# 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** |  Development of lipid-based nanocarriers using melt extrusion for oral peptide delivery  |
| **Value / what is covered?**  |  |
| **Awarding body** |  |
| **Number of studentships** | 1 |
| **\*Summary descriptive text / Example of research project**  | Peptide-based drugs are an important class of medicine used for the treatment of many relevant disorders. However, their delicate physicochemical characteristics, poor membrane permeability and harsh conditions along the gastro-intestinal tract pose hurdles in providing effective therapy. Consequently, peptide drugs are typically administered parenterally with long-term repeated dosing, which brings great inconvenience to patients. Therefore, the development of oral peptide drugs is of great research interest. The proposed PhD project will focus on the development of a peptide-friendly approach for the preparation of nanostructured lipid carriers (NLC) using hot melt-extrusion. Lipid-based nanoparticles are an exciting carrier system that can protect peptides along the GI tract, enhance their transmucosal transport and provide controlled drug delivery. Lipid-based nanoparticles are often prepared by melt extrusion, which is a promising encapsulation method for biomacromolecules. The scientific approach of this project is therefore to develop lipid nanoparticles using biologically relevant processing conditions so that peptide structural integrity is conserved. Developed peptide-encapsulated NLCs will be characterized and peptide encapsulation efficiency, stability and therapeutic efficacywill be evaluated *in vitro* and *in vivo.*  The successful candidate will be a part of a highly interdisciplinary project and have the opportunity to learn about nanoparticle synthesis, peptide formulation, biological testing and continuous manufacturing. |
| **\*Supervisor(s)** | Dr. Sheiliza Carmali |
| **\*Eligibility / residence Status** | UK / EU |
| **Country** |  |
| **\*Start date and duration**  | 3 years |
| **\*Faculty** |  |
| **\*Research centre / School** | School of Pharmacy |
| **Subject area** | pharmaceutics |
| **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, Molecular Biology, 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** | Peptide, biotherapeutics, nanoparticles, hot-melt extrusion, continuous manufacturing, oral drug delivery |
| **Training provided through the research project** | Training will be provided in a range of techniques including peptide characterization, nanoparticle formulation strategies, hot-melt extrusion technology and performance characterization including *in vitro* bioactivity, drug release and stability assays. The student will also develop generic research skills in scientific writing, literature reviewing, time management and delivery of presentations, nationally and internationally. |
| **Expected impact activities** | The PhD student will be encouraged to engage in a variety of impact activities, disseminate the research project findings through public talks, and participate in QUB showcase events. |