

Project proposal

Project title	Optimising a novel product mix as a means to inhibit biofilm formation in medically important microorganisms.
First Supervisor	Dr <input type="text" value="Alison Kelly"/>
Second Supervisor	Professor Declan Naughton
School	Life Sciences <input type="text"/>
Other member of supervisory team (no more than three KU supervisors in total)	Dr Adam Le Gresley
Specific requirements beyond 2:1 degree	Microbiology laboratory experience (work experience, internship or independent project). Good knowledge of chemistry although training will be provided.

Project summary (max 4,000 characters)

MSc by Research

One of the current major hurdles to overcome in medicine is biofilm formation by microorganisms, which is recognised as leading to increased resistance to a variety of antimicrobials. Biofilms are able to form on many surfaces including on and within the human body and are associated with a higher risk of chronic infection, lengthier hospital stays and repeated treatment regimes. Research here at Kingston University with Professor Declan Naughton has identified and investigated a novel antimicrobial mix with activity against *Staphylococcus aureus*, *E. coli* and *Pseudomonas aeruginosa* (Holloway et al, 2012, 2011).

The aim of this research project is to take this mix and investigate its potential as a means to inhibit biofilm formation in a number of medically important microorganisms in a model system. In addition, the project will investigate the removal of formed biofilms using this mix on its own and in combination with more traditionally employed therapies. It is envisaged that in both these aspects the biofilm 'make up' will be analysed by a variety of means, including DOSY-NMR, in an attempt to determine the dynamics within the biofilm.

Holloway, A.C., Mueller-Harvey, I., Gould, S. W. J., Fielder, M. D., Naughton, D. P., and Kelly, A. F. (2012) The effect of copper(II), iron(II) sulphate, and vitamin C combinations on the weak antimicrobial activity of (+)-catechin against *Staphylococcus aureus* and other microbes. *Metallomics*, 4 (12), 1280-1286

Holloway, A. C., Gould, S. W. J., Fielder, M. D., Naughton, D. P. and Kelly A. F. (2011) Enhancement of antimicrobial activities of whole and sub-fractionated white tea by addition of copper (II) sulphate and vitamin C against *Staphylococcus aureus*; a mechanistic approach. *BMC Complementary and Alternative Medicine* 11 (115), 1472-6882