

## School of Pharmacy PhD Project 2017 / 2018

'Two birds, one stone': an innovative multipurpose strategy for HIV prevention

Professor Karl Malcolm, Professor Brendan Gilmore and Dr Peter Boyd

Recently, a vaginal ring (VR) device jointly developed at QUB and offering controlled release of the antiretroviral drug dapivirine successfully completed Phase III clinical studies in Africa, and is due to reach market in 2017 as the first vaginal microbicide product for HIV prevention. Global health advocates are now prioritising development of second-generation VRs which will simultaneously address multiple sexual and reproductive health needs, including (i) prevention of unintended pregnancy, (ii) prevention of sexually transmitted infections, including HIV, and/or (iii) prevention of other reproductive tract infections. To date, researchers have focused their attention almost exclusively on VRs that combine delivery of antiretrovirals with progestin molecules for hormonal contraception.

Bacterial vaginosis (BV) imposes an enormous burden on morbidity and mortality in both resource-constrained and developed countries (>40% infection rates in many sub-Saharan African countries), and is associated with a 60% increased risk of HIV acquisition in women. New multipurpose prevention technology (MPT) devices that simultaneously prevent HIV infection and treat or prevent BV infection are needed to help stem the HIV pandemic. In this project, we will develop for the first time next-generation VRs offering simultaneous controlled release of dapivirine and one or more antibacterial agents targeted at BV. A range of antibacterial and biofilm disrupting agents (including metronidazole, Lactobacillus crispatus and retocyclin) will be tested in culture/biofilm models with a view to progressing the most promising candidates for co-formulation development in VRs.

### General Email Enquiries

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### Project Email Enquiries

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### How to Apply

Postgraduate applications should be made using Queen's University [Direct Applications Portal](#). 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](#) and the [Queen's Postgraduate website](#).