

**University of Science and Technology of China / Oxford Summer
studentship Programme**

Project Proposal – 2014

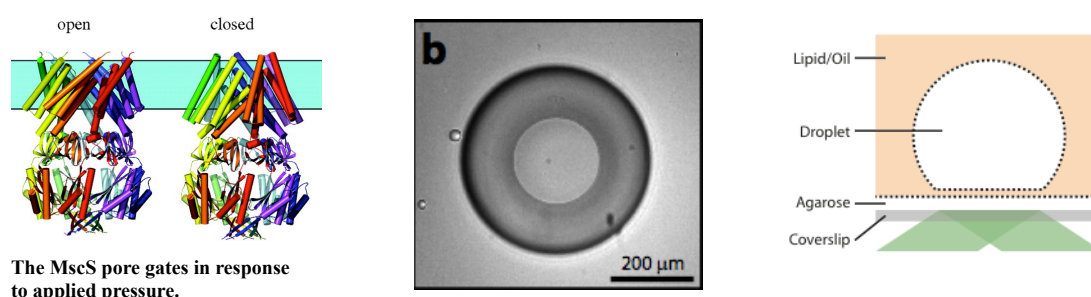
Supervisor: Mark Wallace

Title of Project:

Controlling MscS gating in Droplet Interface Bilayers.

Description of project:

Our lab has recently developed a new mimic of the cell membrane based on the contact of aqueous droplets in a solution of lipid and oil. Droplet Interface Bilayers permit single-molecule fluorescence imaging whilst retaining control of the membrane potential. This has the potential for experiments capable of correlating single-molecule measurement of ion-channel conformational change with single-channel electrophysiological measurements of ion channel function.



You will build on current work in the lab to reconstitute the mechanosensitive channel of small conductance MscS into Droplet Interface Bilayers. We will seek to reproduce the single-channel conductance events from MscS in this *in vitro* model, and control gating through manipulation of the lateral pressure of the bilayer.

Reasonable expected outcome of project:

This work will pave the way to reconstitution of FRET-labelled MscS and simultaneous single-molecule fluorescence and single-channel electrophysiology.

Location:

This work will be conducted in the Chemistry Research Laboratory (South Parks Road).