Development of chemical probes for selective sensing and quantification of glutathione by fluorescence spectroscopy

Supervisor: Dr Robert Edkins
https://www.strath.ac.uk/staff/edkinsrobertdr/

Internship Description:

You will synthesise and evaluate a glutathione sensor based on the fluorophore BODIPY. This fluorophore will be linked by a glutathione-cleavable aryl sulfonyl linker to a secondary phosphorus-based chromophore being developed in our group. Cleavage of the linker will turn off the BODIPY emission and turn on emission from the secondary chromophore. This change in emission will be readily detected and ultimately allow mapping of glutathione in cells by fluorescence microscopy. Full training in all techniques will be given.
The work will involve:

- Synthesis of the individual chromophores
- Synthesis of the dyad from these components
- Characterization by NMR spectroscopy and mass spectrometry
- Measurement of UV-visible absorption and fluorescence spectra
- Titration experiments with glutathione to determine the effectiveness of your sensor

Qualifications:
Some experience in synthetic organic chemistry from undergraduate teaching labs
Sophomores and Juniors are encouraged to apply.