PCL/20/02 - The Role of Apelin and Apelin Receptor as therapeutic targets in lung inflammation and injury

Respiratory infections are the leading causes of sepsis, and can progress to lung inflammation and acute respiratory distress syndrome (ARDS). The mortality associated with ARDS remains high, and management is largely supportive. The contribution of immune cells such as neutrophils and macrophages to ARDS is known, however the role of non-immune cells in lung inflammation is poorly understood. Using an inflammatory model in human alveolar epithelial cells and mesenchyme-like cells, I have identified the peptide apelin as a major responder of these cells to *Pseudomonas* lipopolysaccharide (LPS). This project aims to understand the role of apelin, and the G-protein coupled apelin receptor, in the transcriptional response to inflammatory signalling in lung. To address this, apelin receptor agonists and antagonists will be used in the LPS inflammatory system in human alveolar epithelial cells, mesenchymal-like cells, and endothelial cells. Uncovering the molecular mechanisms of apelin action in lung inflammation could lead to development of the apelingergic system as a novel therapeutic target in lung inflammation and injury.