

Interdisciplinary PhD Studentship: Developing novel ways for targeted delivery and site specific release of selective MMP inhibitors in designated tissues

The School of Engineering and Materials Science is looking for a prospective candidate for an Interdisciplinary PhD studentship to develop novel ways for targeted delivery and site specific release of selective MMP inhibitors in designated tissues.

Proposed research

Matrix metalloproteinases (MMPs) are a group of enzymes present in many tissues in the human body and are capable of breaking down structural proteins such as collagens, proteoglycans and elastin. These enzymes are known to play important roles in structural protein turnover under physiological conditions. However, when over-produced, some of the MMPs can cause tissue destruction, and this is a prominent feature in a number of pathological conditions such as tumour invasion and metastasis, cartilage and bone destruction in arthritis, and arterial disease (atherosclerosis) that leads to coronary heart disease and stroke. There has been much research aiming to develop agents that can inhibit the proteolytic activity of MMPs and can be used to treat patients with the diseases mentioned above. A number of synthetic inhibitors have been developed and tested. Although these agents are able to effectively inhibit MMPs, they were found to have major adverse effects. Much research is required to develop means to direct the inhibitors to and concentrate them in the diseased tissues, so that they will not have a high concentration in healthy tissues which would require a low level of MMP activity for protein turnover.

The primary aim of this EPSRC DTA interdisciplinary studentship is to develop novel ways for nanoencapsulation, delivery and site specific release of selective MMP inhibitors in designated tissues.

It is expected that this work will advance the development of methods to enhance the efficacy, and minimise the adverse side effects, of MMP inhibitors as pharmacotherapeutics. If successful, the method that is developed in this project can significantly increase the concentrations of MMP inhibitors in diseased tissues and reduce their concentrations in other normal tissues, therefore enhancing efficacy and reducing side effects. This can potentially have a very significant impact, as MMP inhibitors can be used to treat many different common diseases, such as cancers, heart disease and arthritis.

Application Details

Applications for the studentship are available for September 2010 Entry. The studentship arrangement will cover tuition fees and provide an annual maintenance grant at research council rates, starting at £15,290 per year (including London weighting) for up to three years.

To be eligible for the studentship, applicants must have settled status in the UK, meaning they have no restrictions on how long they can stay and been 'ordinarily resident' in the UK for 3 years prior to the start of the grant.

Full details of eligibility are defined on the following EPSRC web page:
<http://www.epsrc.ac.uk/funding/students/Pages/eligibility.aspx>

Unfortunately candidates with no settled status in the UK are not eligible to apply for the studentship.

The minimum requirement for entry to a research programme is a good Honours degree (or equivalent) or MSc/MRes in a relevant discipline.

For informal enquiries about this position please contact Professor Wen Wang:
Tel: 020 7882 8871
E-mail: wen.wang@qmul.ac.uk

To express an interest in the position please send your CV and two signed reference letters to the following address:

Jonathon Hills
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Queen Mary University of London
Mile End Road
London E1 4NS

Or by email to j.hills@qmul.ac.uk

Closing Date: 25/06/2010