

Cell to cell communication in vascular and cancer cells

Host School/Institute: Centre for Vascular Research, Bosch Institute, School of Medical Science

**URL: <http://www.medfac.usyd.edu.au/people/academics/profiles/swimmer.php>
<http://www.bosch.org.au/research/Cardiovascular/VascularResearch/people/swimmer.php>**

Project Code: SMS7

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Description of Project:

Cell surface receptors play a crucial role in cellular communication and signal transduction. They direct a variety of cellular processes including cell positioning, -proliferation, -differentiation and -death. Their function relies on a tight regulation of signalling activities- abnormal receptor signalling is a principal cause of human diseases that range from developmental defects to cardiovascular disease (CVD), cancer and diabetes. Accumulating evidence implicates oxidants in receptor signalling pathways, however the exact mechanism and the precise location, identity and levels of oxidants are still not fully understood. A summer scholar is being sought to take part in the experiments to analyse the involvement of the oxidant generating enzyme NOX4 in the oxidative regulation of two cell surface receptor systems implicated in tumour metastasis and CVD. The significance of this project is that it will provide a better understanding of these complex processes, which may allow the development of novel therapies to target abnormal redox-modulated pathways in vascular disease and cancer.

We will approach this question from both a cellular biology and biochemical perspective. Methodology will include: Live cell imaging Confocal microscopy, immunocytochemistry, Immunoprecipitation, Western Blot analysis, amplification of protein expression plasmids, transfection of expression plasmids, tissue culture of mammalian cells

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