



UNIVERSITY OF
CAMBRIDGE

Department of Oncology

Early Cancer Institute Michael Cowan Non-Clinical PhD Studentship – Understanding the optical signature of cancerous tissues (Fixed Term)

We invite applications from UK students for this 3.5 year fully funded non-clinical studentship based in the Early Cancer Institute, Department of Oncology, University of Cambridge, UK.

Project details

Cancer is responsible for one in every six deaths worldwide, but many cancers can be cured if they are treated early enough. In the case of solid tumours, which represent approximately 90% of adult cancers, surgical resection is the most common and most effective method of treatment. The success of cancer surgeries relies heavily on ensuring that the tumour is fully excised, but up to 20% of these surgeries fail to completely remove the tumour, and this number can even rise as high as 60% in certain cancers. One major reason for this challenge is the inability to visualise the precise margins of the tumour during surgery, especially when tumour cells infiltrate surrounding tissues. Access to intraoperative margin information would significantly reduce the risk of incomplete tumour removal, which could be achieved through the use of optical imaging methods like optical coherence tomography (OCT).

In recent years, OCT imaging capabilities have increased by over an order of magnitude in terms of both speed and resolution, which now makes it possible to map 3D tissue microstructure during surgery. This allows us to determine whether a given image field-of-view contains cancer cells based on how it interacts with light. In this project, we will use custom-built OCT systems to image a range of tumour samples, assessing their structural and morphological characteristics and drawing conclusions about the utility of OCT imaging for tumour identification in different cancer types and subtypes. This highly interdisciplinary project welcomes applications from a wide range of backgrounds. As part of the project, candidates will receive training in imaging and image processing, including both traditional methods and machine learning-based techniques. Depending on the candidate's interests, there will also be the opportunity to engage in hardware development (designing and building state-of-the-art optical systems) or modelling light-tissue interactions to deepen the understanding of how light behaves when interacting with healthy and cancerous tissues.

Funding

This studentship commences in October 2025. It provides a maintenance stipend of £21,500 per annum for 3.5 years, tuition fees at the **UK rate**. In addition, £1225 for personal development and overseas travel and £5000 for research consumables is provided per annum for the first 3 years.

Candidate

We are looking for a highly motivated and enthusiastic individual capable of thinking and working independently. Applicants should have or shortly expect to obtain a minimum of a good upper second-class honours degree from a UK university, or an equivalent standard from an overseas university, in a relevant discipline.

Eligibility

The funding for this studentship covers students with UK Home tuition fee status only. For more information on Home tuition fee status please visit the UKCISA website.

How to apply

Application closing date: 16th February 2025.

Before applying please ensure that you meet, or expect to meet our [PhD entrance requirements](#), then submit a full PhD application via the [University of Cambridge Postgraduate Applicant Portal](#).

When making your application, you should:

- Select to commence study in Michaelmas term 2025 (October 2025).
- add 'Dr Danielle Harper' and 'RD44501' to the 'Proposed research title' section.
- Check **all** supporting documents (CV, References and Transcripts, if available) are uploaded by the studentship closing date (16th February 2025). Please note, it is the applicant's responsibility to ensure all supporting documents are submitted on time, failure to do so will result in rejection of your application.

Prospective candidates are encouraged to contact Dr Danielle Harper (dh744@cam.ac.uk) to discuss this project in greater detail.

Further information about the PhD in Oncology course and how to apply can be found [here](#) and full information about making an application to the University of Cambridge can be found on the University's [Postgraduate Study website](#).

Interview and selection process

Applicants will be informed of the outcome of their application via the University of Cambridge Postgraduate Applicant Portal by **March 2025**.

Shortlisted applicants will be invited to attend an online interview in **March 2025**. You will be interviewed by a panel of Principal Investigators from the Early Cancer Institute. Applicants will be notified of the outcome of their interview after completion of all the interviews. The successful applicant will receive a formal offer letter by **April 2025**.

For general enquiries about these PhD studentships or the application process, please contact the Department of Oncology Postgraduate Education Team at: postgradadmin@oncology.cam.ac.uk.

Please quote reference RD44501 in any correspondence about this vacancy.

The University actively supports equality, diversity and inclusion and encourages applications from all sections of society.

The University has a responsibility to ensure that all employees are eligible to live and work in the UK.

Student support and training

As a Postgraduate Student with the Department of Oncology, University of Cambridge, you will have access to a wide range of training opportunities and benefit from close supervision provided by a Principal Supervisor who oversees your research project and an Adviser who provides additional support. Our Postgraduate Student Administrator acts as the first point of contact for any student with a query or difficulty that is not directly related to their scientific work. All student matters in the department are overseen by our Director of Postgraduate Education and the Cancer Biology Postgraduate Education Committee. There are no taught elements or examined coursework in the PhD in Oncology course, but students are encouraged to attend the wide variety of lectures and training courses available across the department and wider University. This includes a centrally run Statistics course and the University Core Skills Training Programme, which covers sessions on Time Management, Presentation and Performance and Scientific Writing. Our Postgraduate Students are automatically made members of the [University's Postgraduate School of Life Sciences](#), which also offers a wide variety of core skills and professional development training. We also expect that our Postgraduate Students register as members of the [Cancer Research UK Cambridge Centre](#).