PARTICIPANTS NEEDED FOR NZ'S BIGGEST MS STUDY

Multiple Sclerosis, or MS as it is more often known, is the most common neurological condition in New Zealand, but it's unclear exactly how many people have this disease. A research team at CSM & HS has just launched a definitive study into the condition.

"We think there are about 3000 to 4000 people with MS, but we want to accurately record its prevalence, the level of disability, and compare socioeconomic status to the whole NZ population," explains Associate Professor Bruce Taylor, who is leading the two year study.

Multiple Sclerosis is an inflammatory disorder of the brain and spinal cord that presents with waxing and waning symptoms and disability that with time become fixed. Common early symptoms include loss of vision in one eye, double vision, loss of feeling, weakness and imbalance. MS imposes a large burden on those with the illness, and on their carers and the health system.

The study, which involves questionnaires and no tests, is also investigating whether the environment affects prevalence. It will look at where people are living in 2006 and trace where they have lived before diagnosis. Interestingly MS increases the further people live from the equator, and previous research has shown that there is a two and a half fold increase between the Waikato and Southland.

"One of the factors in this may be decreasing exposure to winter sunlight," says Associate Professor Taylor. "Sunlight produces vitamin D in the skin and Vitamin D is an important regulator of the immune system."

Assoc Professor Bruce Taylor and Dr Deborah Mason

The study is also trying to answer why MS may be is less common in people of Maori origin. This may help determine which genes are protective against MS and which make people more susceptible.

This research is funded by the Health Research Council and the National MS Society.

If you have Multiple Sclerosis the research team would like to hear from you.
Please contact 0800 677 839 (0800 MS STUDY) or msstudy@chmeds.ac.nz (325)

TESTING BREATH FOR SEVERE LUNG INFECTIONS

Infectious diseases specialist Professor Stephen Chambers from the Department of Pathology and five colleagues have received $645,850 from the Health Research Council to investigate a breath test to identify severe lung infections. This could have widespread benefits for young children suffering from cystic fibrosis and also immune compromised cancer patients.

Professor Chambers says if a child has damaged lungs or an abnormal immune system harmless organisms can cause life-threatening disease.

"Unfortunately the tests we have now are sometimes inaccurate or require difficult investigations to find out what is going on," he says.

These infections are very important in diseases like cystic fibrosis and leukaemia. In cystic fibrosis the commonest germ which damages the lungs is pseudomonas which grows in 'thick gooey blobs', and clogs up the small airways. In leukaemia the most dangerous organisms are fungi like those that grow on stale food.

"These infections are uncommon, but can be fatal unless diagnosed very early," he says.

The research is based on the theory that when organisms are growing in the lung they will produce small amounts of trace gases that may be detected on the breath. The researchers will look for the best gases to use as markers, and in human trials it will be determined how well these work.

"The main aim is to identify tests what work and do not cause pain or discomfort for children. The tests are quite fun and if they work they can be done frequently to allow early diagnosis.

Professor Chambers is confident that if the breath tests are successful, children suffering from severe lung infections associated with cystic fibrosis can be treated more effectively. "They will find the management of their illness much less demanding. We want to minimise the burden the family and the health care team feels when looking after sick children with prolonged severe illness."

Christchurch School of Medicine and Health Sciences

August 2006

Connecting with the Community

The University of Otago has recently approved a new strategic plan, extending to 2012. The University's vision is to be; "A research-led University with an international reputation for excellence." In 2007 the Christchurch School of Medicine and Health Sciences will revise its strategic plan up to 2012.

Key strategic issues to be discussed will include: achieving research excellence, and achieving excellence in research-informed teaching. Integral to our planning will be our relationship and engagement with the Canterbury District Health Board and the people of Canterbury.

In 2007 the School will receive its largest ever intake of fourth year medical students, with an intake of over 80, compared with historical numbers of about 60, although this year that reached 73. Thus over the three years of clinical training we will eventually have about 240 clinical medical students. We are also host to about 60 PhD students and 500 postgraduate students in Health Sciences.

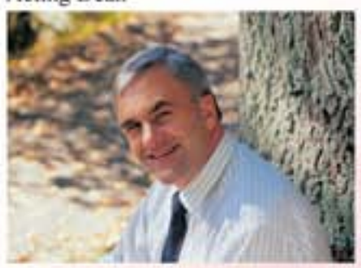
In the most recent Health Research Council project awards we were again pleased with the success of our research staff, with grants being awarded to infectious diseases specialist Professor Stephen Chambers, molecular biologist Associate Professor Martin Kennedy, cardioendocrine biochemist Professor Tim Yandle.

Staff involved with collaboration grants included respiratory physician Dr Michael Epton, diabetes physician Dr Helen Lunt and Professor David Fergusson from the Christchurch Health and Development Study.

The largest grant was awarded to Suzanne Pitama from the Maori Indigenous Health Institute and Dr Vicky Cameron from the Cardioendocrine Research Group to examine cardiovascular disease in the Maori community.

The School has also been delighted to host some outstanding speakers in the recent Mid-Winter Dialogues, and it is great to see friends of the School attending these lectures.

Professor Peter Joyce
Acting Dean



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UNRAVELLING THE ROLE OF HORMONES IN HEART FAILURE

For the last two decades the mysteries of heart hormones and heart failure have been at the centre of research by the Christchurch School of Medicine and Health Sciences Cardioendocrine Research Group (CCERG) directed by Professor Mark Richards.

As a Cardiologist at Christchurch Hospital and the Heart Foundation Chair of Cardiovascular Studies, he has led a highly successful multi-disciplinary research team that is having a major impact on the diagnosis and management of heart failure world-wide.

"Our understanding of the role of heart hormones in alleviating and signalling heart failure has increased very significantly over the last fifteen years, " he explains. "Our research has contributed to international acceptance that hormones secreted by the heart when it is under stress, play a fundamental protective role, can be used to assist in diagnosis of heart failure and may potentially guide improved anti-failure treatment, "he explains.

The CCERG has produced a steady flow of innovative papers, many published in top international medical science journals such as 'The Lancet' and 'Circulation'. These findings have been described as 'medical milestones' in the diagnosis and treatment of heart disease; the developed world's major cause of mortality and hospitalisation.

"One key reason we've made so much progress is because our research is very clinically driven by medical staff who're treating heart failure every day and who work in close partnership with a team of dedicated and talented scientists," says Professor Richards.

A key study, the Post-Myocardial Infarction (PMI) study, was launched in 1994. Over a thousand people with heart attacks have been followed for five years or until death. This study has just completed follow-up of the 1000th patient. The group has examined the behaviour of heart hormones and related this information to patient outcome after heart attack.

"The PMI study has resulted in a huge accumulation of new information about prognostic markers. One of the early key results in 1998, which has since been replicated by many other studies overseas, is that by measuring the heart hormones BNP and/or NTproBNP after a heart attack, doctors can much more accurately assess survival rates," he explains. "Subsequently it has become clear from follow-up analyses in 2003 and onwards, that heart hormone levels predict outcomes many years after injury to the heart, pointing the way to earlier drug intervention."

Christchurch researchers found that higher NTpro BNP levels mean lower survival rates, as the heart secretes more hormone to try to cope with its stress and failure. This discovery was a significant advance for cardiac management, enabling doctors to determine which patients need more intensive follow-up and more rapid escalation of treatment.

The subsequent development of a sophisticated blood test by CCERG scientists, now allows GPs and hospitals to better analyse how a patient should be treated and what drugs to use. These tests are routinely recommended by cardiac guidelines in Europe and North America.

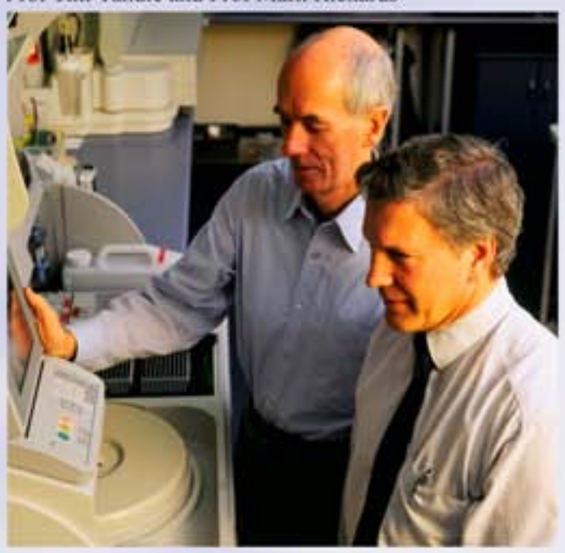
The PMI study also provided a number of other leads with positive clinical spin-offs for heart patients. Another study showed that high BNP levels in conjunction with high blood pressure before a heart attack indicates a patient is at greater risk.

"In 2003 we then looked at selected genes which may influence recovery after a heart attack. We found that a particular gene variant that regulated other hormones carried risk for death after heart attack, and added to information offered by BNP measurements alone."

The Cardioendocrine Research Group is building on its international success by concentrating on new areas for investigation with a much bigger sample of 2000 patients. A broader range of patients with acute coronary syndromes, from angina through to massive heart attack, will be monitored in relation to a wider spectrum of heart hormones.

This research is funded by the Health Research Council, National Heart Foundation and the Canterbury Medical Research Foundation

Prof Tim Yandle and Prof Mark Richards



canterbury medical research foundation

COMPOUNDS FROM VEGETABLES ATTACK CANCER CELLS

One of the most complex medical challenges is to find the right mix of drugs to kill cancer tumour cells. A team from the Free Radical Research Group, has discovered that compounds from cruciferous vegetables such a broccoli, brussels sprouts and watercress actually help to kill cancer cells that can be resistant to other treatments.

The researchers led by Dr Mark Hampton have just had their ground-breaking study peer reviewed and published in the American journal 'Cancer Research'. Other members of the team that contributed to the publication were Kristin Brown, Dr Susan Thomson and Dr Juliet Puller.

The researchers have shown that isothiocyanates found in cruciferous vegetables cause cell-suicide in cancer cells, including cells that have high levels of a protein called Bcl-2.

"The reason the Bcl-2 protein is important is that it makes cells resistant to cell-suicide or apoptosis, "explains Dr Hampton. "A cancer cell with a lot of Bcl-2 is dangerous because it has increased resistance to chemotherapy drugs that are used to try and destroy the tumour. We have now found that Bcl-2 cannot however provide protection against certain isothiocyanates."

L to R. Dr Juliet Pullar, Dr Susan Thomson, Dr Mark Hampton. Seated, Kristin Brown.

This discovery opens up possible avenues for new drug development by mimicking the cruciferous vegetable isothiocyanates. Such drugs would overcome the protection the cancer cells get from having Bcl-2 and make them more susceptible to other treatments.

The challenge now is to understand exactly how isothiocyanates work inside the cell. Dr Hampton says he and his colleagues tested a variety of different isothiocyanates, and found that not all are effective in causing cell-suicide. "This has provided clues as to which chemical features of the isothiocyanates are important, and we have come up with a possible target that we are beginning to test."

He says that this information could be valuable for designing and testing more refined chemotherapy drugs based on the naturally-occurring isothiocyanates. The ideal situation would be to have a new drug that effectively kills the tumour cells but does not affect other healthy cells within the body. This is why scientific research in the lab is so important in the fight against cancer.

Dr Hampton is a recipient of a Sir Charles Hercus Research Fellowship from the Health Research Council of New Zealand, and last year won a MacDiarmid Award for health research. Other funding has come from the Royal Society Marsden Fund, the Cancer Society, the Canterbury Medical Research Foundation, the Robert McClelland Trust and the University of Otago.