# 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** | **A nanotherapeutic approach to inhibiting hedgehog signalling in brain cancer.** |
| **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** | Patients with grade IV astrocytomas (Glioblastoma - GBM) have a uniformly poor prognosis in spite of aggressive multimodal management (resection, radio-chemotherapy). Median survival statistics are poor, typically around 8 – 14 months, highlighting the urgent need for novel therapeutic strategies.  The Hedgehog (Hh) signalling pathway is essential for embryonic development, stem cell growth and tissue polarity (differentiation). Normally the Hh signalling pathway is inactive in adult tissue, but in some cancers including glioblastoma, Hh signalling is reactivated. This is associated with a range of pro-tumour phenotypes including increased proliferation, invasion, migration and abnormal DNA damage repair.  Gold nanoparticles (AuNPs) are known to increase the sensitivity of tumour cells to radiotherapy, through a range of physical, chemical and biological processes. As radiotherapy forms a major treatment modality for glioblastoma, this PhD project will explore the potential Hh interfering gold nanoparticles to boost the cell killing effect of radiotherapy.  In addition to increased cell killing, the underpinning molecular mechanisms will be studied, including the impact of the targeted gold nanoparticle on cancer “stem like” properties, DNA damage repair, migration and invasion.  This project will build upon the translational nanomedicine expertise of Dr Coulter’s group, with the ultimate goal of developing a novel nanoparticle formulation with both the potential for commercial development and enhancing patient outcomes in this difficult to treat disease setting. |
| **\*Supervisor(s)** | Dr Jonathan Coulter |
| **\*Eligibility / residence Status** | Home (DfE Scholarship deadline 27th January 2021), International Scholarship, International self-funding |
| **Country** |  |
| **\*Start date and duration** | September 2022 |
| **\*Faculty** | Medicine Health and Life Sciences |
| **\*Research centre / School** | School of Pharmacy |
| **Subject area** | Cancer biology, pharmaceutics, 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, 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** | All postgraduate research applicants for Pharmacy who are interested in the project must submit an application all required supporting documents via the Direct Applications Portal (link below). UK students considering applying for DfE scholarship support, applications must be submitted before **Friday 27th January 2022.** Any interested applicants can informally contact Dr Coulter by email at j.coulter@qub.ac.uk  <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/ResearchThemes/>  NanomedicineandBiotherapeutics/  https://www.qub.ac.uk/schools/SchoolofPharmacy/Research/find-a-phd-supervisor/dr-jonathan-coulter.html |
| **Keywords for search filters** | Cancer biology, Nanomedicine, Drug Delivery, Hypoxia, Microfluidics |
| **Training provided through the research project** | The PhD candidate will be working in a well-funded nanotherapeutics group, with members from 5 nationalities.  From the start the PhD student will be involved in academic research designed to have translational/clinical application. This dual approach spans:  1) Research Skills: the academic supervisors will ensure excellent training in nanoparticle formulation, systematic physical characterisation, *in vitro* cell and molecular biology techniques and potentially *in vivo* skills.  2) Record keeping & monitoring: Monthly meetings with the student will take place with electronic records. Students must also complete a 3-month initial review and annual progress review to proceed to years 2 & 3. The annual progress review involves written work, presentation and/or mini *viva*. However, at each of these meetings, the primary supervisor will also be present ensuring that the maximal training benefit can be derived from these processes.  3) Additionally, there will be opportunities to present at academic meetings, building professional networks, personal development on courses for animal licenses, advanced statistics, skills which are all relevant to subsequent employment opportunities. |
| **Expected impact activities** | Impact activities include but are not restricted to presenting the research to academic and industry peers through scientific conferences and students from different disciplines through the Graduate School. The student will also engage with patients, clinicians and key stake holders through a series of webinars/focus groups to understand how they can feed and shape the research plan. Other impact activities relate to commercialisation though IP protection processes, competitor analysis and engagement with clinical collaborators. |