



CHRISTCHURCH  
SUMMER 2016

# University of Otago, Christchurch Newsletter

## Dean's welcome

Welcome to the first edition of our Christchurch quarterly newsletter for 2016.

The year is already off to a good start. We have had the final presentations by our summer research students, and have welcomed 108 new fourth year medical students to the campus. During February and March we will welcome our first intake of new nursing students to the Master of Nursing Science degree, the final year physiotherapy students, Masters students in Dietetics, and new students undertaking taught postgraduate courses in Public Health, Child Health, Women's Health, Mental Health, Orthopaedics and Musculoskeletal Medicine and Health Sciences. Throughout the year new students begin research for either a Doctor of Philosophy or a Masters Degree by thesis.

For the foreseeable future the Otago Medical School will accept 300 medical students into the second year of the MB, ChB programme. For fourth, fifth and sixth year the Christchurch and Wellington campuses will have approximately 110 students each, and about 80 will stay in Dunedin. Auckland Medical School is moving towards a class size of 280 or 290 students. Of the latest intake of Otago medical students 17% are Māori, which marginally exceeds the proportion of the 18-24 year old population who are Māori. This is a marked change from less than five years ago, and reflects on considerable work to improve the performance of Māori students prior to selection of students for the medical programme.

The medical curriculum is constantly evolving. In part this reflects the ever changing nature of health services, and in part due to innovations in education. Notable changes in our curriculum in recent years have been the introduction of simulation based teaching (long practised in the aviation industry), quality and safety teaching, Haoura Māori teaching, and a greater focus on professional development. Hopefully these new threads in education supplement existing strengths in clinical and science teaching.

A really exciting development this year is welcoming our first intake of graduates who will undertake a two year Master of Nursing Science, which will lead to registration as a nurse. The development of the new Master of Nursing Science will add impetus to further developments in inter-professional education. Our historical teaching of nurses has largely been to those who are already registered as nurses, and who are undertaking postgraduate courses. These postgraduate courses will continue. We also have an ever increasing number of nurses undertaking research for either a Masters degree or a Doctor of Philosophy.

I extend a welcome to everyone to attend our exciting series of Public Health Lectures, which begin on Wednesday 2 March at 7pm.

Regards,

Peter Joyce

## Christchurch in NASA Mars project role

University of Otago, Christchurch, researchers are playing a crucial role in research that will assist in NASA's mission to Mars.

The Christchurch researchers are scanning the brains of explorers who have wintered in Antarctica as part of a NASA /German Aerospace Center project to understand what impact living in extreme environments has on the human brain. The research will be relevant for NASA's plans to send humans to Mars. The shortest possible return trip to the red planet would take two years.

The international research team is led by the University of Pennsylvania's Associate Professor Mathias Basner. His team will be scanning the brains of astronauts, while the Canterbury team focuses on those who have wintered in Antarctic's extreme and isolated environment.

Dr Tracy Melzer is the MRI research manager for the Christchurch campus' New Zealand Brain Research Institute. He says the research aims to understand whether prolonged periods in these extreme, isolated and hostile environments change brain structure and function.

His international collaborators have already found the hippocampus region of the brain, which is important for memory formation and visual/spatial orientation, actually shrinks during the Antarctica winter.



Dr Melzer and his colleagues will scan the brains of up to 28 international explorers over two years. They are tested before leaving for Antarctica, immediately on their return, then six months afterwards. The Christchurch scans are important because they capture explorers immediately as they return from the ice.

# Public health lectures 2016

This year our speakers cover a diverse range of health areas including heart disease, infectious diseases, and the genetics of mental health and cancers.

## **Wednesday, 2nd March, 7 – 8pm**

*Resilience in everyday life: how to bounce back from adversity.*

Emeritus Professor Jonathan Davidson, Duke University.

## **Wednesday, 9th March, 7 – 8pm**

*Schizophrenia genetics: update and agenda for the near future.*

Professor Patrick Sullivan of the University of North Carolina and Sweden's Karolinska Institutet.

## **Wednesday, 16th March, 7 – 8pm**

*The health importance of having a good-humoured heart.*

Professor Mark Richards of the University of Otago, Christchurch and the National University of Singapore.

## **Wednesday, 23rd March, 7 – 8pm**

*Dangerous caring: how good medicine can be bad for your health (and how to avoid it).*

Professor Dee Mangin of the University of Otago, Christchurch and Canada's McMaster University.

## **Wednesday, 30th March, 7 – 8pm**

*Brain imaging in Parkinson's disease.*

Dr Tracy Melzer of the University of Otago, Christchurch.

## **Wednesday, 6th April, 7 – 8pm**

*One Health: A global approach to tackling infectious diseases.*

Professor David Murdoch of the University of Otago, Christchurch.

## **Wednesday, 13th April, 7 – 8pm**

*Will eating cake give me cancer?*

Dr Logan Walker of the University of Otago, Christchurch.

## **Wednesday, 20th April, 7 – 8pm**

*Engineering customised care at the bedside for better patient outcomes.*

Professor Geoff Shaw of the University of Otago, Christchurch and the University of Canterbury.

Lectures held in the Rolleston Lecture Theatre, University of Otago, Christchurch building at 2 Riccarton Ave. Check [chch-lectures.ac.nz](http://chch-lectures.ac.nz) for further details.

Queries to [kim.thomas@otago.ac.nz](mailto:kim.thomas@otago.ac.nz)

# Preparing for future disease epidemics

Christchurch microbiologist Professor David Murdoch has taken part in an invitation-only global think tank aimed at better anticipating future infectious disease epidemics.

The head of the University of Otago, Christchurch's Pathology Department was one of two Australasians invited to the World Health Organization-led event late last year.

Professor Murdoch says he was privileged to be among about 130 international experts invited to attend, including human and animal health experts, and members of aid agencies and the insurance and travel industries.

"The big idea was how to better prepare for future epidemics, knowing there definitely will be ones. It also recognized reviews of the Ebola response and a desire to improve on that."

Acknowledging the importance of collaboration, one key outcome of the event was getting people from diverse areas of expertise together, Professor Murdoch says.

The event consisted of six sessions, including 'Back to the future: learning from the past', and 'Preventing the spread of infectious disease in a global village'. Each session consisted of short talks by five experts, then robust discussion.

Professor Murdoch spoke at the event about the relatively new area of microbiomes (the communities of microorganisms that inhabit parts of the human body) and how understanding it could help with preparing for and controlling future respiratory disease epidemics.

Some of the ideas that emerged from the event were that global and public health were getting more political attention than ever, and that health threats increasingly reflected nature, including the animal world, and so acknowledging and understanding its interplay with human health was important.



Professor David Murdoch

# Revolutionising heart disease diagnosis

Christchurch researchers are playing a key role in a new company aiming to revolutionise the accurate diagnosis of heart conditions.

Upstream Medical Technologies [UMT] is a partnership between the University of Otago and Powerhouse Ventures Ltd. Researchers from the University's Christchurch Heart Institute are developing a range of tests to speed up the diagnosis of potentially deadly heart conditions, which will be patented and ultimately sold to hospitals worldwide.

The lead researchers are internationally-recognised scientists Associate Professor Chris Pemberton and Professor Mark Richards.

Associate Professor Pemberton says Christchurch Heart Institute researchers were first to identify the importance to heart health of protein fragments in the blood known as signal peptides.

"These protein fragments, once identified, can be monitored for medical diagnostics relating to heart health," he says.

"UMT has developed a world-first test to potentially speed up the diagnosis of unstable angina, a serious cardiac condition that is difficult and time consuming for doctors and is a major area of unmet clinical diagnostics."



Associate Professor Chris Pemberton

# Contact between children monitored in world-first infection study

Christchurch primary school pupils are wearing sensors tracking contact with each other in a world-leading study to better understand a common but serious disease.

The staphylococcus bacterium is a major cause of serious infections such as septicaemia, but also often presents as sores on the skin. Most commonly, though, it is carried harmlessly on skin or in noses, from where it can be passed on to others who might become ill. Very little is known about who passes it to whom in the community.

University of Otago, Christchurch researcher Dr Pippa Scott is testing levels of the bacteria in Linwood Avenue School pupils and, in a world first, monitoring contact between them using 'proximity sensors' to better understand how staphylococcus is passed from person to person.

Dr Scott says school-aged children often spread flu and other diseases so could be important to the spread of staphylococcus in the community.

"We asked a lot of schools if they would take part in the study and Linwood Avenue School principal Gerard Direen came back to us quickly and said the school would be really keen to help."

Dr Scott says 70 children aged between 8 and 11 were given the proximity sensors to wear clipped to their shirts for around 2 weeks. The sensors are not GPS devices and cannot pinpoint a child's whereabouts but rather record when children come in contact with each other. They have never before been successfully used in a study linking infectious disease spread to contact in the same individuals.

The study is ongoing but early analysis found almost every child was carrying the bacterium at some stage during the seven times they were tested. More than half the children carried the bacteria at any one test session. Almost all strains the children had were susceptible to commonly prescribed drugs for the condition.



Dr Pippa Scott

## Helping train young Pacific doctors



Dr Kiki Moate

The University of Otago is helping train young Cook Island doctors in a partnership that could benefit both New Zealand and its Pacific neighbor.

Cook Island-born Dr Kiki Moate is a Canterbury District Health Board pediatric surgeon and the University of Otago, Christchurch's Associate Dean, Pacific. As a surgeon, he frequently travels to Pacific countries to operate on children with complex cases. As Christchurch's Associate Dean, Pacific, he is involved in expanding the University's involvement in the training of young Pacific Island medical professionals.

Dr Moate says the Cook Islands' Ministry of Health has developed a rural health diploma for its doctors, in partnership with the University of Otago. The Cook Island Government issues the qualification and it can only be used in that country, meaning new skills benefit the local population. It provides a much-needed pathway, not previously available, for Cook Island medical practitioners to progress to being rural health specialists.

Diploma students do a placement in a New Zealand rural health setting as part of the course, so get both experience of a new medical environment and soak up expertise from the Kiwi doctors they work alongside.

"One of the benefits of this diploma is that in future these more highly-trained GPs will be able to triage patients in their own country and better determine those patients who really need to come to New Zealand for care. That will save money for New Zealanders as it is expensive to move patients. It will also raise the level of important primary care in the Cook Islands."

# Leading scientist celebrated



*“She was one of the first scientists to demonstrate our cells produce free radicals as part of their normal function.”*

Scientists from around the world have celebrated the exceptional career of Christchurch researcher Professor Christine Winterbourn, whose research in the area of free radical science has spanned more than four decades.

A Festschrift – a day of lectures to celebrate an academic’s particularly long and illustrious career – was held for Professor Winterbourn late in 2015.

Professor Winterbourn was the first woman awarded New Zealand’s top science honour, the Royal Society’s Rutherford Medal, in 2011. She was one of the first scientists to demonstrate our cells produce free radicals as part of their normal function. Her discoveries have been pivotal in the development of our current understanding of free radical biology and her ideas have influenced the research of numerous scientists in demonstrating the importance of free radical reactions in many common diseases such as cancer, cardiovascular disease and arthritis.

## First study of South Island Pasifika heart health

It’s well known that New Zealand’s Pacific population suffers higher rates of heart disease than the general population. But until now, evidence has been based on data gathered in Auckland. University of Otago, Christchurch researcher Dr Allamanda Faatoese is changing that with the launch of the Pasifika Heart study of Christchurch Pacific people.

“Pacific communities living in Auckland have vastly difference environments than those in Christchurch. We know little about the heart health profile of Pasifika people in Christchurch,” she says.

The Heart Foundation-funded Pasifika Heart study will for the first time measure heart disease risk factors in 200 Pacific Island participants, both healthy people and those suffering from illness. Dr Faatoese is based at the University’s Christchurch Heart Institute but will study participants from across the South Island.

Each participant’s personal and family medical history, blood pressure and body composition will be recorded along with their cholesterol levels, blood sugars and markers linked with kidney function, gout and heart failure.



Dr Allamanda Faatoese

**Watch our public health lectures online**

[otago.ac.nz/christchurch/news/podcasts](http://otago.ac.nz/christchurch/news/podcasts)

- Gut health
- New medical imaging
- Ebola
- Māori health
- Are medicines safe?
- Quakes’ psychological effects