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School of Pharmacy PhD Project 2017 / 2018

Rapid detection of bacteria and antimicrobial resistance markers in chronic lung infection

Dr Deirdre Gilpin, Prof. Michael Tunney, Dr Derek Fairley and Prof. Peter Coyle

Bacterial infection in chronic lung disease is a major contributor to rates of mortality and morbidity, and increasing rates of antibiotic resistance are of concern amnog clinicians. Traditionally, identification and bacterial suscetibility testing has been largely culture based, which can take several days. During this time, antibiotic treatment is empiric and may not be approriate. However, increasingly non-culture based techniques are being investigated as a means to both detect and identify bacteria, and to determine the rpesence of antibiotic resistance markers.This study will initially develop real time automated PCR assays to identify principal pulmonary pathogens directly from respiratory samples from patients with chronic lung disease. Leveraging on our extenisve bank of isolates from a range of clinical conditions, we will use whole genome sequencing to compare the "resistome" (i.e. antibiotic resistance genes) of clincially signficant species, with published core-genome reference sequences. The molecular resistome will be compared with phenotypic measurements of antibiotic susceptibility (by determination of minimum inhibitory concentration).
Ultimately, this project aims to provide an aid to diagnosis and antibiotic therapy, in a clincially relevent time frame. This 3-year project will provide extensive training in molecular biology including next-generation sequencing techniques and analysis and routine bacteriology with an important clinical focus, as part of an internationally renknowned research team.

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How to Apply
Postgraduate applications should be made using Queen's University Direct Applications Portal. Please note that there are two application processes: one for admission to the university and another for postgraduate awards.

Further Information
Additional information for prospective postgraduate students can be found on the School of Pharmacy website and the Queen's Postgraduate website.

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