

Project proposal template – Faculty studentships Summer 2014

<i>Project title</i>	A LAMP assay for rapid point-of-care testing for Gram positive and Gram negative bacteria	<i>Director of Study</i>	Dr Gary Forster-Wilkins
<i>Second Supervisor</i>	Prof. Mark Fielder	<i>School</i>	Life Sciences <input type="button" value="v"/>
<i>Other members of supervisory team</i>	Dr Simon Gould Dr James Denholm-Price	<i>Any requirements from applicant (eg degree in specific subject area)</i>	BSc/MSc with a significant microbiology/molecular biology <input type="button" value="v"/>

**Project summary
(max 1,000 characters)**

Clinically important bacterial pathogens include both Gram positive (e.g. *S. aureus*) and Gram negative (e.g. *K. pneumoniae*) species. Ideally, therapy should be selected for the appropriate cell type to ensure efficacy, although in practice it is initiated without knowledge of the Gram type. Inappropriate therapy not only risks failure, but may also contribute to promoting antibiotic resistance. Availability of a rapid ‘point of care’ test to differentiate Gram type that does not require culture would therefore reduce incorrect prescription and possible exacerbation of antibiotic resistance.

This project aims to develop an assay that will differentiate the Gram type of infection causing bacteria, based upon the loop-mediated isothermal amplification (LAMP) technique. Initially, bioinformatics will be employed to identify candidate genes specific to Gram positive and Gram negative species to target by LAMP and to design appropriate primer sets. After validation using laboratory strains the assay will be used for screening clinical samples, of both human and veterinary origin, in the laboratory and ‘in the field’. Incorporation of species-specific primer sets in the LAMP assay will also permit its use as an epidemiological tool.