



HRC funding for Malaghan Institute clinical cancer research

2 February 2010

Wellington clinicians Mr Martin Hunn and Dr Peter Ferguson have recently been awarded prestigious Clinical Research Training Fellowships from the Health Research Council of New Zealand (HRC), to undertake cancer research at the Malaghan Institute of Medical Research.

Mr Hunn's research, which will contribute towards his doctorate, is comprised of two related projects that have the common aim of improving immunotherapy for the treatment of patients with glioblastoma multiforme. Glioblastoma multiforme is a highly malignant brain tumour that is almost always fatal within a few months or years.

"Standard treatments such as surgery, radiotherapy and chemotherapy appear to have reached their limits and are unable to prevent tumours from recurring," said Mr Hunn. "As a practising neurosurgeon, it is clear to me that a fundamentally different approach is needed if we are to alter the course of this devastating disease."

Immunotherapy is a novel approach to cancer treatment that exploits the sensitivity and potency of the immune system, which can be directed to seek out and destroy tumour cells through the use of custom-made vaccines.

The feasibility of using cancer vaccines in combination with temozolomide chemotherapy to treat patients with recurrent glioblastoma multiforme is currently being assessed in a Phase I clinical trial at the Malaghan Institute, in collaboration with the Wellington Blood and Cancer Centre.

Mr Hunn is one of the Principal Investigators for this trial and one component of his PhD will be to assess vaccine-elicited immune responses in trial participants.

"We hypothesise that following chemotherapy glioblastoma multiforme tumours produce proteins that mediate drug resistance and could act as potential targets for immune attack," said Mr Hunn.

In work that complements the clinical trial, Mr Hunn will use his HRC fellowship to explore the possibility of using vaccines to generate immune responses that selectively remove these drug-resistant cells.

"The hope is that we may have a way of re-sensitising the tumours so that they are once again vulnerable to subsequent chemotherapy treatments," he said.

Mr Hunn is also optimistic that immunotherapy could be used to eradicate cancer stem cells that might be present in the glioblastoma tumours. Cancer stem cells (tumour initiating cells) possess unique properties that make them particularly resistant to radiation and chemotherapy and are thought to be responsible for the initiation of most cancers and their recurrence following treatment.

"By acting through entirely different mechanisms, immunotherapy might succeed in attacking these cells where conventional treatments have failed," said Mr Hunn.



The goal of Dr Ferguson's HRC-funded PhD research is to improve early cancer detection by enhancing the ability of magnetic resonance imaging (MRI) to 'see' cancer cells.

Magnetic resonance imaging uses a powerful magnetic field and radio frequency pulses to provide an unparalleled view inside the human body. However, the technology does have its limitations, particularly when it comes to visualising very small tumours.

A novel synthesis process to produce superparamagnetic nanoparticles has been developed and patented by Dr Richard Tilley and colleagues at Victoria University of Wellington. Dr Ferguson believes that these novel particles might hold the key to enabling MRI to detect even the smallest of developing tumours.

"My research goal is to translate the superior magnetic properties of the nanoparticles into contrast agents that enhance the ability of MRI to detect cancer," said Dr Ferguson.

Dr Ferguson's initial focus is to improve the detection of melanoma, the incidence and mortality rates of which have more than doubled in New Zealand over the past three decades. Early diagnosis could improve the outcome for a large number of patients.

"Technical advances in magnetic resonance imaging will increase its resolution and permit targeted imaging. New Zealand needs to play a part in this developing field to reap the benefits for patients, clinicians and the economy."

The Malaghan Institute would like to acknowledge the HRC's funding of these talented individuals and the important contribution their research will make to the lives of New Zealanders affected by cancer.

The Malaghan Institute of Medical Research is New Zealand's premier vaccine and immunology research centre and is based at Victoria University's Kelburn campus, Wellington. The Institute operates independently and is a charitable trust. Researchers at the Malaghan Institute are focused on developing innovative ways to harness the strength and potency of the immune system, the body's own natural defence against disease, to treat cancer, asthma, arthritis, multiple sclerosis and infectious disease.

All media enquiries should be directed to Vicky Hale, Marketing Admin Assistant, Malaghan Institute of Medical Research, on +64 499 6914 ext 821 or vhale@malaghan.org.nz.

This media release is also available for viewing on our website www.malaghan.org.nz with links to relevant individuals and research groups.