# PGR Studentship Information Template 2020 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** | Sustained Release Nanocarriers for Ocular Drug Delivery  |
| **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**  | Ophthalmic drug delivery remains the most challenging task to pharmaceutical scientists. This is due to the unique structure of the eye, which restricts the entry of drug molecules at the required site of action. For example, drug delivery through topical (e.g., eye drops) and systemic (e.g. oral tablets) routes result in low or sub-therapeutic drug levels due to multiple ocular barriers. Currently, the effective method of administering drugs in conditions such as age-related macular degeneration, diabetic retinopathy, and glaucoma, which account for most of the blindness worldwide, is by either frequent eye drops or intravitreal injections (i.e., direct injection into the eye). However, injections cause significant tissue trauma, rise in intraocular pressure, uncomfortable and painful to patients, requires professional training, can cause severe injection-related infections (e.g., endophthalmitis, hemorrhage, and cataract). On the other hand, eye drops have shown low bioavailability and the chief problem is patients forgetting to take them on time and for long-term. Our proposed solution is to formulate novel biodegradable nanocarriers for a long-term drug delivery to the eye, to prevent frequent injections/eyedrops into the eye. In this regard, during the 3-years of this PhD project; the student will (i) design, development and characterize drug-loaded nanocarriers, (ii) engineer *in situ* forming gels (ii) develop analytical techniques for polymer and drug analysis, (iii) investigate in vitro/ex vivo release of drugs from the nanocarriers and gel and their combinations, (iv) examine the biodegradation and biocompatibility in cell-cultures, and (v) conduct preliminary in vivo examinations to determine the suitability of these delivery system for human application. The student will receive sufficient training in the experimental design and techniques for the development of novel nanocarriers-based formulations. The student will work in an active Ocular Drug Delivery Research group, where he/she will be exposed to a range of novel formulations, techniques, and characterization. This project will also provide ample opportunity for the PhD student to gain exceptional knowledge in various aspects of pharmaceutical product development and ophthalmological techniques. 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 |
| **\*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** | Nanocarriers, long-acting drug delivery, sustained release, polymer implants, glaucoma, delivery  |
| **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** |  |