



School of Pharmacy PhD Projects 2015/16

Project Title Materials with Improved Biocompatibility for Implantable Medical Devices

Supervisors Dr Louise Carson and Prof Colin McCoy

Description

In recent decades there has been a large increase in the use of bioengineered implantable medical devices such as joint prosthesis, heart valves, and cosmetic implants. Once these devices are implanted into the body, a complex series of events occurs, known as the foreign body response (FBR). The FBR is initiated almost immediately on implantation when proteins adsorb to the device surface, a process known as biofouling. The chain of events which follow results in chronic inflammation at the site of implantation and the formation of a fibrous capsule isolating the device from the surrounding tissue. For a small and intricate biosensor, which requires free diffusion of the analyte to the sensing membranes, this capsule is extremely detrimental to the accurate functioning and useable lifetime of this device. If the FBR could be avoided, this may lead to the use of accurate biosensors for disease management (e.g. implantable glucose sensors in diabetes mellitus) or sensors for therapeutic drug monitoring.

This project aims to design, formulate, and characterise biomaterials that will prevent the FBR. The student will gain extensive experience and training in materials science, a wide range of analytical techniques, and *in vitro* biological testing.

Start Date

October 2015

Keywords

Biomaterial, Implant, Foreign Body Response

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/>

