# PGR Studentship Information 2021 entry

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| **\*Title of studentship** | Targeting deubiquitinases for the treatment of airway 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 Almac Discovery |
| **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 in hospitalization. Morbidity and mortality are associated with a progressive decline in lung function due to recurrent lung injury and airways obstruction caused by thickened airway secretions and ineffective mucociliary clearance (MCC).  In normal airways, the epithelial sodium channel (ENaC) is predominantly silent however dysregulation leads to increased Na+ absorption, airways dehydration, thickened mucus and impaired MCC. ENaC endocytosis and trafficking is controlled by Nedd4-2-mediated ubiquitination. As restoration of normal MCC would serve to reduce the risk/number of life-limiting cycles of infection and lung injury, a reduction in ENaC at the apical membrane through the use of appropriate DUB inhibitors represents an attractive **disease-agnostic therapeutic strategy**.  The objective of this study is to validate ENaC as a target for DUB inhibition. This will be conducted using **Almac’s CRISPR technology platform and QUB’s disease-relevant model systems** (gold standard air-liquid interface cultures of differentiated airway cells allowing measurement of ENaC activity, airways surface liquid and MCC). Although, the work will primarily involve a targeted approach, it may also include the validation of DUBs identified through non-biased investigations of airway-disease-relevant DUBome CRISPR screens already available at Almac Discovery. The use of DUB inhibitors (Almac Discovery) will also facilitate interrogation of pathways of importance in airways disease.  These studies directly align to the strategic research interests of the Martin group and builds on a new collaborative relationship with Almac Discovery supported by BREATH (Border REgions Airways Training Hub). Working together we aim to develop 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 Xavier Jacq (Almac Discovery) |
| **\*Eligibility / residence Status** | UK/EU only |
| **Country** | Northern Ireland |
| **\*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 identification and validation and novel therapeutic strategies. |
| **Candidate requirements / Key skills required for the post** | Applicants should have a 1st or 2.1 honours degree (or equivalent) in a relevant subject. Relevant subjects include Pharmaceutical Biotechnology, Pharmacy, Biochemistry, Molecular Biology, Pharmaceutical Sciences, Biomedical Sciences, Biological Sciences, or a closely related discipline. Students who have a 2.2 honours degree and a Master’s degree may also be considered, but the School reserves the right to shortlist for interview only those applicants who have demonstrated high academic attainment to date. |
| **\*Deadline for applications** | Friday 26th February 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)  <https://www.almacgroup.com/discovery/>  [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, CRISPR, biochemistry, drug target identification, drug discovery, ubiquitin |
| **Training provided through the research project** | The successful applicant will join a well-resourced, multi-disciplinary team focussed on collaborative, translational research. The project will entail culture of primary airways epithelial cells at air-liquid interface and will offer expert training in a wide range of molecular (to include CRISPR), genomic, electrophysiological, protein biochemistry and imaging techniques. |
| **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. |