



School of Pharmacy PhD Projects 2015/16

Project Title Endotracheal tube biomaterials with tuned antibacterial 'harpoons'

Supervisors Professor C.P. McCoy (main supervisor), Dr. Louise Carson

Description This project will build on some exciting recent results from our group to generate a new anti-infective type of medical polymer, based on PVC, to reduce infections found when endotracheal (ET) tubes are used. ET tubes are medical devices used to assist breathing in patients receiving surgery or in intensive care, and infection of the device is very common and potentially fatal.

We have recently showed that a wide range of types of molecule can be tethered to the surface of PVC. In this project, we will use this technology to attach a range of 'molecular harpoons' to the surface of PVC. This novel surface-attachment approach will be a significant advance on drug-incorporated PVC materials, which have been previously proposed in the literature, in two important ways. Firstly, as only the surface will be modified, the mechanical properties, which are vital for the successful functioning of the ET tube, will not be compromised. Secondly, the attachment of molecules which 'harpoon' bacteria is not expected to interfere with their mechanism of action in membrane disruption, while it simultaneously tethers them in the precise location where their action is required (the ET tube surface). Exploration of this mechanism will, in fact, form a major part of the project, as the 'harpoon' will be able to be varied to optimise the anti-infective character of the material.

These surfaces and bulk material will be characterised using our suite of state-of-the-art techniques and the ability of the surface to resist infection will also be explored.

Start Date October 2015

Keywords Drug delivery, biomaterials, surface modification, biodegradable, infection control

Contact Details

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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/>

