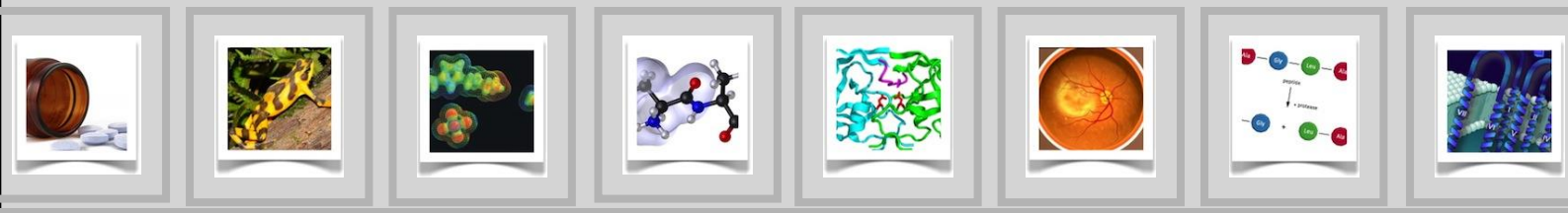

School of Pharmacy PhD Projects 2013

Project Title The use of a novel technology platform to create a DNA vaccine for Prostate Cancer

Supervisors Dr Helen McCarthy & Dr Ryan Donnelly

Description

This project is funded by Prostate Cancer UK – Closing date 31st May 2013

Eligibility for both fees and stipend depends on the applicants being either an UK or EU resident. In addition, applicants must have a minimum 2.1 Honours degree in a relevant subject e.g. Pharmacy, Pharmaceutical Sciences, Biomedical Sciences. A postgraduate degree would be an advantage (e.g. MPhil, MRes). Only those candidates who have achieved excellence in educational attainment will be considered for interview.

DNA vaccines have a distinct advantage because they stimulate both humoral and cellular immunity. DNA vaccines can also provide a therapy for those with pre-existing conditions in addition to the traditional prophylactic response. Furthermore DNA vaccines do not carry a risk of disease spread and production is faster and easier, making them cost effective. The biggest stumbling block to the success of DNA vaccines has been in the delivery system.

This project is designed to test a novel technology platform that will revolutionize the current options available for the delivery of DNA vaccination. This brings together two components: i) a peptide delivery system that is able to wrap the DNA into nanoparticles, protect the DNA from degradation and deliver the DNA to the nucleus of cells, ii) a microneedle patch that will house the nanoparticles within the polymer matrix, painlessly breach the skin's *stratum corneum* barrier and dissolve upon contact with skin interstitial fluid thus releasing the nanoparticles to the antigen presenting cells.

Through a series of objectives this project will assess DNA release, optimal microneedle loading and the immune response. This project will show how effective this unique technology platform is for prostate cancer compared to conventional injectable systems.

This 3-year project will provide the opportunity to gain technical expertise in molecular biology, in addition to *in vitro* and *in vivo* technologies.

Further information on the project can be obtained by emailing Dr Helen McCarthy (h.mccarthy@qub.ac.uk).

Start Date October 2013

Keywords Prostate Cancer, DNA Vaccines, Transdermal Delivery

Contact Details
pharmacypostgrad@qub.ac.uk
How to Apply
Postgraduate applications should be made using Queen's Online:
http://go.qub.ac.uk/pgapply
Please note that there are two application processes: one for admission to the university and another for postgraduate awards.
Further Information
Additional information for prospective postgraduate students can be found on the School of Pharmacy website:
http://www.qub.ac.uk/pha
and the Queen's Postgraduate website:
http://www.qub.ac.uk/home/ProspectiveStudents/PostgraduateStudents/