Newcastle University PhD Studentship

Title:
Cerenkov Phototherapy for Cancer Treatment

Value of award
100% of International tuition fees paid

Number of awards
1

Start date and duration
September 2019 for 3 years

Application closing date
8th February 2019

Overview
The use of external sources of light in combination with photosensitizers is a highly promising and rapidly emerging cancer treatment. At present, however, its application is limited due to the shallow penetration of light through tissue, meaning that most tumours remain out of reach.

Recently, a variety of materials have been shown to act as photosensitizers when exposed to Cerenkov radiation. Cerenkov radiation can be generated deep within a patient when the positrons ($\beta^+$) or electrons ($\beta^-$) emitted by medical radioisotopes travel faster than light through tissue. Exposure of these photosensitizers to Cerenkov radiation results in the formation of highly cytotoxic reactive oxygen species (ROS; e.g. hydroxyl and superoxide radicals). ROS do not specifically target cancer cells, however by co-localising a suitable photosensitizer and a $\beta^+/\beta^-$-emitting radioisotope at the tumour site it becomes possible to ablate nearby (i.e. cancerous) tissue.

The aim of this PhD studentship is to develop in vivo delivery systems that would enable a tumour-specific therapy effect while also minimising off-target ROS-associated toxicity.

Sponsor
Faculty of Science Agriculture and Engineering and Chinese Scholarship Council (CSC)

Name of supervisor(s)
Dr James C Knight and Dr Elizabeth A. Gibson

Eligibility Criteria
You must be a citizen and permanent resident of the People's Republic of China at the time of application. You should have an upper-second-class Honours degree or higher, or international equivalent, in chemistry. You must meet the English Language Proficiency Requirement (IELTS of at least 6.5 or equivalent).

How to apply
You must apply through the University’s online postgraduate application system. Apply here. To do this please ‘Create a new account’. All relevant fields marked with a red asterisk must to be completed.
The following information will help us to process your application. You will need to:

• Insert the programme code **8100F** in the programme of study section
• Select **PhD Chemistry (full time) - Chemistry** as the programme of study
• Insert the studentship code **CSC1817** in the studentship/partnership reference field
• Attach a covering letter and CV. The covering letter must state the title of the studentship, quote reference code **CSC1817** and state how your interests and experience relate to the project
• Attach degree transcripts and certificates and, if English is not your first language, a copy of your English language qualifications

**Contact**
Dr James C Knight ([james.knight2@ncl.ac.uk](mailto:james.knight2@ncl.ac.uk)); Dr Elizabeth A Gibson ([elizabeth.gibson@ncl.ac.uk](mailto:elizabeth.gibson@ncl.ac.uk))