



Louis Hopkins

Ph.D. Candidate, Immunology
First Year ARCS Scholar
Herz Global Impact Award



EMORY UNIVERSITY

Investigating TIGIT-mediated immune suppression during Mycobacterium Tuberculosis (Mtb) infection and pathogenesis

Tuberculosis: Global Public Health Threat

Mtb Immune Suppression

1. Antigen
2. Co-stimulation
3. Cytokine

Limits myeloid cell- T cell communication

Inadequate protective helper T cells (T_H) response

Improve TB immune responses?

Mtb limits expression of adhesion molecule, CD155

| Time (H) | Mtb | hip1 mutant |
|----------|-----|-------------|
| 0H | ~8 | ~8 |
| 8H | ~10 | ~12 |
| 24H | ~12 | ~18 |
| 48H | ~20 | ~35 |
| 72H | ~18 | ~42 |

Hip1=serine protease

Why could this be beneficial for the pathogen?

T cell

1. CD155-TIGIT promotes immune suppression

2. Regulates the T cell responses important for TB control

Not explored in the TB field

Myeloid Cell

Hypothesis

Naive T cell

CD155

CD226

TIGIT

Poor Activation

Suppressive myeloid cells

FoxP3

T cell Suppression and Suppressive T cells

Suppression in Granuloma

Global TIGIT Outcomes

Manipulation of CD155 and TIGIT interactions promote immune suppression and TB pathogenesis

Provide new insights into immunosuppression throughout the spectrum of TB disease

HIV coinfection

Vaccines

Granulomas

ACKNOWLEDGEMENTS: ADVISOR: Jyothi Rengarajan, PhD, Rengarajan Lab, Emory Vaccine Center FUNDING: NIH-NIAID R01AI155023

Scholar Awards Celebration
November 15, 2023



Igniting Innovation in Georgia