ETM/389 - Cathelicidins As Novel Therapeutic Antiviral Agents in Rhinovirus Infection

Studies have implicated dysregulated autophagy as a mechanism underlying human rhinovirus (HRV) mediated evasion of innate immunity and increased pathogenesis during infection, particularly in patients with pre-existing respiratory conditions. We have identified the human cathelicidin LL-37 as having potent direct antiviral activity against HRV, together with the capacity to alter death pathways in HRV-infected cells, as a potential host defence mechanism.
We propose to characterise the mechanism by which LL-37 exerts antiviral effects towards HRV, and to assess the potential for both exogenous LL-37 and Vitamin D (a known inducer of endogenous LL-37 production) to be used as antiviral therapeutics in this infection. In addition, we will investigate the modulation of autophagic pathways and the induction of apoptosis in HRV-infected cells, as an additional immunomodulatory mechanism for LL-37 mediated therapy of rhinovirus infection in the respiratory tract.