2016/2017 Summer Studentship Project Application Form

Send to: Research Office, University of Otago Christchurch, PO Box 4345, Christchurch, by 5pm on 4 July 2016

Supervisor Information (First named supervisor will be the contact):	
First Supervisor's Name and Title: Associate Professor Chris Pemberton	
Department - UOC &/or CDHB (if applicable): Medicine, UOC	
First Supervisors Phone: (03) 364-0887	First Supervisors Email: chris.pemberton@otago.ac.nz Fax: 364-0713
First Supervisors Mailing Address: Endolab, 21 St Asaph Street, Christchurch 8011	
Co-Supervisors Name and Title(s):	

Research Category (Choose one category only – to be used for judging the students' presentations):		
Clinical	Laboratory ✓	Community

Project Title (20 words MAXIMUM):

A new monoclonal assay for BNP signal peptide

Project Description:

Introduction: Patients with chest pain suspicious of acute coronary syndromes (ACS) constitute a diagnostic challenge for emergency departments. In particular, the rapid diagnosis of unstable angina (UA) can be time consuming and difficult. We have developed a prototype test to the signal peptide of the cardiac B-type Natriuretic Peptide (BNPsp) and shown that it might have potential as a marker for diagnosing the presence or absence of UA. We now seek to improve the analytical test to BNPsp using a monoclonal antibody based format. This development includes testing assay formats, documenting assay performance and obtaining results from normal healthy volunteers and biobanks of patients with ACS.

Aim: To validate a new monoclonal antibody based assay for the signal peptide of BNP.

Possible impact (in lay terms):
Short term – training and experience in the development of a new in vitro assay that has commercial and clinical potential.

Long term – 1) the implementation of a novel assay that could potentially be used clinically to assist decision making and improve patient outcomes and 2) provide a new research tool for studies in cardiovascular disease.

Method:
Custom monoclonal antibodies to BNPsp and appropriate standard peptides have been sourced and purified. The BNPsp assay will require development in either competitive or two site "sandwich" format on standard 96 well ELISA plates. Testing and development of assay standard ranges, curve format and sample requirements will be carried out in the CHI assay lab under the guidance of senior scientists and experienced technicians. Careful documentation of assay characteristics, performance parameters and design profile will also need to be carried out. Once a robust and appropriate design is formatted, analytical characteristics such as detection limits, ED50 curve readings, sample collection type analysis, quality control data, 99th percentile and CV calculations will be determined from a biobank of 150 volunteer samples. Reverse phase and size exclusion chromatographic analysis will also be performed to verify that the assay measures the expected peptide. Further analytical and clinical performance documentation of the assay will be carried out in a biobank of ACS patient samples.

This project would be ideal for a science or medical student who is contemplating further research study such as Hons., Ph.D or B. Med. Sci. It will be able to be completed in the 10 week span of the studentship and very likely lead to a scientific publication.

Student Prerequisites (eg. Medical Student) if applicable:
Medical or science student preferred