

## Project proposal template

### Graduate School studentships

### March 2015

<i>Project title</i>	<input style="width: 95%;" type="text" value="Amino acids in bacterial targeting: New warriors in antibiotic resistance war"/>		
<i>First Supervisor</i>	<input style="width: 15%;" type="text" value="Dr"/> ▼	<input style="width: 70%;" type="text" value="Amr ElShaer"/>	
<i>Second Supervisor</i>	<input style="width: 95%;" type="text" value="Professor Raid Alany"/>		
<i>School</i>	<input style="width: 95%;" type="text" value="Pharmacy and Chemistry"/> ▼		
<i>Other member of supervisory team (no more than three KU supervisors in total)</i>	<input style="width: 95%;" type="text" value="Dr Alex Sinclair"/>		
<i>Specific requirements beyond 2:1 degree</i>	<input style="width: 95%;" type="text" value="Degree in Pharmaceutical sciences, Microbiology, Chemistry or other Science related degrees"/>		

**Project summary**  
**(max 4,000 characters)**

Antibiotic resistance is a current world issue that started to emerge only few years after the introduction of the first antibiotic; penicillin in 1943. Within 6 years, around 60% of *Staphylococcus aureus* isolates from British hospitals were found to be penicillin resistant. Bacterial resistance means effective loss of an antimicrobial agent, limiting treatment options and increasing morbidity and mortality rates. Therefore, resistance among bacteria has become a major public-health problem nationally and internationally and efforts are needed to hinder its emergence. Polymers have very appealing physical and chemical properties, therefore they have been used over the years to develop drug delivery systems that can enhance drug properties and will be used as a potential vehicle in targeting bacteria. The aim of the proposed study is to utilise amino acids to prepare a polymeric system that can target bacteria via electrostatic interaction. The proposed work will take place in three phases; the first phase will investigate the synthesis and characterisation of the amino acid polymers, while the second phase will study the use of the novel polymers to prepare nanoparticles that can encapsulate antimicrobial agents, such as emerging antibiotics, fatty acids and macromolecules. The final phase of the proposed research will look at the physical and microbiological properties of the amino acids nanoparticles.

