

BBSRC DPhil Studentship in Development of Lentiviral Vectors to Induce Transient Cell Activation and Proliferation of Naïve T Cells

Sir William Dunn School of Pathology, University of Oxford in collaboration with Oxford Biomedica

Application Deadline: Friday 1st December 2023 (12:00 midday GMT)

Project Start Date: 13th October 2024

Supervisors

Primary Supervisor: Omer Dushek (University of Oxford)

Secondary Supervisors: P. Anton van der Merwe (University of Oxford) & Nicholas Clarkson (Oxford Biomedica)

About the Project

Lentiviral vectors (LV) have been used extensively for the treatment of genetic disorders because of their ability to modify eukaryotic cells efficiently and permanently. More recently, LVs have been used to deliver chimeric antigen receptors (CARs) or cloned T cell receptors (TCRs) into mature T cells as part of cell therapies known as adoptive cell transfer (ACT). These cell therapies have successfully treated a variety of leukaemias with several approved therapies and many more in trials.

A major recognised limitation of these therapies is the complicated logistics of producing the cells. This has meant that the cost of the therapy is very high hampering its wide deployment. One approach to making these treatments more accessible and effectively democratising treatments is to pursue direct *in vivo* delivery of LVs encoding CARs to transduce T cells within patients. A key limitation is that this procedure is often transient because the recipient cells are naïve and not proliferating and there are innate antiviral mechanisms restricting HIV-2 based LVs from infecting naïve T cells.

Here, we aim to translate complicated cell therapies into simple gene therapies by engineering additional functionality into LV vectors to improve efficacy *in vivo*. We will use our basic understanding of T cell activation and combine it with Oxford Biomedica's expertise in lentiviral vector engineering and production to functionalise LV vectors to overcome the hurdles to *in vivo* CAR-T therapy.

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 9th November 2023 18.30 – 18.30 (GMT) which will introduce the ABViP Programme, and each of the projects and provides an opportunity to have your questions answered. To register for this webinar, please [click here](#).

About the Department

The Dunn School has a comprehensive training and support programme for graduate students. Students have abundant opportunities to present their work, including an annual Graduate Student Symposium and biweekly progress seminars. All students have the option of paid internships and can apply for post-doctoral funding of up to 6 months after submission, in order to maximise their chances of securing excellent post-doctoral fellowships. Our Graduate Student Association arranges career and social events. We receive outstanding feedback. In 2021 95% of students were satisfied or very satisfied with their experience and 91% would recommend or strongly recommend that other students apply. In 2023 we received more applicants per place than any other PhD programme in Oxford.

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 Omer Dushek (E-mail omer.dushek@path.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 £20,622 (estimated), which includes a top-up from Oxford Biomedica.

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 1st December 2023.

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 the 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>