BBSRC DPhil Studentship to develop: "Packaging cell lines for the production of stealthy enveloped viruses and exosomes" [Project 2023/02]

Department of Oncology, University of Oxford in collaboration with Oxford Biomedica

Application Deadline: Friday 9th December 2022 (12:00 midday GMT)
Project Start Date: October 2023

Supervisors

Primary Supervisor: Professor Kerry Fisher
Secondary Supervisors: Professor Robert Carlisle

About the Project

Gene therapy using viruses, genetically modified cells and exosomes promises to achieve dramatic medical advances in a range of important diseases. However, intravenous applications of these biotherapeutics is often limited by poor stability in human blood. This project will focus on stress ligands upregulated on the surface of manufacturing cells lines during production that can ultimate be passed on to enveloped biologics such as lentiviruses or extra-cellular vehicles. Upon injection into the bloodstream, stress ligands are immediately recognised by macrophages and complement proteins resulting in rapid clarence or inactivation before they can reach their intended targets. To address this problem, we will employ CRISPR/Cas9 methodologies to remove key genes from producer cells preventing them from responding to stress or triggering stress-related pathways. In parallel we will also seek to upregulated ligands that actively evade clearance. The enveloped biotherapeutics produced by these cells should then have stealth-like qualities and a greater capacity for systemic delivery to target tissues. A range of biophysical and immunological techniques will be used to test this hypothesis before moving on to therapeutics models. We anticipate this project will generate important publications, considerable intellectual property and could make useful contributions to treatment of several genetic diseases.

About the BBSRC Collaborative Training Partnership in Advanced Bioscience of Viral Products (ABViP)

This PhD studentship is part of the Biotechnology and Biological Sciences Research Council (BBSRC) Collaborative Training Partnership (CTP) in Advanced Bioscience of Viral Products (ABViP). The ABViP CTP is a comprehensive, multidisciplinary training programme designed to deliver the next generation of bioscience leaders who will advance research on the underpinning bioscience of viral products for future gene therapies and vaccines. Led by Oxford Biomedica (OXB) and involving both UCL and the University of Oxford, CTP students will have access to a wide-ranging portfolio of training opportunities at the Partner sites including taught courses and case studies designed to complement the doctoral research. Students trained through the ABViP CTP will gain a holistic insight into the research and development activities required to develop the medicines of the future, with the ability to see the world of medicines development through both an academic and industrial lens. For more information about the ABViP CTP, please click on the following link.

A webinar will be held on Thursday 16th November 2022 17.30 – 18.30 (GMT) which will introduce the ABViP Programme, introduce each of the projects and provide an opportunity to have your questions answered.

About the Department

The Department of Oncology's mission is to improve cancer care through research and teaching. There is strong emphasis on translation, with established infrastructure to develop scientific insights toward clinical appreciation. One of the key aims for the Department is to bring together basic scientific and clinical research groups from across Oxford to apply knowledge of cancer and to develop research so that we may better understand how we can combat cancer in the most effective way possible. The Department houses over 400 staff and postgraduate

students - both clinical and non-clinical - and is one of the largest departments in the University of Oxford's Medical Sciences Division.

This project will be hosted by the Gene Delivery Group that has a long history in developing cell and virus-based therapeutics from discovery through to clinical trials.

About Oxford Biomedica

Oxford Biomedica (OXB) is a pioneer of gene and cell therapy with a leading position in viral vector research and bioprocessing. Our mission is to deliver life-changing gene therapies to patients. OXB is an innovation and science focussed company which has developed a leading platform of novel technologies and capabilities. The OXB team provide design, development, bioprocessing and analytical development for gene-based medicines based on viral vectors, both for in-house products and for those developed with partner organisations. OXB has contract development and manufacturing organisation (CDMO) capabilities that support the development of novel gene-based medicines through all phases of clinical development to commercial manufacture. At Oxford Biomedica, we drive credible science to realise incredible results.

Entry requirements

As a minimum, applicants should hold or be predicted to achieve the following UK qualifications or their equivalent: a first-class or strong upper second-class undergraduate degree with honours in a relevant discipline such as biology, biochemistry, or medicine, although those who have not achieved this level of qualification will be considered if they show strong performance in a master's course. A previous master's degree is not required.

We particularly welcome applicants from disadvantaged backgrounds, or via an unconventional career path. If you're unclear as to whether you are eligible, we would encourage you to apply regardless. You can also contact the project supervisor (see details below). To learn more about the policies in relation to diversity and inclusion at the University of Oxford, please click here for further information.

Informal enquiries should be addressed to Kerry Fisher (E-mail kerry.fisher@oncology.ox.ac.uk).

Funding

This BBSRC CTP ABViP Studentship is available to UK and Overseas (including EU) students. Full maintenance (stipend & fees) is available to the UK and Overseas students for the duration of the four-year PhD. Note that up to a maximum of one fully funded studentship allocation is available for Overseas students across the Department. The annual tax-free stipend for the PhD studentship is £17,668 (estimated).

English language requirements

If your education has not been conducted in the English language, you will be expected to demonstrate evidence of an adequate level of English proficiency. The English language level for this programme is: **Standard**

Deadline and Application Process

The deadline for submission is 12:00 midday on Friday 9th December 2022

To apply for this PhD studentship, you must submit a formal application to the DPhil in Advanced Bioscience of Viral Products course (Course code RD_NG1) through UOXFs application portal by the above deadline. More information about the course and application process is available here:
https://www.ox.ac.uk/admissions/graduate/courses/dphil-advanced-bioscience-of-viral-products