Project Title:
Assembly of biomembranes: membrane protein folding and constructing synthetic biology modules

Academic Supervisor: Professor Paula Booth

Project Description:
Self-assembly is a hallmark of Biology. Our research is aimed at understanding the assembly of biological membranes and their constituent membrane proteins as well as exploiting this to create and control artificial modules for Synthetic Biology.

Integral membrane proteins account for about 30-40% of all cell proteins and function as transporters, receptors and signal transducers. They act as gateways to cells and comprise the vast majority of drug targets. We investigate the folding of these proteins to their functional state, with an emphasis on understanding the mechanism of folding through kinetic and thermodynamic studies. We use this knowledge to understand membrane biogenesis and misfolding that occurs in disease states. Moreover, we exploit the ability to self assemble transporters and receptors in Synthetic Biology, by constructing minimal artificial cellular compartments with defined roles that can be adapted for bio-inspired devices. An interdisciplinary approach is used at the interface of Biology and Chemistry with a focus on membrane transport proteins. Techniques range from cell cultures, protein expression, biochemistry and molecular biology to biophysical, chemical and nanoscience methods.

Applications will be accepted on a rolling basis.

Please contact: paula.booth@kcl.ac.uk with any queries.

Funding:
4 Year Programme with RCUK Rates for Stipend (£16,142 p/a) and Fees included - UK/EU applicants only.

Applying:
To apply, please visit the King’s College myApplication system: https://apply.kcl.ac.uk/

Please ensure that you quote the project title (Assembly of biomembranes) and supervisor (Paula Booth) in the relevant sections of the application form, as well as the following reference 16-CHEM-01 / GTS. If you require support with the application process, please contact the Postgraduate Admissions Tutor for Chemistry at gerd.wagner@kcl.ac.uk.
References:


Subject Areas:

Biological Sciences: Biochemistry/Biophysics, Cell Biology, Molecular Biology, Structural Biology
Chemical Sciences: Biochemistry