INVESTIGATING LINKS BETWEEN GENES AND MEDICATION

A new research group has been launched at the School thanks to the generosity of the Whangarei-based Jim and Mary Carney Charitable Trust. The Carney Centre for Pharmacogenomics will investigate how our genetic make-up affects individual reactions to different medications.

“This is a relatively new but important area of research, simply because so many patients have different reactions to different drugs,” explains Centre Director Associate Professor Martin Kennedy. “Because of our rapidly increased understanding of the human genome we’re now able to track drug reactions much better than ever before.”

“The Christchurch School of Medicine and Health Sciences proposal and presentation just stood out,” said Mrs Mary Carney at the launch. “I’m so pleased our first grant can go to health research to eventually improve medical treatment for New Zealanders.”

The Carney Centre will draw together our strengths in basic science and clinical research, involving twelve staff and six PhD students across six departments.

Other senior clinical clinicians collaborating with the Centre are Professor Evan Begg (Clinical Pharmacology), Professor Peter Joyce (Psychological Medicine), Dr Murray Barclay (Gastroenterology), and Dunedin-based Dr David Clark (Pharmacology) and Professor Robin Taylor (Respiratory research). Additionally, Dr Rebecca Roberts is a full-time pharmacogenomics Research Fellow in the new Centre.

Vice-Chancellor Professor David Skegg, Mrs Mary Carney and Associate Professor Martin Kennedy at the Carney Centre launch.

HEALTH RESEARCH OPEN DAY: SUNDAY AUGUST 28, 1.00-4.00PM

Mark this date down in your diary! The popular Health Research Open Day will be held on Sunday August 28, where you will be able to witness the diversity of health research which is being undertaken by the School and Christchurch Hospital. For the price of a gold coin this is a bargain afternoon of knowledge, information, and entertainment!

The Health Research Open Day will once again feature a range of interactive displays in the foyer, devoted to the latest in health research, guided tours, plus a series of talks in the Rolleston Lecture Theatre on a range of health research and its clinical applications.

Canterbury Medical Research Foundation Director Guy Johnson says, “We always get a good turnout, people love to see what is being done in terms of medical research and we like to show all our donors and members the good work resulting from their generosity.”

The keynote speaker for the afternoon is Professor Wylie Vale, an internationally recognised endocrinologist from the Salk Institute, San Diego, California who will be speaking on “Stress: the good, the bad and the ugly” Other research talks will cover antibiotic resistance, stroke and swallowing, and diabetes.

canterbury medical research foundation

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Christchurch School of Medicine and Health Sciences
August 2005

Connecting with the Community

The Christchurch School of Medicine and Health Sciences, and the Health Sciences Division of the University of Otago, are currently going through a transition phase. In March Professor Ian Town resigned as Dean, and moved to his new position as Deputy Vice-Chancellor at the University of Canterbury. Meanwhile, I have been appointed as Acting Dean.

The University of Otago will soon appoint a new Pro Vice-Chancellor for the Division of Health Sciences, and it is likely that this person will also be the Dean of the Faculty of Medicine. When the Pro Vice-Chancellor is appointed, the Faculty of Medicine will then undertake strategic planning, including how the Christchurch School of Medicine and Health Sciences will contribute to the broader Divisional directions.

When this strategic planning is completed the position of Dean at the Christchurch School will be readvertised.

In May research staff were particularly successful in being granted a record $10.6 million of contestable research funding from the Health Research Council. It is particularly significant that two of our leading research groups; the Christchurch Cardioendocrine Research Group (Director: Professor Mark Richards) and the Free Radical Research Group (Director: Professor Christine Winterbourn) have been awarded large programme grants.

Plans are now well underway for an extension to our main building, at the front of Christchurch Hospital. This will lead to the much needed upgrading of key teaching facilities, and an extension of laboratory space for research staff.

The popular Health Research Open Day is planned for the afternoon of Sunday August 28. We look forward to welcoming members of the public to this annual event, highlighting our research efforts.

Professor Peter Joyce
Acting Dean

RESEARCHING THE IMPACT OF FREE RADICALS AND DISEASE

The Free Radical Research Group (FRRG) is one of the larger research teams at the School, comprising 26 staff and students, and is housed in the Pathology Department.

Free radicals are unstable chemicals that can be produced in our bodies as a result of reactions with oxygen. The free radicals that result damage our tissues by attacking cells in the body and causing multiple dysfunctions. This is thought to be a a major cause of many diseases such as cancer, emphysema, and heart disease.

This area of research has developed and expanded immensely in the past 25 years. The senior scientists in the FRRG have been in the "game" so long now that they have seen much of this development and have made significant contributions to the research. One example of this is their work on how white blood cells not only kill bacteria, but can also damage the body during this process.

The FRRG actually comprises four Principal Investigators, who each manage a research team, with interrelated and sometimes overlapping interests.

Professor Christine Winterbourn has headed the FRRG since its inception and her focus is on understanding the chemistry of free radicals and reactive oxidants, and how they cause disease. Myeloperoxidase (MPO), the green protein present in white blood cells is a major interest for Associate Professor Tony Kettle in relation to inflammatory diseases like cystic fibrosis.

Dr Margret Vissers is investigating the effects of oxidant exposure and Vitamin C on cell function while Dr Mark Hampton is researching the regulation of apoptosis or cell-suicide in relation to diseases such as cancer. Recently Dr Hampton won a MacDiarmid Young Scientists of the Year Award for his research.

The staff and students that make up the group are a heterogeneous mix of career researchers and include Post-doctoral scientists, Research Fellows, Technicians and Postgraduate students working towards their PhD.

We also take pride in the multi-cultural nature of the group, which brings interest and diversity to our day-to-day working life. With people from Sri Lanka, Russia, India, Japan, Lebanon, Scotland, Australia, the Netherlands, and Singapore as well as the odd Kiwi; we could probably lay claim to being a mini-United Nations!

All the members of the FRRG are funded by research grant money. At present the group is supported by a Programme Grant from the Health Research Council of New Zealand and also holds grants from Lotteries Health, National Children's Health Foundation, the Cancer Society of New Zealand and the Canterbury Medical Research Foundation. It is one of the contributing laboratories to the National Research Centre for Growth and Development (Centre of Excellence) and the mainstay of the University of Otago major research theme "Oxidative Stress in Health and Disease".

Dr Margret Vissers

Professor Christine Winterbourn

Dr Mark Hampton

Associate Professor Tony Kettle

NEW RESULTS ON ANTIBIOTIC RESISTANCE IN THE COMMUNITY

When antibiotics such as penicillin were first developed over fifty years ago they were seen as wonder drugs, and the roll-back of most common infectious diseases was predicted by scientists and clinicians. However, that early optimism was soon tempered by an increasing awareness that bacteria have a seemingly inexhaustible ability to counter attack, to mutate and to 'resist' new antibiotic drugs.

Methicillin-resistant *Staphyloccus aureus* or MRSA, the most well known of these resistant bugs is now becoming increasingly common in our hospitals. What is not so clearly known is the level of general antibiotic resistance in bacterial infections in the wider N.Z. community. MRSA in the community is becoming an increasing problem overseas, and GPs are very aware of the dangers of unnecessarily prescribing antibiotics for fear of increasing the risk of resistant bugs.

To try to shed some light on these issues, Dr Dee Richards along with Professor Les Toop from the Department of Public Health and General Practice at the School and Professor Steve Chambers from the Department of Pathology have been researching levels of antibiotic resistance in the community, in collaboration with Pegasus Health GPs and the two Christchurch community laboratories.

Dr Richards and her colleagues have just completed two important studies which throw new light on this ongoing medical problem. The first, which has recently been published in the British Medical Journal, investigated the issue of whether to prescribe an antibiotic (trimethoprim) to women with symptoms of a urinary tract infection (UTI).

"This has presented a dilemma for GPs when a woman has symptoms of a UTI, but the standard urine test is negative for bacterial infection. While wanting to relieve the unpleasant symptoms they don't want to prescribe drugs unnecessarily. This research looked at whether women with symptoms of UTI received any benefit from antibiotics, even though their test was negative for infection," she says.

The results are surprising. When women with a negative test were given antibiotics, a significant number recovered more quickly than those on a placebo. This indicated there may be other factors underlying the symptoms than those picked up by the standard test.

"So balancing the competing interests of symptom relief and minimisation of antibiotics remains a major dilemma for GPs. Further research is needed for those women who test negative for UTIs, to see why they actually benefit from antibiotics, even though the front-line dipstick test and the subsequent laboratory test indicates they don't have a bacterial infection. We need to find better ways of predicting who will and will not benefit from antibiotics"

The second area of recent research by Dr Richrds looks at the levels of antibiotic resistance in the Christchurch Community using samples of UTIs collected from 76 GPs, and submitting them to laboratory analysis.

"Interestingly this study shows a significant increase compared to our previous research in 2000. Overall we estimate that women with a positive test have trimethoprim resistance of 7.4% compared to 2.7% in 2000."

Dr Richards says these results signal the need for continual monitoring of antibiotic resistance in the community to provide the information GPs need when they prescribe, and for public education on risks associated with antibiotic resistance.

The Christchurch Sentinel GP Network is the only one in New Zealand performing this community surveillance, and it has just completed a third study looking at MRSA. Unfortunately there is no ongoing funding for this surveillance in New Zealand.

Dr Richards' research has been funded by Pegasus Health, the Health Research Council, Canterbury Medical Research Foundation and the Canterbury Chair of General Practice Trust.