



QUEEN'S UNIVERSITY BELFAST

*Title of studentship	Development of next-generation vaginal gels containing multiple active agents for improved treatment of bacterial vaginosis
Value / what is covered?	Will consider either DfE-funded (UK/EU only) and self-funded applicants (worldwide)
Awarding body	Various
Number of studentships	1
*Summary descriptive text / Example of research project	<p>Bacterial vaginosis is a very common dysbiosis affecting hundreds of millions of women worldwide. It is associated with a profound shift in the vaginal microbiota, characterised by high bacterial species diversity, increased loads of facultative anaerobes, marked depletion of key Lactobacillus species, and a significant rise in vaginal pH to > 4.5. This dysbiotic state is associated with an approximate 2-fold increased risk of acquiring a broad range of sexually transmitted infections, including chlamydial infection, gonorrhoea, herpes simplex type 2 infection, and human immunodeficiency virus (HIV) infection, and increases the risk of HIV-infected women transmitting HIV to male partners. BV is associated with important reproductive and obstetric conditions, including increased risk of pelvic inflammatory disease, spontaneous abortion, pre-term delivery, low birth weight, and postpartum endometritis.</p> <p>Current clinical approaches to the management of bacterial vaginosis are somewhat empirical and involve the use of broad-spectrum nitroimidazole antimicrobials or clindamycin. Recommended first-line regimens include oral metronidazole 500 mg twice daily for 7 days, intravaginal 2% clindamycin cream once daily for 7 days, or intravaginal metronidazole gel once daily for 5 days. However, both practitioners and patients widely recognize the limitations of current therapeutic approaches to the treatment of bacterial vaginosis, particularly the inability to prevent the frequent and often relentless symptomatic recurrences; typically, 50% of women treated for bacterial vaginosis show recurrence of symptoms within 12 months.</p> <p>It is widely acknowledged that new treatment options for bacterial vaginosis are urgently needed. In this project, we will seek to develop new vaginal gel products with a view to significantly enhancing clinical outcomes for bacterial vaginosis. Compared to existing single-active treatment options, we will seek to develop next-generation of vaginal gel products containing combinations of active agents that can work synergistically. The active agents in the gel will be judiciously selected from existing antibacterial drugs, acid-modulating agents, biofilm disruptors, prebiotics and probiotics.</p>

	<p>A range of vaginal gel formulation strategies will be investigated, including simple aqueous polymer gels and innovative nano-formulation strategies that will allow both hydrophilic and lipophilic drugs to be incorporated into the gel.</p> <p>The successful applicant will work as part of a world-leading research group with widely-reputed expertise in vaginal drug delivery. The applicant will be expertly trained in key skills pertaining to drug delivery, pharmaceutical formulation and analytical testing of drug products.</p>
*Supervisor(s)	Prof. Karl Malcolm & Dr. Taher Hatahet
*Eligibility / residence Status	UK/EU for DfE studentship; worldwide applications for self-funded students
Country	Northern Ireland, United Kingdom (UK)
*Start date and duration	1 October 2020
*Faculty	MHLS
*Research centre / School	Pharmacy
Subject area	Drug delivery; pharmaceuticals
Candidate requirements / Key skills required for the post	Applicants should have a 1st or 2.1 honours degree (or equivalent) in a relevant subject. Relevant subjects include Pharmacy, Molecular Biology, Pharmaceutical Sciences, Biochemistry, Biological/Biomedical Sciences, Chemistry, Engineering, or a closely related discipline. Students who have a 2.2 honours degree and a Master's degree may also be considered, but the School reserves the right to shortlist for interview only those applicants who have demonstrated high academic attainment to date
*Deadline for applications	7 th January 2020 for DfE applications; self-funded applicants considered all year
*How to apply / contacts	<p>Postgraduate Research applicants for Pharmacy who are interested in applying for a fully funded DfE studentship must have applied to Queen's, via the Direct Applications Portal, and submitted all required supporting documents by the closing date, which will be announced later in the Academic year.</p> <p>https://dap.qub.ac.uk/portal/user/u_login.php</p>
Relevant links / more information	<p>http://www.qub.ac.uk/schools/SchoolofPharmacy/Research/PostgraduatePositions/</p> <p>http://www.qub.ac.uk/schools/SchoolofPharmacy/Research/</p>

Keywords for search filters	Vaginal gels; drug delivery; bacterial vaginosis; formulation;
Training provided through the research project	<p>The project will provide hands-on training for the student in the following techniques:</p> <ul style="list-style-type: none"> • drug formulation methods • preparation and characterisation of drug delivery gels • drug quantification using high performance liquid chromatography (HPLC) • in vitro drug release testing • thermal analysis methods • rheological and mechanical test methods for gels • microbiological assessments <p>As an integral part of the project, the student will further develop the following key skills:</p> <ul style="list-style-type: none"> • planning and organising: designing and planning of experiments • numeracy and statistical skills • teamwork: working confidently as part of a large research team
Expected impact activities	We anticipate that the project will lead to new gel-based products with increased efficacy against bacterial vaginosis.