# PGR Studentship Information 2021 entry

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| **\*Title of studentship** | **Inhibition of furin as a strategy for the treatment of chronic airways diseases** |
| **Value / what is covered?** | Fully funded.  100% of UK/EU tuition fees paid and an annual stipend for UK residents only (living expenses). |
| **Awarding body** | DfE CAST Studentship with Boston Pharmaceutics, USA |
| **Number of studentships** | 1 |
| **\*Summary descriptive text / Example of research project** | Chronic airways diseases such as cystic fibrosis (CF) and chronic obstructive lung disease (COPD) are associated with significant treatment costs (UK £4.7Bn & USA $42.6Bn pa), due to intensive management needs and frequency of hospitalization. In both cases cycles of infection and inflammation, as a result of thickened airway secretions and ineffective mucociliary clearance (MCC), contribute to airways obstruction, a progressive decline in lung function and recurrent lung injury.  Furin is a pro-protein convertase which can cleave and activate a wide range of mammalian and pathogenic substrates relevant to chronic lung disease. These include the epithelial sodium channel (ENaC), dysfunction of which contributes to airways dehydration, as well as TGF-beta-related processes.  A significant programme of work, in collaboration with Boston Pharmaceuticals, has already shown that novel first-in-class, highly selective, sub-nanomolar furin inhibitors have the ability to inhibit ENaC and improve MCC. The objective of this present study is to more fully understand the role of furin in other cellular processes to include the modulation of TGF-β1 signaling as further benefit may be achieved through the anti-inflammatory effects of these compounds as well as their effects on airway remodeling (fibrogenesis). Suppression of NOTCH signaling, in particular, could potentially promote ciliated cell differentiation instead of a cytokine-driven goblet cell metaplasia which would also provide a more positive cell fate to further enhance MCC and reduce overall mucus production.  These studies directly align to the strategic research interests of the Martin group and builds on a well-established collaborative relationship with Boston Pharmaceuticals. Working together we aim to deliver a potentially ground-breaking, impact-driven, translational drug delivery programme for the treatment of chronic airway diseases. |
| **\*Supervisor(s)** | Professor Lorraine Martin (School of Pharmacy) and Dr Damian Downey (School of Medicine, Dentistry & Biomedical Science). |
| **\*Eligibility / residence Status** | UK/EU only |
| **Country** | Northern Ireland, UK |
| **\*Start date and duration** | 1 October 2021  Funding covers a three-year, full-time PhD. |
| **\*Faculty** | Medicine, Health & Life Sciences |
| **\*Research centre / School** | School of Pharmacy |
| **Subject area** | Chronic airways disease, drug target validation and novel therapeutic strategies. |
| **Candidate requirements / Key skills required for the post** | Applicants should have a 1st, 2.1 honours degree (or equivalent) or Master’s degree in a relevant subject. Relevant subjects include Pharmaceutical Biotechnology, Biomedical Sciences, Pharmacy, Biochemistry, Molecular Biology, Pharmaceutical Sciences, Biological Sciences, or a closely related discipline. The School reserves the right to shortlist for interview only those applicants who have demonstrated high academic attainment to date. |
| **\*Deadline for applications** | 23rd July 2021 |
| **\*How to apply / contacts** | Postgraduate Research applicants for Pharmacy who are interested in applying for a fully funded DFE studentship must have applied to Queen’s, via the Direct Applications Portal, and submitted all required supporting documents by the closing date, which will be announced later in the Academic year.  <https://dap.qub.ac.uk/portal/user/u_login.php> |
| **Relevant links / more information** | [Professor Lorraine Martin,\_School of Pharmacy, QUB](https://pure.qub.ac.uk/portal/en/persons/lorraine-martin(60b109e2-c34a-47f6-8ec7-7eda01dbdb20).html)  [Dr Damian Downey, WWIEM, School of Medicine, Dentistry & Biomedical Science, QUB](https://pure.qub.ac.uk/en/persons/damian-downey)  <https://www.bostonpharmaceuticals.com>  [http://www.qub.ac.uk/schools/SchoolofPharmacy/Research/PostgraduatePositions/](about:blank)  [http://www.qub.ac.uk/schools/SchoolofPharmacy/Research/](about:blank) |
| **Keywords for search filters** | Proteases, cystic fibrosis, COPD, respiratory, airways, cell biology, molecular biology, biochemistry, drug development |
| **Training provided through the research project** | The successful applicant will join a well-resourced, multi-disciplinary team focussed on collaborative, translational research. The enhanced funding package will facilitate expert training in a range of cell, protein, molecular and imaging techniques to include differentiation of primary airways epithelial cells at air-liquid interface and other ex vivo functional models. A major benefit is that the student will have significant career development opportunities through engagement with an enabling and transformative industry partner. Access to novel, first-in-class compounds and additional resources will enable the generation of a significant body of data for both thesis and high impact research publications with BP. This project also provides a unique opportunity for the student to engage and contribute directly to a dynamic drug development programme. |
| **Expected impact activities** | Students are expected to present at a minimum of one national and international meeting during their training and make a contribution to internationally excellent research outputs, to include publication in international, peer-reviewed journals. Engagement with industry partners and participation in our on-going school’s outreach programme on lung health and/or science festivals will be encouraged. |