The role of oxidised cholesterols during respiratory infection

Honours Project Description

Project duration:	12 months
Description:	Metabolic diseases including type 2 diabetes (T2D) increase severity of bacterial and viral lung infections. The underlying immune-metabolic mechanisms however remain elusive. Our laboratory has recently shown that oxidised cholesterols and the oxidised cholesterol receptor GPR183, expressed on innate and adaptive immune cells, are important players in *Mycobacterium tuberculosis* pathogenesis: a) decreased expression of GPR183 in blood from tuberculosis (TB) patients with T2D is associated with more severe TB disease, b) activation of GPR183 by the oxysterol 7a25OHC induces autophagy and reduces intracellular bacterial growth and c) GPR183 is a negative regulator of type I IFNs. Bartlett S, et.al. Frontiers Immunology 2020 https://doi.org/10.3389/fimmu.2020.601534 This project expands on our published work to investigate the role of oxysterols in viral infections and determine the impact of cholesterol lowering medications on systemic and local oxysterol production in the lung and respiratory infection outcomes in preclinical murine models.
Expected outcomes and deliverables:	The applicant will gain expertise in the following techniques: - Working safely with human pathogens - Handling of laboratory animals - Extracting RNA from tissues, q-RT-PCR, ELISA, Flow Cytometry, Immunohistochemistry, Immunofluorescence
Suitable for:	Students with a background in Immunology, Molecular Biology, Chemistry
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