DPhil Studentship: Optical Fluorescence image guided surgery

Supervisors: Prof Freddie Hamdy and Prof Boris Vojnovic

Studentship reference: NDS17/001

Project Description
Optical imaging that exploits invisible near-infrared fluorescence light has the potential to improve cancer surgery outcomes while minimising patient recovery times. We have an exciting opportunity for a graduate student who is familiar with physics and/or engineering and is interested in multidisciplinary work to join our research teams.

The emerging technique of near-infrared fluorescence image guidance has wide applications in human surgery, particularly in cancer surgery, where our aim is to exploit cancer-specific molecular agents such as antibodies or peptides tagged to fluorophores. The use of near-infrared fluorophores confers the ability for the surgeon to 'see' at depth and to locate structures of interest. Since successful cancer surgery relies on excision of almost all tumour cells, a high level of imaging sensitivity is essential.

The successful applicant will contribute to the design and practical development of novel clinical optical instrumentation systems, related calibration devices and to work on optical detection devices exhibiting significantly improved sensitivity. There will also be opportunities to contribute to the design and evaluation of fluorescently-labelled molecules, in collaboration with other research groups. Close interaction with engineers, surgeons and other clinical personnel is expected to take place.

Essential Background:
Equivalent of first or upper second class (2.1) BSc Honours Degree in engineering, physical or biological sciences or related disciplines; An MSc in applied physics is preferred but is not essential.

Candidate knowledge:
Experimental laboratory and data analysis skills are considered essential, as is an enthusiasm for 'thinking outside the box' and exploiting knowledge from several disciplines during the DPhil period. 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, instrumentation systems, mathematical modelling methods, and computer aided design and other numerical techniques, programming using high and low level computer languages.

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

The successful applicant is expected to start in October 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 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: 19 May 2017