

|  |  |
| --- | --- |
| **\*Title of studentship** |  **3D Printing in the Preclinical space vs. Late Development** |
| **Value / what is covered?**  | The successful candidate will receive a fully funded scholarship, which covers home tuition fees and an annual stipend for 3 years, and budget to attend conferences, mini courses & workshops for further development.  |
| **Awarding body** | DTP Collaborative Ph.D. Studentship |
| **Number of studentships** | 1 |
| **\*Summary descriptive text / Example of research project**  | 3D Printing (3DP) provides many advantages for preclinical drug product development as a wide dose range can easily be manufactured/printed, multiple prototypes can be manufactured quickly, adjusting release profiles and drug product geometries. All of these will enable a fast road towards establishing, gaining, and initial understanding of toxicology, safety and efficacy. However, the drug product developed for early phase studies should be representative from a performance point-of-view for late stage use or at least that differences are understood enabling bridging to a viable late stage development drug product. While many papers postulate that 3DP might replace conventional tablet manufacturing technologies it is well known that current 3D printers are nowhere near the capacities of a high-speed tablet press, hence the technologies are currently not suitable for high-volume products. Therefore, there is an essential need to investigate and understand the performance of 3D printed tablets relative to the corresponding conventionally manufactured tablets. Our aim is to develop concepts for rapid prototyping of preclinical tablets, characterize the performance and compare this performance with conventionally manufactured tablets. |
| **\*Supervisor(s)** | Prof Dimitrios Lamprou (<https://pure.qub.ac.uk/en/persons/dimitrios-lamprou>) Dr Sune Andersen (Janssen) |
| **\*Eligibility / residence Status** | UK and Ireland |
| **Country** | Northern Ireland |
| **\*Start date and duration**  | 1st October 2022 (36 months) |
| **\*Faculty** | MHLS |
| **\*Research centre / School** | Pharmacy |
| **Subject area** | 3D Printing, Drug Delivery, Pharmaceutical Technology. |
| **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. Technical experience and knowledge in some of the following would be desirable: pharmaceutical formulation,  |
| **\*Deadline for applications** | 10th June 2022  |
| **\*How to apply / contacts** | Postgraduate Research applicants must have applied to Queen’s, via the Direct Applications Portal.<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** | 3D Printing, Drug Delivery, Pharmaceutics |
| **Training provided through the research project** | The student will be working in a multi-disciplinary environment in the laboratories of both Prof Lamprou and Janssen.The experimental programme will include: Preparation and characterisation of various 3D printed tablet designs, physicochemical characterisation, In Vitro Testing, and computational modelling. The techniques that will be used during the project covers a wide-range and include CAG, DSC/TGA, FTIR, Raman, SEM, UV-Vis, HPLC, release studies, tableting, and 3D printing technologies.Transferrable skill training will also include research management, personal effectiveness, communication skills, networking, team working and career management. The successful candidate will also spend time to Janssen being exposed to industrial view on drug development, attend conferences, mini courses & workshops for further development. |
| **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. |