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| **\*Title of studentship** | **Assessing the molecular mechanisms by which Cathepsin V promotes breast cancer growth and metastasis.** |
| **Value / what is covered?** | Fully funded    100% of UK/EU tuition fees paid and an annual stipend for UK residents only (living expenses), currently at **£15,285** |
| **Awarding body** |  |
| **Number of studentships** | 1 |
| **\*Summary descriptive text / Example of research project** | Targeted therapies such as tamoxifen, fulvestrant and anastrozole have exhibited significant clinical success since being introduced as treatments for Estrogen Receptor positive (ER+) breast cancer patients. However, 30-50% patients treated with these endocrine therapies subsequently develop resistance and disease recurrence. Whilst only 10% of ER+ tumours are metastatic at diagnosis, 20–40% of patients will ultimately develop recurrence at distant organs and such metastatic tumours are classified as incurable. Therefore, it is critical that new strategies are developed to improve treatment options for patients that exhibit disease recurrence and metastasis.  Lysosomal cysteine protease Cathepsin V has previously been shown to exhibit elevated expression in breast cancer tissue, where it is also associated with metastasis. We recently identified that elevated Cathepsin V expression is associated with reduced survival in ER+ breast cancers (PMID: 33298139). Our research has shown that Cathepsin V augments tumour cell proliferation and invasion, as well as promotes the degradation of GATA3 by the proteasome. GATA3 expression is associated with a favourable clinical outcome in ER+ breast cancers and mechanistic studies have indicated that GATA3 inhibits metastasis by reversing epithelial-mesenchymal transition (EMT). Therefore, we hypothesize that Cathepsin V drives an aggressive tumour phenotype by promoting tumour cell growth/invasion and suppressing GATA3 protein expression. In this PhD project, we will utilise a wide range of molecular and cell biology techniques to delineate the molecular mechanisms by which Cathepsin V contributes to tumourigenesis and determine if it represents a future therapeutic target in this subtype of the disease. |
| **\*Supervisor(s)** | Dr Roberta Burden |
| **\*Eligibility / residence Status** |  |
| **Country** | Northern Ireland |
| **\*Start date and duration** | Self-funded applicants can start at any time  3 years |
| **\*Faculty** | MHLS |
| **\*Research centre / School** | Pharmacy |
| **Subject area** | Molecular Oncology, Protease Biology |
| **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 Pharmacy, Pharmaceutical Sciences, Biochemistry, Biological/Biomedical 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** |  |
| **\*How to apply / contacts** | Postgraduate Research applicants must have applied to Queen’s, via the Direct Applications Portal.  <https://dap.qub.ac.uk/portal/user/u_login.php> |
| **Relevant links / more information** | <http://www.qub.ac.uk/schools/SchoolofPharmacy/Research/PostgraduatePositions/>  <http://www.qub.ac.uk/schools/SchoolofPharmacy/Research/>  <https://www.qub.ac.uk/schools/SchoolofPharmacy/Research/find-a-phd-supervisor/dr-roberta-burden.html>  <https://pure.qub.ac.uk/en/persons/roberta-burden> |
| **Keywords for search filters** | Cancer, Proteases, Cathepsins, Therapeutics, Personalised Medicine |
| **Training provided through the research project** | The successful candidate will join a multi-disciplinary research group with extensive skills in all aspects of protease biology. The student will be trained in a wide range of cell and molecular biology techniques relevant to molecular oncology which will equip them for a successful future career in research. |
| **Expected impact activities** | We envisage this project will lead to high impact publications in respected cancer/molecular biology journals. We would also aim for research to be presented at local, national and international conferences to enable dissemination of our research. |