

DPhil Studentship: Optical Fluorescence image guided surgery

Supervisors: Prof Freddie Hamdy and Prof Boris Vojnovic

Studentship reference: NDS17/001

Project Description

Paradigm shifts in surgery arise when surgeons are empowered to perform surgery faster, better, and/or less expensively. Optical imaging that exploits invisible near-infrared fluorescence light has the potential to improve cancer surgery outcomes while minimising patient recovery times. This emerging technique has wide applications in human surgery, particularly in cancer surgery. In particular the use of cancer-specific molecular agents such as antibodies or peptides tagged to near-infrared excited fluorophores is becoming feasible. The use of near-infrared fluorophores confers the ability for the surgeon to 'see' at depth and to locate deep structures of interest. Since successful cancer surgery relies on excision of almost all cells, a high level of sensitivity is essential: this can be provided by high affinity probes coupled to bright fluorophores, or by novel instrumentation, or indeed both. The successful applicant will thus be expected to contribute to design and development of clinical instrumentation systems, of calibration devices and of detection system with significantly improved sensitivity. The design and evaluation of targeting agents is likely to be undertaken by the successful candidate in collaboration with other groups. Close interaction with clinical surgeons is considered an essential requirement.

Essential Background:

Equivalent of first or upper second class (2.1) BSc Honours Degree in physical or biological or engineering sciences or related disciplines; MSc preferred but not essential.

Candidate knowledge:

Experimental laboratory and data analysis skills are considered essential, as is an enthusiasm for thinking outside the box. Good communication skills in an interdisciplinary environment are also considered essential. A good understanding of at least one of the following topics is essential: optics, lasers, imaging devices, computer aided design and other numerical techniques, programming with high and low level computer languages. Familiarity with the other topics is desirable.

Funding:

The successful applicant will be funded for a maximum period of four years. The studentship covers University fees at Home rate and includes a stipend of at least £19,000 a year. Only applicants who are eligible for Home fee rates can be considered for this studentship.

The successful applicant is expected to start in April 2017 (Trinity Term 2017).

Details of the research groups

Informal inquiries can be made to Prof Boris Vojnovic (boris.vojnovic@oncology.ox.ac.uk), Head of Advanced Technology Development Group at the Department of Oncology, with a copy of your curriculum vitae and cover letter. For any queries regarding the application procedure please contact graduate.studies@nds.ox.ac.uk. The second supervisor on this project will be Prof Freddie Hamdy, Nuffield Professor of Surgery and Professor of Urology. This project is fundamentally multi-disciplinary, combining expertise in physics and surgery and requiring a mix of optical, electronic, mechanical and computer engineering as well as biology, chemistry and surgical techniques.

Training:

Numerous training courses are available in Oxford to the student and day-to-day training will be provided by research group members. Students will attend weekly seminars within the department and those relevant in the wider University. Students will be expected to present data regularly to the research groups in the Department of Oncology and the Nuffield Department of Surgical Sciences,

and to attend external conferences to present their research globally. Students will also have the opportunity to work closely with the other collaborators, both within Oxford, other universities in the UK and overseas and with industry.

How to apply:

Formal applications must be completed online: <http://www.ox.ac.uk/admissions/graduate/applying-to-oxford>. You should apply for “DPhil in Surgical Sciences”. Please ensure that you quote the studentship reference quote NDS17/001. For any queries regarding the application procedure please contact graduate.studies@nds.ox.ac.uk. You will be expected to supply your official transcripts, CV, and details of three academic referees. Please note that as this is a studentship project no research proposal is required. Please submit a statement of purpose/personal statement in its place.

Closing date for applications: 12 noon, 6 January 2017