



# School of Pharmacy PhD Projects 2015/16

**Project Title** The role of *Pseudomonas aeruginosa* in infection in chronic respiratory disease.

**Supervisors** Dr D Gilpin, Prof. M. Tunney, Dr D. Downey (Centre for Infection & Immunity)

**Description** *Pseudomonas aeruginosa* is a common pathogen among people with various respiratory diseases, such as Cystic Fibrosis, bronchiectasis and COPD. Once acquired, chronic infection is usually established, with exacerbations resulting in decreased lung function and ultimately worse outcomes for the patient. A wide variety of bacterial virulence factors allow *P. aeruginosa* to evade host defences and antibiotics and establish persistent infection; however, the events involved in triggering exacerbation are poorly understood. This study will employ an array of culture based and molecular methods to establish differences in genotype and virulence of *P. aeruginosa* between various respiratory diseases, in order to determine whether particular lineages or phenotypes are associated with exacerbation. Various models will be used to assess virulence in isolates from different diseases and at different disease stages. Transcriptomic analysis will also be used to determine changes in phenotype, and particular emphasis will be placed on examining transcription of genes associated with virulence and antibiotic resistance and correlating this with relevant clinical parameters. Ultimately, this type of data aims to provide useful clinical information which will inform appropriate antibiotic prescribing and improve treatment of exacerbations. 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 renowned research team.

**Start Date** September 2015

**Keywords** *Pseudomonas aeruginosa*, bacteria, next-generation sequencing, molecular biology, antibiotic resistance, virulence

#### Contact Details

[pharmacypostgrad@qub.ac.uk](mailto:pharmacypostgrad@qub.ac.uk)

#### How to Apply

Postgraduate applications should be made using Queen's Online:

<http://go.qub.ac.uk/pgapply>

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:

<http://www.qub.ac.uk/pha>

and the Queen's Postgraduate website:

<http://www.qub.ac.uk/home/ProspectiveStudents/PostgraduateStudents/>



