# PGR Studentship Information Template 2022 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** | Injectable Hydrogels for Controlled Drug Delivery in Cancer Treatment |
| **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** |  |
| **\*Summary descriptive text / Example of research project** | In situ depot forming (ISDF) drug delivery implants have gained tremendous interest over the last few decades. This is due to their wide range of biomedical applications such as in long-term drug delivery. Drug delivery implants forming upon injection has shown a range of advantages which include localized and systemic drug delivery, easy and less invasive application, sustained drug action, ability to tailor drug delivery, reduction in side effects associated with systemic delivery and improved patient compliance and comfort. Importantly, administration by this method allows the injection of a relatively low viscosity material into the body which then solidifies to form a semi-solid depot that controls the drug delivery to provide long-term therapeutic action. Such a technology can address an array of chronic diseases e.g., cancer, musculoskeletal diseases, antipsychotic therapy, birth control, HIV, vaccine and ocular diseases to name a few.  This project addresses the need for better cancer treatment – which remains a major burden worldwide, accounting for an estimated 9.6 million deaths in 2018 – about 1 in 6 deaths are due to cancer. To improve the efficacy of chemotherapy and reduce side effects, the project proposes to develop novel ISDF based injectable hydrogels. The hydrogels enable low volume injections of API (active pharmaceutical ingredient) that can sustain for long-term following subcutaneous injections in treating cancer.  In this project, we will develop and characterize novel injectable ISDF hydrogels and demonstrate it long-term delivery of API. The selected student will be involved in the (i) design, development and characterize drug-loaded ISDF systems, (ii) develop analytical/bio-analytical techniques for polymer and drug analysis, (iii) investigate in vitro/ex vivo performance of ISDF, (iv) examine the biodegradation/biocompatibility in cell-cultures, and (v) conduct preliminary in vivo examinations to determine the suitability of the delivery system for human application.  Prof Raj Thakur has long-standing experience in the design and development of novel long-acting drug delivery systems, some of these systems have now been commercially exploited for treating chronic ocular conditions. Dr Wafa Al-Jamal has long-standing experience in delivering a broad range of therapeutic agents and fabricating multifunctional nanoparticles to target cancer and other diseases.  The student will receive sufficient training in various areas that fall within the remit of this project such as experimental design, analytical/bioanalytical techniques, characterization of ISDF and ex vivo/in vivo evaluation. This project will also provide ample opportunity for the PhD student to gain exceptional knowledge in various aspects of pharmaceutical product development, long-acting delivery systems and cancer treatment. It will also provide opportunity for the PhD student to work along experienced team members from both industry and academia and present their research at national and international conferences. |
| **\*Supervisor(s)** | Prof Raj Thakur & Dr Wafa Al-Jamal |
| **\*Eligibility / residence Status** | UK/EU or non-EU |
| **Country** | Northern Ireland |
| **\*Start date and duration** | 1 October 2022, 3 yrs |
| **\*Faculty** | MHLS |
| **\*Research centre / School** | Pharmacy |
| **Subject area** | Pharmacy, Pharmaceutical Sciences, or Polymer science, drug delivery |
| **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, polymer science, chemical 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** | Open deadline |
| **\*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** | In situ depot forming, long-acting drug delivery, sustained release, polymer implants, cancer, drug delivery, hydrogels |
| **Training provided through the research project** | Students will get training in pharmaceutical formulation; pharmaceutical analysis; microbiology; and mathematical modelling. In addition, students will be trained in a wide range of R&D related activities throughout the PhD program that will enable them to become an independent research and/or ready for industrial positions. It will also provide opportunity for the PhD student to present their research at national and international conferences |
| **Expected impact activities** |  |