Project Title: FXYD1 Phosphorylation VS Glutathionylation	**Code: NCS3**
Host School / Institute: Northern Clinical School / Kolling Institute	**Address:** The Kolling Institute, Royal North Shore Hospital, St Leonards
Certificates & Clearances required: No	
Primary Supervisor: Prof Gemma Figtree	
Phone: 02 9926 7111	**Email:** gemma.figtree@sydney.edu.au
Co-Supervisor/team: Prof Figtree will be the primary supervisor and postdoctural researcher Dr Owen Tang will be overseeing the laboratory experiments.	
Project Type: Laboratory based; Data Analysis	
Project Category: Cardiovascular; Molecular biology	
Skills / Attributes of a successful student: Applicant must be hard working, organised and enthusiastic. Basic laboratory skills would be desirable.	
Project Keywords: Redox; Glutathionylation; sodium potassium pump	

Project Description: FXYD1 is a 12kDa single transmembrane protein that has been shown to be closely associated with sodium potassium pump and tightly regulates its activity. On top of that, a second dimension of regulations can be implemented by the post translational modifications of FXYD1 protein itself. The FXYD1 protein was demonstrated to be phosphorylated at 2 serine (S63 and S68) positions, glutathionylated and/or palmitoylated at 2 cysteine (C42nand C42) residues. However, the relationship between the phosphorylation status and glutathionylation status remains unclear. During this project, plasmids encoding wild type/mutant (serine to alanine, cysteine to alanine) will be over-expressed in cells which are then subjected to various oxidative stresses. The FXYD1 protein will then be analysed for their phosphorylation and glutathionylation status.

The student will have the opportunity to use the following molecular biology tools to carry out the experiments outlined:

1. Bacterial culture with plasmid DNA extraction.
2. Cell culture and DNA transfection.
3. Protein analysis including western blotting and immunoprecipitation.