

# Free Radical Biochemistry Laboratory

## School of Biological Science, University of Canterbury, Christchurch, New Zealand

### Group Leader:

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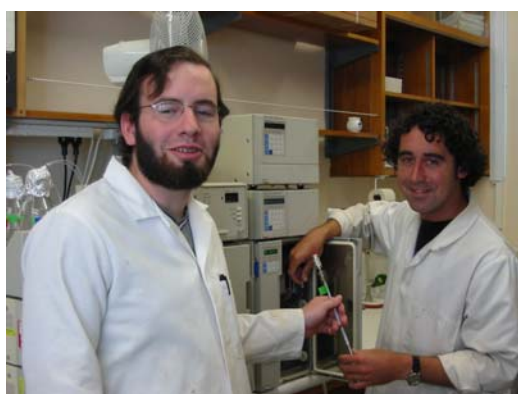


### Laboratory Research Interests:

- Heart disease and the role of cellular antioxidants
- Neopterin in inflammatory diseases
- Inhibition of oxLDL mediated apoptosis
- Protein oxidation as an initiator of apoptosis
- Redox stress in fish – Effect on vascular control

### Laboratory Description

Our research is focused on three major areas, free radical damage to cellular proteins (protein hydroperoxides and protein bound DOPA), the role of the antioxidant 7,8-dihydroneopterin in inflammation, and cellular dysfunction by oxidant during vascular disease (heart disease and complications of diabetes). We are primarily a free radical biochemistry laboratory specialising in tissue culture based research with HPLC and GC analysis. Our principal cell models are human monocyte like U937 and THP-1 cells and macrophages purified from human blood.



### Selected publications

- Baird, S.K., Mark B. Hampton M.B. and S.P.; Oxidised LDL triggers phosphatidylserine exposure in human monocyte cell lines by both caspase-dependent and -independent mechanisms, FEBS Letters, FEBS Letters, v578, 2004, 169-174
- Gieseg, S.P.; Pearson, J.; and Firth, C.; Protein hydroperoxides are a major product of low density lipoprotein oxidation during copper, peroxy radical and macrophage-mediated oxidation, Free Radical Research, v37, No. 9, 2003, 983-992.
- Duggin, S.; Rait, C.; and Platt, A., Gieseg, S.P., Protein and thiol oxidation in cells exposed to peroxy radicals is inhibited by the macrophage synthesised pterin, 7,8-dihydroneopterin, Biochimica Biophysica Acta, v1591, 2002:139-145
- Gieseg, S.P., Duggan S. and Gebicki, J.M. Peroxidation of proteins before lipids in U937 cells exposed to peroxy radicals, Biochemistry Journal, v350, 2000:215-218.

**Web Site:** [http://www.biol.canterbury.ac.nz/people/gieseg/gieseg\\_res.shtml](http://www.biol.canterbury.ac.nz/people/gieseg/gieseg_res.shtml)

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