2015/2016 Summer Studentship Project Application Form

Send to: Research Office, University of Otago Christchurch, PO Box 4345, Christchurch, by 5pm on **3 July 2015**

Supervisor Information (First named supervisor will be the contact):	
Supervisor's Name and Title(s): Gabi Dachs and Logan Walker	
Department: Mackenzie Cancer Research Group, Department of Pathology	Institution: UOC or CDHB
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Mailing Address: University of Otago, Christchurch	

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

Project Title (20 words MAXIMUM):

Analysing gene expression data to understand ascorbate transport in tumours of colorectal cancer patients

Project Description:

We are looking for a bright, enthusiastic student to join a multidisciplinary cancer research group. The Mackenzie Cancer Research Group is interested in the cellular and molecular basis of cancer and response to therapy. We have close links with the clinic and the proposed study represents an important part of our ongoing research.

Background:

The role of vitamin C (ascorbate) in cancer remains controversial, but our recent studies of human tumour samples from patients with endometrial cancer (Kuiper 2010) and colorectal cancer (Kuiper, 2014) have shown intriguing associations between low tumour levels of ascorbate with a more aggressive and hypoxia-related tumour phenotype, and shorter disease-free survival. It is important to understand why some tumours were able to accumulate ascorbate, while others were not.
Factors which may contribute to ascorbate accumulation in tumours are vascularity, tumour tissue density, and the level of ascorbate transporters (SVCT-1, SVCT-2, GLUT-1). We have undertaken an immunohistochemical study to examine these factors in tumours, but would now like to widen our investigation to cover gene expression levels in large international cohorts.

Aim:

Determine whether expression levels of ascorbate transporters in tumours from colorectal cancer patients are associated with hypoxia-related gene expression and clinicopathological factors.

Methods:

The student will

1. select one or more suitable genetic databases and publications that contain detailed gene expression data with associated clinicopathological information;
2. perform association studies between the genes encoding SVCT-1, SVCT-2, GLUT-1 with HIF-1 controlled genes (including VEGF, BNIP3, CA-IX);
3. determine associations between the ascorbate transporters and clinicopathological data (including grade, stage, survival).
4. Statistical analysis of association data.

These bio-informatic methods are established in our group, and the student will be trained to carry out the analyses.

Significance:
The use of ascorbate in cancer remains controversial, yet many cancer patients choose high dose ascorbate treatment provided by alternative providers. This study will provide valuable scientific data for the ongoing debate.

Student Prerequisites (eg. Medical Student) if applicable:
Advanced student with some bio-informatic experience