Title of PhD project	**Identification and characterisation of barriers to antimicrobial resistance gene transfer**	
Supervisor	Professor Jodi Lindsay	SGUL
Co-Supervisor	Dr Gwenan Knight	LSHTM
Brief description of project	Antimicrobial resistance (AMR) is a great threat to the future of modern medicine (amr-review.org/Publications). Key multi-drug resistant bacteria and human colonisers that evolve by acquiring antimicrobial resistance genes from other bacteria, exchanging them at high frequency, and competing successfully with the microbiome in the host. We have built laboratory models of this dynamic using clinical isolates of the key AMR pathogen methicillin-resistant *Staphylococcus aureus* (MRSA) to investigate gene transfer and loss as well as the ability of resistant strains to compete with non-resistant strains. This project will focus on identifying and characterising new mechanisms that reduce AMR gene transfer. We will investigate the function of genes involved, how they control the evolution of AMR populations, and whether they could be useful new tools for manipulating genomes. This is a cross-disciplinary research project aimed at generating innovative strategies for reducing AMR incidence in the host.	
Skills we expect a student to develop/acquire whilst pursuing this project	Identify hypotheses, design experiments to answer the hypotheses, interpret and discuss findings, communicate them in papers and presentations. Microbiology, cloning, phage biology, sequencing, bioinformatics, data analysis. This is a multidisciplinary project with opportunities to collaborate with experts in clinical microbiology, epidemiology, public health, mathematical modelling, and with a focus on translational outcomes to benefit patients.	
Particular prior educational requirements for a student undertaking this project	None	