# PGR Studentship Information Template 2021 entry

* Please complete the template with as much information as possible.
* \*fields are essential.
* If you have information that does not have a label, please create a new row in the table for it.

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| **\*Title of studentship** | Microfluidics in Nanomedicine |
| **Value / what is covered?** |  |
| **Awarding body** |  |
| **Number of studentships** |  |
| **\*Summary descriptive text / Example of research project** | Progress in drug design has led to the development of new molecules. However, the limited ability to selectively deliver these molecules at well-defined dosing regimens remains a significant challenge. Therefore, the development of effective therapies relies on the development of effective carriers that are nontoxic, able to carry a significant payload of the molecule, with high accuracy, and which allow combination therapeutic platforms.  In the last two decades, Nanomedicines (NMs) are being explored for their potentials in treatment of numerous diseases and especially for cancer. The market for nanoformulated medicines is growing at a significant rate, with an estimated market value of $15.8 billion in 2014 and forecasted growth to $44.5 billion by 2019. The outcomes of the project have the potential to confer significant benefits for future medicines development.  The aim of this project is to develop nanoparticles (NPs) by microfluidics that contain a variety of drug molecules and biologics. Microfluidics is a technique, which deals with flow of fluids within micron sized channels. It provides a platform where these NMs can be formulated in a controlled manner enabling to tune their size, charge, polydispersity, and other surface fictionalization properties. In addition, the technique is energetically economical, easier to use, comparatively cheaper, faster, and the molecules which hasn’t been incorporated in the particles can be reused.  The specific objectives of this work are as follows:   1. Manufacturing of Polymer (e.g. PLGA) & lipid-based (e.g. liposomes, SLNs) Nanomedicines using microfluidics and comparison with traditional formulation methods. 2. Physicochemical characterisation of the NPs. 3. Dose and time kinetics of the NPs *in vitro* & *in vivo*. 4. Biophysics (simulation studies). |
| **\*Supervisor(s)** | Dr Dimitrios A. Lamprou (<https://pure.qub.ac.uk/en/persons/dimitrios-lamprou>) |
| **\*Eligibility / residence Status** |  |
| **Country** | Northern Ireland |
| **\*Start date and duration** | 1 October 2021 |
| **\*Faculty** | MHLS |
| **\*Research centre / School** | Pharmacy |
| **Subject area** | Pharmaceutical Technology, Biopharmaceutics, Nanomedicine |
| **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, Chemistry, Engineering, 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 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** | <http://www.qub.ac.uk/schools/SchoolofPharmacy/Research/PostgraduatePositions/>  <http://www.qub.ac.uk/schools/SchoolofPharmacy/Research/> |
| **Keywords for search filters** | Drug Delivery, Microfluidics, Nanomedicine, Biopharmaceutics |
| **Training provided through the research project** | The successful applicant will be integrated into QUB research groups of experienced researchers with access to world-leading facilities. The techniques that will be used during the project cover a wide-range and include: Atomic Force Microscope (AFM), Differential Scanning Calorimetry (DSC), Fourier-transform Infrared (FTIR) Spectroscopy, ζ-Potential and Size Measurements, *In Vitro* Release Studies, Cell Culture / Cytotoxicity Assays, and MatLab Simulation Studies. |
| **Expected impact activities** | The PhD student would be encouraged to engage in a variety of impact activities, disseminate the research project findings through public talks, and participate in QUB showcase events. Examples of impact activities includes: Blogs or web articles, Magazine articles, Public lectures, School visits, oral & poster Presentations (at local, national and international conferences), and Publication of scientific papers in peer reviewed journals. |