Title of PhD project	**Novel drugs against superbugs – preclinical optimizations**	
Supervisor	**Dr Kai Hilpert**	SGUL
Co-Supervisor	**Prof Deborah Baines**	SGUL
Brief description of project	The WHO have declared antibiotic resistance and multi-drug resistance (MDR) one of the most pressing worldwide health care issues. Our group is specialised in antimicrobial peptides and we have already derived several novel peptides with significant activity against MDR-*Pseudomonas aeruginosa*, MRSA and VRE. In this project we focus on the transition from *in vitro* activity to *in vivo* efficacy. This is a truly interdisciplinary study, were the candidate will work at the interface of different disciplines to tackle one of the most pressing issues in modern medicine. We are working together with different pharmaceutical companies and hope that by the end of the project a drug candidate can move to the late state of preclinical tests and then move on towards clinical phases soon after. This is an exciting opportunity to be on the forefront of drug development for urgently needed drugs against superbugs.	
Particular *prior* educational requirements for a student undertaking this project	Standard SGUL research degree entry requirements: see http://www.sgul.ac.uk/study/postgraduate/research-degrees-postgraduate	
Skills we expect a student to develop/acquire whilst pursuing this project	1) Peptide synthesis on cellulose 2) Peptide synthesis on resin 3) Analytical and preparatory HPLC 4) Electrospray mass spectroscopy 5) toxicology and efficacy studies on different cell cultures (together with bacteria) 6) toxicology and efficacy studies on a whole organism, waxworm and mouse 7) training in GaitCad a special software to handle and analyse large data sets 8) flow cytometry, 9) medicinal chemistry , 10) light and electron microscopy , 11) microarrays and 12) micro-calorimetry	