RECORD GRANTS FOR HEALTH RESEARCH

The University of Otago Christchurch has received more than double last year's grants from the Lottery Grants Board for health research for 2008. The grants for new or ongoing health research are $1.1 million dollars over 11 projects ranging from drug use in the elderly, to genetic changes in leukaemia, to risk factors in inflammatory bowel disease.

Professor Evan Begg

Clinical Pharmacology ($94K) is studing free drug metabolic clearance in the elderly. The results aim to confirm if it is possible to make consistent recommendations about dose reductions of drugs in the elderly, thus reducing adverse side effects.

Dr Margaret Currie

Angiogenesis Research, ($178K) is investigating whether insulin resistance fuels tumour growth and colon cancer progression. Colon cancer is the second most common cause of cancer deaths and there are increased risks in being overweight or obese.

Professor Zoltan Endre

Department of Medicine, ($105K). Investigating preventing and reversing the effects of diabetes on the kidney. Kidney disease is the second most common cause of death in patients with diabetes.

Dr Barry Palmer

Cardioendocrine Research ($43K) is researching gene variants from the X chromosome in heart disease. The aim is to provide findings to develop tests that can be used in patient risk profiles and individual treatment regimens.

Dr Rebecca Roberts

Gene Structure and Function Laboratory ($91.4K) is investigating genetic risk factors for irritable bowel disease.

Professor Steven Chambers

Pathology ($78.8K) is studying diagnosis of the bacterium pseudomonas aeruginosa by breath testing. The aim is to identify a marker that can be developed for this infection in cystic fibrosis and bronchiectasis.

Dr Leigh Ellmers

Christchurch Cardioendocrine Research ($13.4K). Investigating the effects of long-term urocortin 2 treatment following heart attack.

Dr Ursula Jewell

Cancer Genetics Research. $165K to go towards the purchase of a state-of the art microarray scanner. $120K to further investigate hidden genetic changes in leukaemia by high-resolution microarray profiling.

Dr Tim Prickett

Cardioendocrine Research ($121K) is investigating heart hormones and bone formation. The findings may lead to new prevention and treatment of osteoporosis and monitoring bone growth in adults.

Professor Tim Yandle

Cardioendocrine Research ($114K) to investigate a new system for multiple and simultaneous immunoassays.

TOP INTERNATIONAL RESEARCH RATINGS

There is an increasing use of bibliographic approaches to measuring research quality in an institution. Many of these are based upon citations, which is how often people refer to research papers written by others. By these approaches it is possible to score and rank countries, cities, universities, disciplines, journals or individuals.

Internationally, New Zealand scores well on citation measures, and even better when adjustments are made for the relatively low level of expenditure on research in this country. Within the University of Otago medical disciplines which score well above international averages include cardiology, paediatrics and psychiatry. For journals, citations are used to calculate impact factors, which play an important role in determining in which journals researchers wish to see their research published.

Finally there has been the recent development of the h-index which is one way of scoring any individual researcher. In brief, an h-index of ten means that ten of an individual's research papers have been cited ten times; an h-index of thirty means that that thirty of an individual's papers have been cited thirty times. The criteria of an h-index of 30 is the how we award Gold Medals for Research Excellence.

Four of our senior research staff, have an h-index over fifty, which is an exceptional rating, achieved by very few researchers. Individuals such as Professors Espiner, Nicholls, Winterbourn and Fergusson are key reasons for Christchurch successes in research. As accumulating papers and citations takes many years, the four staff are all senior staff members; we have other younger staff who will achieve this exceptional milestone as their careers progress.

Prof. Gary Nicholls,
Prof. David Fergusson
Prof. Christine Winterbourn
Prof. Eric Espiner,

University of Otago, Christchurch, February 2008

Connecting with the Community

It is a great pleasure for me to introduce the February 2008 newsletter, which connects the University of Otago, Christchurch with our community. For the first time in more than a decade we enter the new year in a favourable financial position, with the likelihood of improved funding in the immediate years ahead.

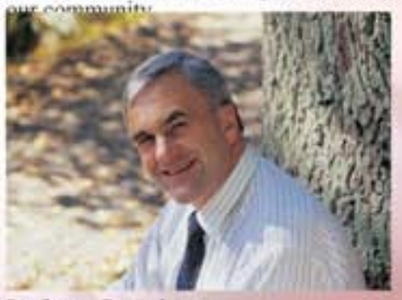
Three key factors which have contributed to our greater income are the new funding formula through the Tertiary Education Commission for the funding of Medical Education, announced by Dr Michael Cullen in 2006, the full introduction of Performance Based Research (PBRF), and our successes with Health Research Council funding which comes with research overheads.

Balancing our books, payment of all past debts, and improved anticipated funding mean we can look positively at our challenges for the future, so that we can work towards our vision, which is to be: "A research-led campus with an international reputation for excellence."

The results from the 2006 Performance Based Research Funding exercise became available during 2007, and ranked New Zealand Universities, with Otago first, Auckland second and Canterbury third. Within the broader rankings the four Schools of Medicine were also scored; Christchurch was first, Auckland second and Dunedin third. This provides further evidence of the strength of health research in Christchurch.

We are in the process of reviewing and changing our Medical course, with major changes planned for 2010, by which time we will have in excess of eighty medical students in each of their fourth, fifth and sixth years of their MB, ChB. We now have in excess of 70 PhD students on campus and about 500 (although mainly part time) post graduate health science students, with nurses being the single largest group. Last year saw the "coming of age" our Centre for Postgraduate Nursing Studies, and after a slow start the Centre is now on a strong pathway to the achievement of its vision.

Our strengths are our staff and our students, and we continue to be able to attract and retain outstanding students and staff. This is aided by an ever improving relationship with the Canterbury District Health Board, which is absolutely vital to our successes. I like to think that the Canterbury District Health Board is providing health care to our community today, while the University of Otago, Christchurch is contributing to 'tomorrow's health care' for our community.



Professor Peter Joyce
Dean

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NEEDLE IN A HAYSTACK. TRACKING DOWN RARE CONDITIONS

Advances in understanding how abnormal genes cause disease have made huge strides in recent years, particularly since the mapping of the human genome in 2001. It is rather like the discovery of the New World by early navigators in the fourteenth and fifteenth centuries, suddenly previous mysteries become much clearer and lead to other discoveries, and improvements in treatment.

This process is still taking place on a daily basis in the Molecular Pathology Laboratory in Christchurch. This lab mainly carries out diagnostic research into genetic disease for Canterbury DHB and has recently uncovered new ways in which the editing of DNA and mRNA influence the development of rare conditions.

"Recently we were presented with a challenging case involving a patient with transient cerebral ischaemia, or intermittent blood clotting in the brain,"explains research scientist Professor Steve Brennan. "This condition is potentially very serious, even life threatening, but it wasn't clear why it was happening."

Normally in this situation scientists will examine the patient's DNA and genetic coding to see if there are any abnormalities in the target genes. In this case it was soon determined the patient could not form blood clots because his body was unable to produce the protein fibrinogen, vital for blood clotting.

"But the paradox in this case was the intermittent and dangerous clots in the brain and there were no abnormalities in the coding of the three main genes which control for the formation of fibrinogen."

However increasingly in genetic diagnosis, clinicians and medical scientists are finding that gene variants not only occur in the main coding genes, but also in what are known as the 'junk DNA'. This is DNA that has been considered as not being particularly significant for encoding proteins and controlling other key processes in the body.

Professor Steve Brennan and PhD Candidate Ryan Davis discover new gene mutation linked to rare blood clotting in brain.

"So we decided to search more closely in the 'junk DNA' area, or more specifically in the messenger RNA which is a copy of the DNA that encodes the message used by cells for protein formation. We looked for what are known as 'deep intronic mutations' or very very small changes to the genetic code in this area,"says Prof Brennan.

This was the task of PhD candidate Ryan Davis who won the 'best student presentation' award for his work at the NZ Society of Biochemistry and Molecular Biology conference in Wellington. He found that there was one minor deep intronic nucleotide substitution which prevented fibrinogen synthesis. Ryan's discovery illustrates that even apparently benign looking changes can alter the way in which RNA is edited for final reading, showing that gene translation is much more complex than first thought.

"The next challenge in this story was to work out a way to patch over this variation in the messenger RNA to stop it blocking the normal process of protein manufacture, and facilitate the production of fibrinogen in the patient," says Prof Brennan. "Ryan used novel synthetic RNA analogues to do just this in a preliminary way in cell lines."

But that still left the question as to why the patient had been getting clots in the brain when the main clotting protein was not being produced? The explanation lies in the fact that without the normal fibrinogen 'mesh' there is a tendency for platelets to form loose clumps around a wound, to break away in lumps and travel through the vascular system until they get stuck in the tiny arteries and veins in areas such as the brain.

YOUNG ADULTS IN DENIAL ABOUT ALCOHOL ABUSE

A high proportion of 25 year olds who experience problems with alcohol do not think that they need help according to research from the Department of Public Health and General practice.

Dr Elisabeth Wells examined reasons why young adults do or do not seek help for alcohol problems. It has been published in the Australian and New Zealand Journal of Psychiatry and funded by the Health Research Council as part of the Christchurch Health and Development Study.

The study found that around one third of the 1003 young adults surveyed reported problems with alcohol over the previous four years, i.e. from 21-24. However of these 351 young adults only 26 (7%), had treatment for alcohol problems. The other 93 % did not seek help for their drinking problems.

Of the 7% who did seek help, nearly all felt they needed treatment, and that view was supported by family and friends. Dr Wells says this indicates the important role of family and friends in assisting young people to recognise that they need help, and more importantly, to take action.

The main reasons given in the survey for not seeking help or advice were: that they thought they did not need help (96%), or that their alcohol problem would just get better by itself (29%), or that they did not think to go for help (25%).

"One of the worrying results of this study is that the more severe the diagnosis in terms of drinking the more likely young adults think that their problems will get better by themselves and not seek help," says Dr Wells. "Males are twice as likely as females to take this head-in-the sand attitude."

Most of those with alcohol problems who thought that they could handle it themselves did not do so. Only 25% became problem-free in their final year. Hardly any of the 351 with problems consistently drank within the guidelines promoted by ALAC and other drug and alcohol services.

Dr Wells says this study confirms that a high proportion of young New Zealanders have ongoing problems with alcohol consumption and abuse, and that most do not do anything to deal with it. They are either unmotivated or unable to change their drinking patterns.

Attempts in New Zealand to reduce alcohol-related harm range from primary prevention (legislation, taxation and health promotion) through to treatment. Time will tell if the Alcohol Advisory Council social marketing campaign ("It's not the drinking, it's how we're drinking") will reduce per occasion consumption.

Currently treatment options include a national helpline, outpatient, day-patient and residential services and general practitioners. Outpatient treatment is free but has waiting lists. General practitioners may be more available but most have less specialised skills for dealing with alcohol problems and have a fee for service, so in this study they were consulted only for the physical consequences of drinking.

Dr Elisabeth Wells