**Research Theme**

*Infection and Immunity*

**Research Project Title**

Impact of host metabolic status on mycobacterial virulence, persistence and drug resistance.

**Principal Investigator**

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**Collaborator**

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**Project Description**

**Diabetes has emerged as a risk factor for tuberculosis (TB).** Increase in diabetes incidence as a fuel for TB and the associated complications of the dual disease burdens are triggering global health alarms. The mechanisms underlying the interplay between TB and diabetes remain unknown. As an intracellular facultative pathogen, *Mycobacterium tuberculosis* (*Mtb*) has developed strategies to cope with the limiting environment of the human macrophages, including its ability to scavenge host lipids for its survival. *Mtb* has co-evolved with its host into a genetically diverse bacterium with distinct biological and clinical phenotypes, including their lipid repertoires which are key factors of virulence, drug resistance and transmissibility. For instance, the PI has shown that clinical *Mtb* strains differ in their lipid surface coat compositions (Portevin *et al.*, mBio, 2014). We hypothesize that the human host environments, determined by their metabolic status, play a role in shaping the tubercle bacilli, which affect disease pathogenesis and treatment outcomes.

The aim of this PhD project is to study the impact of the host metabolic status (healthy vs diabetic) on immune cell functions and infection by clinical *Mtb* strains isolated from patients from different parts of the world. The researcher will be undertaking a multidisciplinary approach combining endocrinology, infection biology, and high-end lipidomics/ metabolomics and transcriptomics to dissect mechanisms contributing to the urgent problem of TB-diabetes comorbidity. He/ She will identify pathways critical for the host-pathogen relationship and determine the effects of modulating host metabolic pathways, as an adjunct therapy for TB. This work will lay the foundation for the future of stratified medicine, based on *Mtb* clinical strains and host metabolic status.

**Contact Us**

If you have questions regarding this project, please email the Principal Investigator.

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