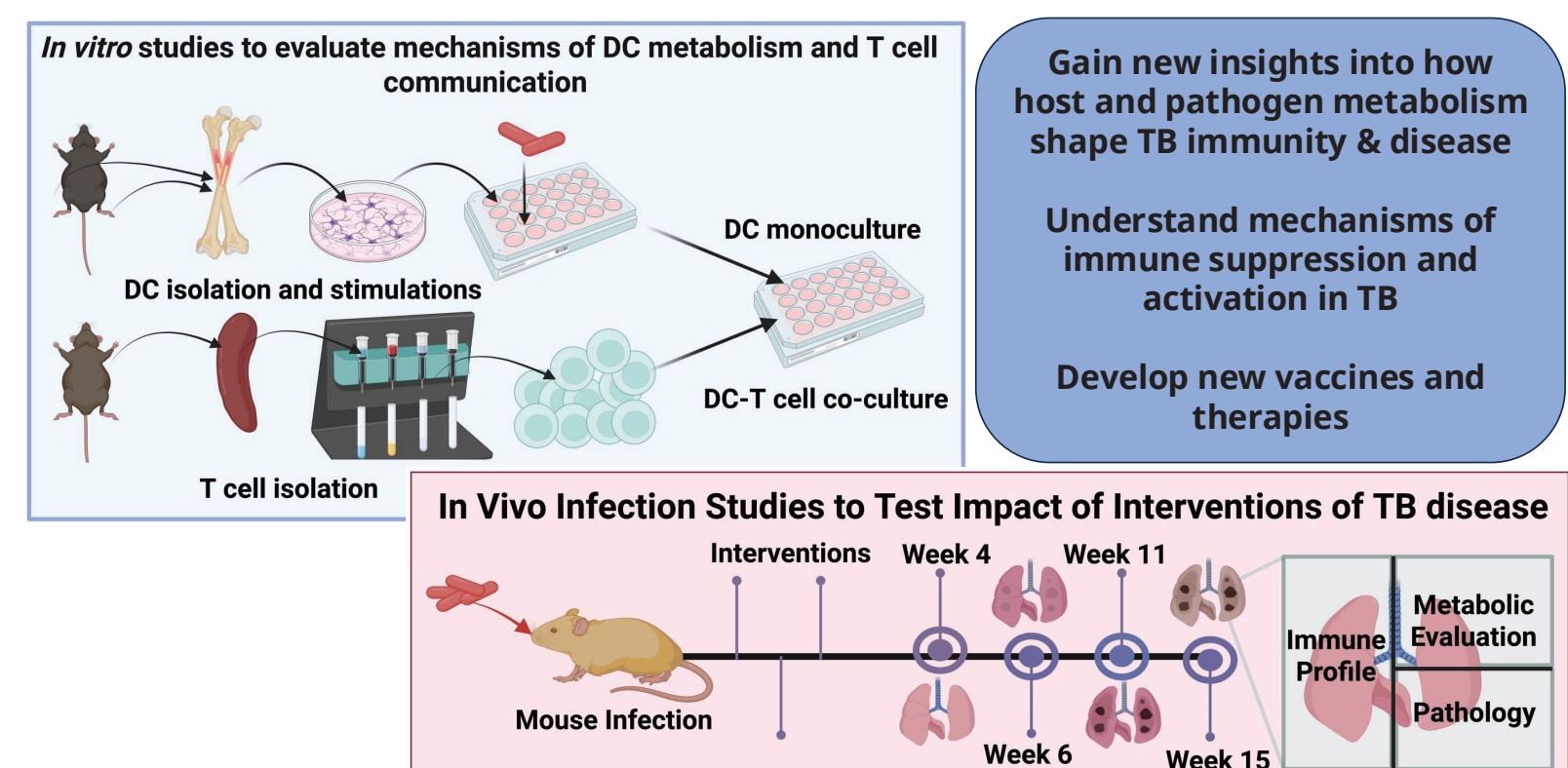
Mtb manipulates host immunometabolism to facilitate its survival and promote disease

How can we change DC metabolism to increase essential communication with T cells?

### CD40 Rewires DC Metabolism and Increases Potential T cell Communication through CD155 Induction



### Approaches to Understand the Intersection between Metabolism and TB Immunology



Gain new insights into how host and pathogen metabolism shape TB immunity & disease

Understand mechanisms of immune suppression and activation in TB

Develop new vaccines and therapies

Scholar Awards Celebration

November 12, 2025



Igniting  
Innovation  
in Georgia