Research Report

2013-2014

Division of Health Sciences
Research Report
2013-2014
DIVISION OF HEALTH SCIENCES

Cover photo: The internationally acclaimed He Kainga Oranga/Housing and Health Research Programme at the University of Otago, Wellington won the 2014 Prime Minister's Science Prize.

Director Philippa Howden-Chapman with deputy director Dr Nevil Pierse (left) and co-directors Professor Julian Crane and Professor Michael Baker (far right).
Tēnā koutou kātoa. It is my pleasure to introduce the 2013-2014 Research Report for the Division of Health Sciences at the University of Otago. We are proud to showcase our world-class research activities in this report. Our ground-breaking research underpins many advances in health policy and practice and the understanding of health and disease, in New Zealand and beyond.

Our researchers include leaders in the fields of cancer genetics, mental health, neuroscience, infectious disease, public health, cardiovascular disease, lifecourse research, and oral health. We have expertise in health inequalities and in Māori and Pacific health, and are dedicated to undertaking research relevant to New Zealand’s unique population groups.

Our staff undertake research that makes tangible benefits to the lives of many New Zealanders and in doing so consistently win some of the country’s most prestigious awards for research excellence, innovation, science communication and teaching. Our internationally acclaimed He Kainga Oranga/Housing and Health Research Programme led by Professor Philippa Howden-Chapman won the 2014 Prime Minister’s Science Prize. In the same year Dr Karl Iremonger was awarded the Prime Minister’s MacDiarmid Emerging Scientist Prize. During 2013-14 our staff were also recipients of the HRC’s Beaven and Liley Medals, and the Sir Charles Hercus and Callaghan Medals from the Royal Society of New Zealand.

The Division is playing a major role in the government’s large science investment initiatives announced in 2013-14. We are hosting the Healthier Lives and Ageing Well National Science Challenges as well as having significant input into other health-related Challenges and the Centres of Research Excellence, in particular Brain Health New Zealand.

The depth and breadth of our research expertise means that research informs our teaching across all aspects of health professional training. Our students are taught by academics and clinicians who are at the forefront of new knowledge, and who are closely integrated into the health workforce. In this manner, we believe we are laying the foundations for the next generation of health research leaders in New Zealand.

We welcome input and feedback on our research activities so I encourage you to contact us if you have something to share or if you would like further information. Finally I would like to congratulate Divisional staff on their outstanding achievements and I look forward to many more successes in the future.

Professor Peter Crampton
Pro-Vice-Chancellor
Division of Health Sciences
University of Otago
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<td>Department of Paediatrics</td>
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<td>Department of Pathology</td>
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<td>Department of Psychological Medicine</td>
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<td>Department of Radiology and the Centre for Bioengineering</td>
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<td>Department of Surgery</td>
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<td>Centre for Postgraduate Nursing Studies</td>
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• The Division of Health Sciences is a research intensive Division with the highest overall annual research income within the University.

• The Division incorporates three campuses (Dunedin, Christchurch and Wellington) and comprises the following Schools and Faculties:
  Faculty of Dentistry
  Otago Medical School
  Otago School of Medical Sciences
  Dunedin School of Medicine
  University of Otago, Christchurch
  University of Otago, Wellington
  School of Pharmacy
  School of Physiotherapy
  Bioethics Centre

• The University of Otago has established fourteen Research Centres and twelve Research Themes for which the University is pre-eminent and to which it gives particular recognition and support. During 2013-14, staff within the Division of Health Sciences were leaders of eight of the Research Centres and eight of the Research Themes.

• The Division has a strong focus on Māori and Pacific health research with centres dedicated to research and workforce development for Māori and Pacific peoples.

• All Schools and Faculties have a strong research focus as evidenced by their successes in securing external income ($111 million in 2013-14), their high numbers of postgraduate students (over 1200 in 2014), their quality research outputs, and the many and varied honours and scholarships awarded to their staff and students.

• The Division strongly encourages and supports the dissemination and commercialisation of research results.

• The Division boasts extensive research support services including state-of-the-art research facilities and equipment, training opportunities, and staff expertise.

• The Division operates a Research Committee which is responsible for the dissemination of postdoctoral fellowships and funding as well as having a mentoring role for researchers. Research in the Division is further supported by the University's Research and Enterprise Office which is the point of liaison between researchers and funding bodies.
ADDITIONAL SOURCES OF RESEARCH RELATED INFORMATION

The Division of Health Sciences research website
otago.ac.nz/healthsciences/research/index.html

Research Office, University of Otago, Christchurch
otago.ac.nz/christchurch/research/researchoffice/

Research Office, University of Otago, Wellington
otago.ac.nz/wellington/research/

Health Research South, Dunedin School of Medicine
dnmeds.otago.ac.nz/research

Research and Enterprise Office, University of Otago
otago.ac.nz/research/index.html
This report contains information on the research activities of the Division of Health Sciences at the University of Otago, for the period 2013-2014.

The data contained within the report has been sourced from the University of Otago’s Research and Enterprise Database, and from departments and departmental websites. Every attempt has been made to ensure that this report is as complete and as accurate as possible, but given the diversity of activities and interests within the Division, there may be omissions or inaccuracies for which we apologise.

To note:

- Research contracts have been attributed to the home department of the principal investigator. Where there were multiple principal investigators on a given contract it is acknowledged that this will duplicate the listing of a small number of contracts in this report.
- In a number of cases contracts straddled departments and it is unfortunate that this report is unable to give credit to co-investigators who, while not listed here, did nevertheless contribute to securing funding.
- This report lists details of external grants that were awarded in 2013 and 2014. A significant number of grants awarded prior to 2013 were also active throughout some, or all, of this period. Information about these earlier grants is available in previous reports: otago.ac.nz/healthsciences/research/reports
- Publications have been listed under the department of each author and co-author, meaning that some publications will be listed more than once.

Professor Gerald Tannock was the recipient of a prestigious James Cook Research Fellowship from the Royal Society of New Zealand to support his studies into the role of gut bacterial communities in health and disease.
THE DIVISION AT A GLANCE

STAFF AND STUDENT INFORMATION

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<th>Equivalent Full-time Students*</th>
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<td>PhD</td>
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<td>Master's (Research)</td>
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<th>Full-time Equivalent Staff</th>
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<td>834</td>
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<tr>
<td>General Staff</td>
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<th>Staff Head Counts</th>
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<tr>
<td>Academic and Research Only Staff</td>
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<tr>
<td>General Staff</td>
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* Includes Summer School

EXTERNAL RESEARCH CONTRACT INCOME

![Graph showing external research contract income from 2008 to 2014]
EXTERNAL FUNDING SOURCES 2013-2014

RESEARCH OUTPUTS

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<tr>
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<th>2010</th>
<th>2011</th>
<th>2012</th>
<th>2013</th>
<th>2014</th>
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UNIVERSITY OF OTAGO SCHOLARSHIPS AWARDED

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<th></th>
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<th>2011</th>
<th>2012</th>
<th>2013</th>
<th>2014</th>
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<td>PhD Scholarship</td>
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<td>Master’s Award</td>
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<td>15</td>
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</tr>
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</table>

*The decrease in the number of scholarships awarded from 2012 reflects a decrease in the total number of scholarships awarded across the University*
HEADCOUNT OF PhD/DClinDent AND MASTER’S BY RESEARCH* STUDENTS

*Master's by Research includes only Master's degrees where students undertake a significant research project and write a thesis.

The Royal Society of New Zealand’s 2014 Callaghan Medal for Science Communication was awarded to Associate Professor Peter Dearden from the Department of Biochemistry.
RESEARCH PERFORMANCE INDICATORS

- **External Research Contract Income:** The Division’s external research contract income was $50.3 million in 2013 and $60.5 million in 2014.

- **Research Outputs:** Our researchers published extensively with 3479 research outputs in 2013 and 3513 in 2014.

- **Health Research Council Funding Success:** The University of Otago received more Health Research Council of New Zealand funding than any other institution in 2014. Divisional researchers received approximately 44% of the total funds allocated in the 2014 round. Four new Programmes were awarded to the University of Otago in 2013-14, all of which went to researchers within the Division.

- **MBIE Funding:** In 2013/14, the Division was awarded approximately $12 million from the Ministry of Business Innovation and Employment’s Science Investment Scheme.

- The University of Otago was ranked first among New Zealand research institutions by the Nature Publishing Group for the number of papers published in Nature journals in 2013 and 2014, many of which were authored by Divisional staff.

- **Professorial Appointments:** Six professors were either newly appointed or promoted within the Division in 2013 and twelve in 2014.

AWARDS AND ACCOLADES

- **Prime Minister’s Science Prize**
  The internationally acclaimed He Kainga Oranga/Housing and Health Research Programme at the University of Otago, Wellington, led by Professor Philippa Howden-Chapman, won the 2014 Prime Minister’s Science Prize.

- **Prime Minister’s MacDiarmid Emerging Scientist Prize**
  Dr Karl Iremonger (Physiology) was awarded the 2014 Prime Minister's MacDiarmid Emerging Scientist Prize in recognition of his discovery of a new brain cell structure and communication system.

- **Liley Medal**
  Professor Michael Baker (University of Otago, Wellington) was the recipient of the 2013 Liley Medal from the Health Research Council of New Zealand. Professor Baker was honoured for his landmark 2012 Lancet study which showed a dramatic rise in the incidence of serious infectious diseases and rising inequalities across populations in New Zealand.
– Beaven Medal
Professor Parry Guilford (Biochemistry) received the 2014 Beaven Medal from the Health Research Council of New Zealand for his contribution to translational research in the field of cancer.

– Sir Charles Hercus Medal
Professor Parry Guilford (Biochemistry) was the 2014 recipient of the Sir Charles Hercus Medal from the Royal Society of New Zealand in recognition of his discovery of the gene mutation leading to hereditary stomach cancer.

– Callaghan Medal
The Royal Society of New Zealand’s 2014 Callaghan Medal for Science Communication was awarded to Associate Professor Peter Dearden (Biochemistry) for his outreach activities associated with Genetics Otago and his genetic research on honey bees.

– Royal Society Fellowships
Professor Catherine Day (Biochemistry) was elected as a Fellow of the Royal Society of New Zealand in 2014. Three staff members received this honour in 2013: Professor Antony Braithwaite (Pathology DSM); Professor Greg Cook (Microbiology and Immunology); and Professor Lisa Matisoo-Smith (Anatomy).

– New Zealand Honours
Officer of the New Zealand Order of Merit (ONZM)
2013, A/P David Perez for services to oncology

Member of the New Zealand Order of Merit (MNZM)
2013, Professor Carl Burgess for services to pharmacology

– James Cook Fellowship
Professor Gerald Tannock (Microbiology and Immunology) received a prestigious James Cook Research Fellowship from the Royal Society of New Zealand in 2013 to support his studies into the role of gut bacterial communities in health and disease.

– Rutherford Discovery Fellowships
Rutherford Discovery Fellowships from the Royal Society of New Zealand were awarded to Associate Professor Suetonia Palmer (Medicine, Christchurch) in 2013, and Dr Louise Bicknell (Pathology DSM) and Dr Michael Knapp (Anatomy) in 2014.

– Distinguished Research Medal
Professor Greg Cook (Microbiology and Immunology) was the recipient of the University of Otago’s Distinguished Research Medal in 2014.
Rowheath Trust Award and Carl Smith Medal

Associate Professors Peter Fineran (Microbiology and Immunology) and Haxby Abbott (Surgical Sciences DSM) were awarded the 2014 University of Otago's Rowheath Trust Award and Carl Smith Medal. This medal provides recognition for outstanding research performance by early career staff.

University of Otago Early Career Awards for Distinction in Research:

2013: Dr Lyndie Foster Page, Faculty of Dentistry

2014: Dr Anita Dunbier (Biochemistry); Dr Jason Garney (Public Health, Wellington); Dr Khaled Greish (Pharmacology and Toxicology); Dr Anna Pilbrow (Medicine, Christchurch).

Cancer researcher Dr Anita Dunbier received a University of Otago Early Career Award for Distinction in Research.
International Association of Dental Research (IADR) Distinguished Scientist Award

Professor Murray Thomson (Dentistry) has become the first New Zealander to win two prestigious awards from the IADR with the receipt of the 2014 Distinguished Scientist Award in Geriatric Oral Research. He also won the IADR's Trendley Dean Memorial Award in 2010.

PARTICIPATION IN NATIONAL RESEARCH INITIATIVES

- National Science Challenges
  In 2013 Prime Minister John Key and the Minister of Science and Innovation, Steven Joyce, announced ten National Science Challenges, the result of a broad consultative process that gave every New Zealander the opportunity to shape the scientific future by creating a 10-year road map for New Zealand's big-picture science. The Division is the host of two of the health-related Challenges – *Healthier Lives* and *Ageing Well*. The Division will also partner and provide leadership in a number of the other National Science Challenges in particular A Better Start (we have co-directorship), High Value Nutrition, Science for Technological Innovation, and Building Better Homes, Towns and Cities. The Challenges provide an opportunity to align and focus the country’s research on large and complex issues by drawing researchers together from different institutions and across disciplines to achieve a common goal through collaboration.

- Brain Research New Zealand/ Rangahau Roro Aotearoa
  A number of divisional staff members are playing key roles in the Brain Research New Zealand/ Rangahau Roro Aotearoa Centre of Research Excellence (CoRE), awarded by the TEC in 2014. The CoRE is co-hosted by the University of Otago and the University of Auckland, and brings together New Zealand’s top neuroscience researchers from the Universities of Otago, Auckland, Canterbury and AUT as well as clinicians from various DHBs. The mission of Brain Research New Zealand is for scientists, clinicians and the community to work together to unlock the secrets of the ageing brain in order to develop new therapies and better clinical and community care to enhance lifelong brain health.

Brain Research New Zealand/Rangahau Roro Aotearoa members (from left): Drs Louise Parr-Brownlie and Andrew Clarkson (Anatomy), Dr Nick Cutfield (Medicine DSM) and Professor Cliff Abraham (Psychology, Sciences).
RESEARCH OUTCOMES AND IMPACTS

– **Speeding up the diagnosis of heart failure and pneumonia**
  Associate Professor Chris Pemberton and colleagues at the Christchurch Heart Institute have discovered a potential new tool to help doctors in emergency departments quickly and accurately diagnose patients with heart failure and pneumonia. The researchers have found that the molecule ghrelin signal peptide (GHRsp) could be used to signal if patients have concomitant heart failure and pneumonia. It is important to know if a patient has underlying pneumonia because the treatments for these two conditions are very different.

– **Break-through in brain fertility control**
  In a landmark discovery, the final piece in the puzzle of understanding how the brain circuitry vital to normal fertility in humans and other mammals operates has been assembled by researchers from the Centre for Neuroendocrinology. The research team led by Professor Allan Herbison has discovered the key cellular location of signalling between a protein vital for ovulation and fertility called kisspeptin and its receptor, Gpr54. This finding will be critical to the future design of novel therapies for infertile couples as well as for new forms of contraception.

– **Saving the lives of premature babies**
  Researchers at the University of Otago, Christchurch have played a crucial role in an international study aimed at saving the lives of very premature babies. The New Zealand arm of the study was led by Professor Brian Darlow of the Department of Paediatrics. The study investigated the critical issue of how much oxygen should be given to very premature babies and their findings are likely to change clinical practice worldwide.

– **Dampness key cause of asthma in children**
  The largest ever worldwide study into the link between damp homes and respiratory and allergic conditions has significant implications for the health of New Zealand’s children. Professor Julian Crane (University of Otago, Wellington) led the New Zealand arm of the International Study of Asthma and Allergies in Childhood (ISAAC) involving 46,000 children in 20 countries. The study found that living in damp or mouldy homes is associated with high rates of asthma, allergies, hay fever and eczema. It is hoped that the study will prompt improvements in the quality of housing, particularly rental properties, in New Zealand which has extremely high rates of childhood respiratory and allergic diseases.

– **Detecting Legionnaires’ disease**
  Professor David Murdoch from the University of Otago, Christchurch has led the development of an innovative testing process to detect patients with Legionnaires’ disease who would otherwise go undiagnosed. Legionnaires’ disease is markedly under-diagnosed as it often presents like pneumonia. However, it is important to know if a patient is suffering from the disease as the treatment required differs from the standard treatment for pneumonia. The new strategy has quadrupled the detection of the disease, resulting in improved outcomes for patients.
Silicone dressings ease skin reactions following radiation therapy

Improved management of skin reactions caused by radiation therapy is likely following research into the use of silicone-based dressings by Dr Patries Herst (University of Otago, Wellington) in collaboration with radiation therapists around the country. Skin reactions following radiation therapy are common and compromise patient quality of life. Clinical trials led by Dr Herst have shown that the silicone dressings significantly decrease the severity of skin reactions following radiation therapy for breast cancer. The dressings have now been adopted as standard skin care following radiation therapy for breast cancer in most DHBs throughout New Zealand.

Osteoarthritis improved by extra physiotherapy programmes

Manual physiotherapy or regular exercise programmes make a significant difference for people with painful osteoarthritis in the knee and hip joints. A randomised clinical trial led by A/P Haxby Abbott (Surgical Sciences, DSM) involved over 200 patients and used three protocols of treatment provided by physiotherapists in addition to usual care by their GP. Manual physiotherapy or regular exercise programmes were found to improve pain and physical function for at least one year and are cost effective. These results suggest that, for optimal patient outcomes, GPs should be referring their patients to these forms of treatment in addition to continuing to provide the usual care.

Genetic link between sugary drinks and gout

Associate Professor Tony Merriman (Biochemistry) and colleagues have for the first time shown that sugar (from sugary drinks) can reverse the benefits of a gene variant which would usually protect against gout. Gout is caused by high levels of uric acid in the blood which crystallise in the joints causing severe pain and inflammation. Rates of gout in New Zealand are particularly high for Māori and Pacific Island peoples. When the variant of the gene SLC2A9 behaves correctly it helps transport uric acid out of the blood and facilitates its excretion through the kidney. Consumption of sugary drinks not only raises uric acid in the blood but it also directly interferes with its excretion by the kidneys. This study provides further convincing evidence for the benefits of avoiding sugary drinks, especially for those prone to gout.

Fighting against antifungal drug resistance

Fungal infections by organisms such as Candida, Aspergillus and Cryptococcus play a significant role in disease. Infections such as thrush affect premature babies, the elderly, females of reproductive age, individuals with dry mouth and terminal cancer patients. Infections can be fatal, especially for the immunocompromised. To date, efforts to expand the array of antifungal treatments available have been hindered by the lack of molecular-level understanding of potential drug targets and mechanisms causing drug resistance. A/P Brian Monk (Dentistry) and colleagues have determined the complex structure of a key cell membrane protein involved in sterol metabolism and resistance in a yeast model. This discovery is providing new insights into mechanisms underlying fungal resistance to triazole drugs and aiding in efforts to develop new broad-spectrum drugs with minimal side-effects.
EVENTS

- *Divisional Research Forum*
  The Division runs an annual Research Forum to showcase the cutting edge research being undertaken within its Schools. In 2013, the theme was *Foundations for Health* and in 2014 it was *Learning Different Research Languages*. Over 100 researchers and students attend the Forum in any given year.

- *Queenstown Research Week*
  Divisional researchers were once again heavily involved in the organisation of the 2013 and 2014 Queenstown Research Weeks. They had major input into the Medical Sciences Congress, the Australasian Winter Conference on Brain Research and a number of the Queenstown Molecular Biology Satellite Meetings including QMB Genetics and QMB Cancer Biology. Queenstown Research Week is one of the largest annual conferences in New Zealand with over 900 delegates attending.

NEW APPOINTMENTS

- **Professor Paul Brunton**
  A leading UK dental researcher and educator, Professor Paul Brunton, was appointed as the new Dean of the Faculty of Dentistry in November 2014. Professor Brunton is a Professor of Restorative Dentistry whose research interests include operative dentistry, specifically tooth preparation and tooth whitening, and early diagnosis and treatment of tooth wear.

- **Professor Tim Stokes**
  In July 2014, Professor Tim Stokes took up the Elaine Gurr Chair of General Practice in the Dunedin School of Medicine. Professor Stokes is a leading UK academic general practitioner who established a national profile in health care quality improvement research and development. Professor Stokes’ work focuses on developing clinical practice guidelines, quality standards and performance measures.
Professor Vernon Ward
Professor Vernon Ward was appointed as Dean of the Otago School of Medical Sciences in 2014. An internationally respected virologist, Professor Ward was formerly the Head of the Department of Microbiology and Immunology. His current research involves both the study of pathogenic viruses and the exploitation of virus properties for beneficial purposes.

Professor Barry Taylor
Professor Barry Taylor from the Department of Women’s and Children’s Health was appointed as the Dean of the Dunedin School of Medicine in 2013. Professor Taylor is a distinguished researcher who has dedicated his career to improving the health and wellbeing of children. His research interests include prevention of obesity and diabetes, sleep disorders and sudden unexpected death in infancy.

SCHOLARSHIPS AND FELLOWSHIPS

The Division hosts a number of very successful Summer Research Scholarship programmes – 218 students undertook summer research projects within the Division in 2012/13 and 174 in the summer of 2013/14.

The Division awarded nine Career Development Postdoctoral Fellowships during 2013/14. These Fellowships are intended to support outstanding graduates to gain further experience in their chosen fields and to establish themselves as independent researchers.

William Evans Fellowships
The Division hosted eleven international researchers on William Evans Fellowships during 2013/14.
The Division actively promotes staff participation in applied research and encourages entrepreneurial activity. During 2013/14, five international patents arising from Divisional research were filed in the areas of: biomarkers for cardiac disease; hormone assays; cancer therapy prognostics; and liposomes for drug delivery.

Staff have been very successful at attracting applied funding from the Ministry of Business Innovation and Employment (MBIE), including over $12 million in programme and smart ideas funding during 2013/14. A number of staff have been the primary research agents on MBIE’s Technology Transfer Vouchers, which are awarded directly to companies to work with Universities on their innovation and business ideas.

In 2014 a new University of Otago spin out company called Ubiquitome was formed based on research carried out in the Division. Ubiquitome’s mission is to enable universal access to genomic information through ubiquitous cloud connected, genetic analysis devices: ubiquitomebio.com/

PROOF OF CONCEPT AWARDS

The winner of the University of Otago’s 2013 Proof of Concept Award was Associate Professor Chris Pemberton (Christchurch Heart Institute) to further develop his world-first test for predicting those at imminent risk of a heart attack.

Dr Elspeth Gold (1963-2015) from the Department of Anatomy won the award in 2014 for validation of a biomarker to differentiate between aggressive and latent forms of prostate cancer.

Dr Monica Gerth (Biochemistry) was runner-up for 2014 with a proposal to develop antimicrobial enzymes that can be used to prevent “biofilms” from coating medical devices and causing infections.
Research Centres and Themes are areas of research and/or collaborative groups of researchers in which the University of Otago is pre-eminent and to which it gives particular recognition and support. Researchers within the Division of Health Sciences were leaders of a significant number of the University’s Research Themes and Centres during 2013/14. These are detailed below.

**Research Centres**

**Centre for Neuroendocrinology**
Director: Professor Allan Herbison, Department of Physiology, OSMS
Website: otago.ac.nz/neuroendocrinology

The Centre for Neuroendocrinology (CNE) is a world-leading research centre for understanding how the brain controls hormone levels in the blood and how these hormones act back to influence brain function. It has more than 70 members and ten principal investigators; four from the Department of Anatomy; five from the Department of Physiology and one from Obstetrics and Gynaecology, University of Otago, Christchurch. The centre represents the largest cluster of neuroendocrinology researchers in the Southern Hemisphere.

The CNE leads the world in research into understanding how the brain control of reproduction, ranging from fertility to pregnancy to lactation. Research programmes also examine neuroendocrine stress responses and the brain control of fluid balance. A wide range of cutting-edge neuroscience methodologies are utilised, ranging from molecular biology and transgenics to electrophysiological, morphological, cell imaging and in vivo approaches.

**Centre for Translational Cancer Research: Te Aho Matatū**
Director: Professor Parry Guilford, Department of Biochemistry, OSMS
Website: otago.ac.nz/ctcr

The Centre for Translational Cancer Research (CTCR) combines major University of Otago research groups in cancer genetics and cancer immunology with leading oncologists and surgeons. It consists of senior scientists and clinicians from the University who cover most fundamental and clinical areas of cancer research. The Centre’s mission is to support and conduct cancer research with an emphasis on studies that can be expected to improve cancer treatment in a relatively short timeframe. CTCR projects range from drug development to immunotherapy and include diagnostic test design and personalised medicine. The latter includes the development of simple tests that can be used to select the best chemotherapy treatment for individual patients and other tests that predict an individual’s prognosis and the risk of treatment side-effects.

**Christchurch Heart Institute**
Director: Professor Mark Richards, Department of Medicine, University of Otago, Christchurch
Website: otago.ac.nz/christchurch/research/cardioendocrine

The Christchurch Heart Institute (formerly the Christchurch Cardioendocrine Research Centre) is New Zealand’s pre-eminent cardiovascular research centre. The Institute is at the international forefront of cutting edge advances in the diagnosis, prediction and treatment of serious cardiovascular disease; from bench to bedside to community. The Centre’s focus has been the exploration of diagnostic, prognostic and therapeutic innovation in common and dangerous cardiovascular diseases including acute coronary syndromes, heart failure and hypertension. The institute is best known for its longstanding leadership in the field of cardiovascular neurohormonal control. One example of its world-leading work is the development of a blood test to diagnose and monitor heart failure. This test now saves the lives of hundreds of thousands of people each year.

**Edgar Diabetes and Obesity Research Centre**
Directors: Professor Jim Mann, Associate Professor Rachael Taylor, Dr Kirsten Coppell, Department of Medicine, DSM
Website: otago.ac.nz/diabetes

Edgar Diabetes and Obesity Research (EDOR) aims to find effective solutions for two major national health problems that are also global health challenges – obesity and diabetes. EDOR’s purpose is to promote collaborative cutting edge research both nationally and internationally and involves a range of disciplines, including nutrition, epidemiology, Māori health, biostatistics, public health, paediatrics, microbiology, genetics and biochemistry. Projects range from investigation of genetic profiling which might enable the identification of individuals more likely to benefit from interventions, to exploration of how policy and food marketing shape our behaviour, to the public health and economic impact of different innovative approaches to manage weight and diabetes risk at all stages of life from birth to the elderly.
Genetics Otago
Director: Associate Professor Peter Dearden, Biochemistry, OSMS
Website: otago.ac.nz/genetics

Genetics Otago aims to connect with the public, media and policy makers to improve the understanding of genetics: to provide a hub where genetics is demystified; where user-friendly information, teaching resources and comments from world-class geneticists can be easily accessed, all the while supporting its members’ collaborative research projects. The Centre’s multi-disciplinary platform of research is enormous, ranging across sciences, health sciences, humanities, law and ethics. Key areas of strength are human disease; developmental, microbial, and evolutionary genetics; law; epigenetics; anthropology; conservation; environment; applied genetics in animal and plant breeding; and bioinformatics. With over 240 members based at the University of Otago and across New Zealand, Genetics Otago is now the largest centre for advanced, multidisciplinary genetics research in Australasia.

National Centre for Lifecourse Research
Directors: Professor Richie Poulton, Dunedin Multidisciplinary Health and Development Research Unit; Professor David Fergusson, Christchurch Health and Development Study, University of Otago, Christchurch
Website: nclr.org.nz/

The National Centre for Lifecourse Research (NCLR) conducts and applies high-quality lifecourse research that informs policy and practice to improve the lives of New Zealanders. The Centre is headquartered at the University of Otago but has partnerships with lifecourse related research groups around New Zealand and internationally. The aim of the NCLR is to build collaborations via research and policy translation nationally and internationally. The NCLR and partners have a long history of conducting world-leading lifecourse research with particular emphasis on:

- Research on human development aimed at informing policy and practice.
- Intervention research: Assessing the impact of programmes and interventions on people's lives.

New Zealand Centre for Sustainable Cities
Director: Professor Philippa Howden-Chapman, Department of Public Health, University of Otago, Wellington
Website: sustainablecities.org.nz

The New Zealand Centre for Sustainable Cities is an inter-disciplinary research centre dedicated to providing the research base for innovative system solutions to the economic, social, environmental and cultural development of our cities. The health and well-being of most of our population (87% of New Zealanders live in cities) is reliant on developing environments that take into account the connections between housing, transport, energy, urban form, health and governance and other issues. Centre partners include Auckland, Massey, Victoria, and Canterbury Universities and NIWA. The Centre aims to work in local, regional and national partnerships to develop the tools to promote well-being and health through smarter economic development, safer and more sustainable housing, transport and energy systems, and enhanced urban design.

Sir John Walsh Research Institute for Oral Health
Director: Professor Richard Cannon, Faculty of Dentistry
Website: otago.ac.nz/sjwri

The Sir John Walsh Research Institute advances research and increases knowledge for the improvement of oral health in New Zealand. Its research programmes cover the spectrum of oral health research from the molecular level through biological systems to the health of populations. These programmes are: Biomechanics and Oral Implantology; Dental Epidemiology and Public Health; Molecular Microbiology; Clinical Research; Dental Education Research; Craniofacial Biology and Clinical Oral Physiology; and Oral Molecular and Immunopathology. The Institute is part of New Zealand’s only Faculty of Dentistry and its members have well-established productive collaborations across the University and with other institutions in New Zealand and world-wide. Among its research objectives is the development of clinical research that translates discoveries into measurable health improvements, and to maintain fundamental research that underpins teaching.
The Webster Centre for Infectious Diseases works to bring New Zealand scientists together to address important problems in infectious diseases in New Zealand. Based in Dunedin, the Centre has engaged more than 60 experts in both human and animal diseases from four universities and key Crown Research Institutes. Previously focused on molecular-based projects, the Centre has expanded its mission to include clinical and population health research as part of its core activities. The Centre includes leaders in basic, clinical and epidemiological research. Among the many aspects of infectious diseases that the Centre investigates are bacterial drug resistance and evolution, antimicrobial design, viral pathogenesis, genetics of disease susceptibility, vaccine design, immunology and host susceptibility, human virology, diagnostics and clinical infectious diseases, and public health.

Brain Health Research Centre
Director: Professor Cliff Abraham, Department of Psychology
Website: otago.ac.nz/bhrc

Although the Brain Health Research Centre (BHRC) is not led by a member of the Division of Health Sciences, Divisional staff have significant input into the Centre. The BHRC encompasses over 40 different research groups and clinicians dedicated to producing cutting edge international research into the workings of the brain. Translating neuroscience discoveries into real treatments for those suffering from neurological disorders is a top priority for the BHRC. Researchers and clinicians are involved with all stages of research on the brain from puzzling out the basic mechanisms of how the brain works to finding treatments that harness the brain's restorative potential, and testing of innovative therapies. Using a broad range of expertise, staff are working toward a better understanding of neurological disorders including Alzheimer's and Parkinson's diseases, stroke, epilepsy, tinnitus and motor neuron disease.

RESEARCH THEMES

Arthritis Research Theme
Director: Professor Lisa Stamp, Department of Medicine, University of Otago, Christchurch
Website: otago.ac.nz/christchurch/research/arthritis

The arthritis research theme is a multidisciplinary group of researchers with an interest in arthritis research. Doctors treating patients with arthritis face a number of clinical challenges. These include:

- identifying patients at risk of developing arthritis
- determining which people with arthritis are likely to have more severe disease and future disability
- individualising treatment and medication to provide the best options for arthritis patients.

The aims of the Arthritis Research Theme are to strengthen research into arthritis within the University of Otago by encouraging laboratory and clinical research into the many different forms of this condition, and to increase the profile of arthritis and arthritis research within New Zealand.

Aspire 2025: Research for a Tobacco Free Aotearoa
Director: Professor Richard Edwards, Department of Public Health, University of Otago, Wellington
Website: aspire2025.org.nz

Aspire 2025 is a partnership between major New Zealand research groups carrying out research to help achieve the Government's goal of a tobacco-free Aotearoa by 2025. It brings together leading tobacco-free researchers and health service groups in New Zealand and strengthens existing collaborations. Areas of research encompass all the main aspects of tobacco control activity including smoking cessation support, policy and regulatory research, smoking among young people, smokefree communications, Māori health and tobacco use, Pasifika tobacco use, and research capacity development. Theme members make use of a translational approach which links the findings from clinical trials, experimental and observational studies, and qualitative approaches with end-users of research, to ensure work contributes directly to reductions in smoking prevalence.
Formulation and Delivery of Bioactives
Director: Professor Ian Tucker, School of Pharmacy

Bioactive materials such as drugs, vaccine antigens, pesticides and nutrients cannot be administered in pure form but must be incorporated into biocompatible formulations which maintain the stability of the bioactive material and deliver it in a suitable way to achieve optimal beneficial effects while minimising unwanted side effects. Thus, the science of formulation and drug delivery has human, veterinary and agricultural applications. It combines physical chemistry, biology and materials science to investigate physico-chemical properties of bioactives, excipients and formulations and behaviours of bioactives and formulations in the biological environment in order to develop an underpinning science.

This science is the basis for design and manufacture of delivery systems with predictable behaviours. Work includes: chemical and physical stability of drugs; pharmaceutics of the solid state; colloidal systems for delivery of drugs and antigens; absorption of bioactives across biological membranes. These projects have fundamental, applied and developmental aspects.

Full Circle: Māori and Pacific Genetics of Health
Associate Professor Tony Merriman, Department of Biochemistry, OSMS

The sequencing of the human genome in 2001 initiated a decade of rapid advance in understanding the impact of genetic variation in the human genome on human disease. This, and the advent of new ‘next generation sequencing’ technologies that enable identification of all variation in individual genomes, ensures that genetic approaches to human diseases will continue to be prominent in health research.

Conducting Māori- and Pacific-focused research requires consultation and on-going engagement with specific communities and organisations. All aspects of research from initiating and conducting the research through to dissemination and translation of the results must be undertaken in a manner consistent with cultural values and protocols. This represents unique challenges. Appropriate processes need to be put in place to enable genomic scientists to fulfil obligations to Māori and Pacific communities, and to assist their engagement with these communities. The growth of Māori and Pacific capability in genetics is required.

The focus of this theme is on the strengthening of research with Māori and Pacific communities (in New Zealand and the South Pacific) on the genetics of health.

Gut Health Network
Director: Associate Professor Michael Schultz, Medicine, DSM
Website: guthealthnetwork.com

The Gut Health Network is an initiative of the University of Otago. The Network is a platform to promote information sharing, discussion and collaboration among those involved in this exciting field. Recent research has suggested that the interaction of the bowel microflora with the intestinal immune system on a specific genetic background plays a much more significant role in a variety of diseases than previously anticipated. Not only Inflammatory bowel diseases but also cancer, certain rheumatological disorders, diabetes, obesity and potentially many other diseases might have their origins in the gut. Basic scientists in the fields of genetics, immunology, microbiology and physiology have teamed up with expert gastroenterologists, paediatricians, rheumatologists and surgeons and furthermore patients and patient support groups in a truly bench to bedside approach.

Health of Veterans, Serving Personnel and their Families
Director: Associate Professor David McBride, Department of Preventive and Social Medicine, DSM
Website: otago.ac.nz/veteranshealth

The theme is dedicated to producing high quality, interdisciplinary research focused on the health status and needs of veterans, serving personnel, and their families. It is the result of a joint effort between the New Zealand Ministry of Defence and the University of Otago. The aim of the theme is to explore future ideas with the broadest possible grouping of researchers within the University, initially around the interface between civilian and military health, and post-conflict re-integration of service people back into their communities and families.

In the longer term the theme intends to use the evolving platform of research activities to develop an argument for Government. Many significant anniversaries will occur in the period 2014-18, including the 100th Anniversary of the Battle of the Somme. The Australian National Commission for the ANZAC Centenary has recommended an Anzac Centre for the Study of Peace, Conflict and War. The research theme intends to engage with this centre.
Otago International Health Research Network
Directors: Professor Philip Hill and Professor John Crump, Department of Preventive and Social Medicine, DSM
Website: dnmeds.otago.ac.nz/departments/psm/research/international_hlth/network

The Otago International Health Research Network, which is hosted by the Centre for International Health, fosters and builds on collaborative links across the University to contribute to the understanding and improvement of health in under-resourced countries. The Network includes approximately 50 researchers and their students across the four divisions of the University. These researchers are conducting research across the world and are involved with major international health bodies such as WHO, CDC Atlanta and the Gates Foundation.

The major research goals of the Network are to:

- foster increased collaboration between researchers already doing health-related research in developing countries
- monitor international health funding opportunities
- facilitate the interaction between staff at the University of Otago and international health researchers from other countries by hosting pre-eminent international health researchers at the university for seminars and symposia
- identify new ways to develop the international health collaborations across the university

Oxygen Theme
Director: Professor Tony Kettle: Department of Pathology, University of Otago, Christchurch
Website: otago.ac.nz/christchurch/research/freeradical

Free radicals are molecules that contain an unpaired electron. They are very reactive chemicals and are being made all the time inside our bodies via reactions with oxygen. Free radicals can cause damage, and we have antioxidants that provide protection. However, free radicals also play important roles in health, helping to fight infection and transmit signals.

Our mission is to discover what free radicals do inside the body, and how this knowledge can be used to measure and treat human diseases. Members of the theme are drawn from at least seven different departments, spread across three campuses, and include biochemists, clinicians and nutritionists. Our research is focused on diseases of both childhood and ageing, and antioxidants in health. It has potential applications to cancer, heart disease, arthritis, neurodegenerative diseases, cystic fibrosis, inflammatory bowel disease and infectious diseases.
The Division has a strong focus on Māori health research, with dedicated Māori health research centres on all three campuses. Areas of research include: ethnic inequalities and unequal treatment; the impact of racism on health; cardiovascular health; oral health; women’s and children’s health; mental health; respiratory health; diabetes; gout; medical education and impact on Māori health; and ethnicity and health in longitudinal research.

In recent times the success of the Division’s Māori Health Workforce Development Unit has led to an increase in the number of Māori entering into the University of Otago’s health sciences professional and degree programmes. The unit also provides support for successful degree completion and academic excellence, building the capability for these students to proceed into the professions and to undertake postgraduate study and research.

Te Rōpū Rangahau Hauora Māori o Ngāi Tahu - Ngāi Tahu Māori Health Research Unit
Dunedin School of Medicine

Website: otago.ac.nz/dsm/ngaitahu

The Ngāi Tahu Māori Health Research Unit was established in 1996 as a partnership between the now Te Runanga o Ngāi Tahu and the Dunedin School of Medicine. The Unit has published numerous papers, articles and books on a number of aspects of hauora Māori including hauora rangatahi (young peoples’ health), hauora wahine (Māori women’s health), Māori mental health, oranga niho (oral health), and Māori injury and disability.

The Unit currently has collaborative research projects with the Injury Prevention Research Unit, the Dunedin Multidisciplinary Health and Development Study, and Raukura Hauora o Tainui. The Unit also develops collaborative relationships with other research groups of specific, and relevant, research topics and projects.

A research highlight during 2013/14 was the funding of a project investigating Māori disability experiences and outcomes following injury. This was funded by a Health Research Council of New Zealand Emerging Researcher First Grant of $149,410 to Dr Emma Wyeth, the Director of the Unit.

Māori and Indigenous Health Institute (MIHI)
University of Otago, Christchurch

Website: otago.ac.nz/christchurch/research/mihi

MIHI has had extensive experience in researching within Māori communities. The Institute conducts research that assists with an understanding of Māori health and works to develop strategies that promote Māori health gain. MIHI also has significant input into the undergraduate medical curriculum and other allied health professional curriculum and professional development. The Institute’s recent research activities include:

Indigenous Health Medical Curriculum
MIHI has been contributing the indigenous health curriculum at UOC since 2003. Within this time they have conducted a number of health education research projects. One of these projects formed the basis of a PhD project exploring how indigenous health is placed and valued within the undergraduate medical curriculum. It involved interviews with students, staff, systemic stakeholders, Māori community stakeholders and Māori patients. It also explored indigenous health curriculum within five other medical schools (both nationally and internationally). MIHI continues to research within the field of medical education and is committed to continuing to develop the best indigenous health education in the world.

Educating for Equity
The MIHI teaching team are named investigators (alongside Māori health teaching team members from UOW and DSM and the University of Auckland) are part of a tri-nation collaboration with Australia and Canada. This research facilitates a number of projects that are focussed on exploring the role of medical education as a tool for addressing health inequities in chronic disease. This study has included the development and evaluation of; on-line learning modules, specific teaching initiatives and understanding the impact of bias in clinical decision-making. A master’s thesis was completed on one of the projects in this study. This research is funded by the Health Research Council of New Zealand.

Application of Meihana Model to Clinical Practice
The Ministry of Health has funded projects that have allowed MIHI to trial the application of the Hui Process and Meihana Model to Clinical Practice. Both these models have been developed within undergraduate and post-graduate curriculum as a response to MIHI’s Māori health research findings, however these projects have broadened the training into practising health clinicians as a component of their professional development. The projects explored how cultural confidence and clinical expertise can be fused to produce better clinical outcomes for Māori patients. This work has resulted in the latest publication of the revised Meihana Model.
Hauora Manawa/Heart Health: the Community Heart Study
An important ongoing study is the Māori Community Heart Study. This is a collaborative study with the Christchurch Heart Institute and is investigating the full range of cardiac risk factors for Māori within two community settings (rural and urban). The project is also identifying objective markers (biochemical and cardiac imaging) for monitoring cardiovascular disease risk in Māori, and will document the implementation of treatment programmes, interventions, barriers to care and outcomes for study participants. Analysis of the five year follow up of 750 participants from the Hawkes Bay and Christchurch is currently being undertaken. This research is funded by the Health Research Council of New Zealand.

Chronic diseases
MIHI academic staff member work collaboratively alongside other University of Otago researchers with a focus on Māori health gain. This includes projects looking at mapping current health inequities and exploring opportunities to design innovative approaches to addressing these inequities. To date these projects have included exploration into areas such as; chronic kidney disease, colorectal cancer screening, and use of te reo Māori in primary practice. MIHI academic staff currently supervise six PhD students and 1 Master's student, and continually host summer students to promote the building of a Māori health research workforce.

There were a number of highlights during 2013/14
The publication of the revised Meihana Model as a clinical framework in the New Zealand Medical Journal
• MIHI being awarded the LIME connection (Leaders in an Indigneous Medical Education – membership from all medical schools in Australia) the Innovation and Leadership in Indigenous medical curriculum award.
• Tania Huria was awarded a HRC PhD scholarship for her study “Created Equal”: Investigating health system perspectives of disparities which is utilising chronic kidney disease as a case study.
• Tania Huria's publication in the Journal of Transcultural Nursing
• Suzanne Pitama was awarded a University of Otago, Christchurch Gold Medal for Teaching
• Cameron Lacey's publications in the Journal of Psychosomatic Research and Epilepsy and Behaviour

Te Rōpū Rangahau Hauora a Eru Pōmare – Eru Pōmare Māori Health Research Centre
University of Otago, Wellington

Website: otago.ac.nz/wellington/research/erupomare

Te Rōpū Rangahau Hauora a Eru Pōmare strives to create a Kaupapa Māori space committed to improving Māori health outcomes and eliminating inequalities through quality science and ongoing theoretical development. It takes a rights-based approach consistent with the Treaty of Waitangi, and is engaged with community through a spectrum of influence from community development, policy advocacy, research dissemination and Māori health.

Recent research projects include:
• BreastScreen Aotearoa Māori Monitoring
• District Health board Māori profiles
• Ethnicity data
• Hauora: Māori Standards of Health IV: A study of the years 2000-2005
• Mauri Mahi, Mauri Ora – long term health effects of redundancy and unemployment
• Oranga Waha – oral health research priorities for Māori
• Prisoner Health
• Racism as a determinant of health
• Rural Māori Health
• Unequal Impact: Māori and non-Māori cancer statistics
• Unequal Treatment – the role of health services

Funding highlights for the Eru Pōmare Māori Health Research Centre in 2013/14 include:
• Ricci Harris, Understanding the impact of racial discrimination on adult health and wellbeing, Health Research Council, $452,777
• Bridget Robson, Oranga Waha – oral health research priorities for Māori. Health Research Council and Ministry of Health partnership fund, $288,702
• Bridget Robson, Breast Screen Aotearoa Māori Monitoring III. Ministry of Health, $189,571
• Bridget Robson, District Health Board Māori profiles 2015. Ministry of Health, $210,725
The Health Research Council also funded a number of Māori health research projects in other Departments at the School in 2013/14. Highlights include:

- Bernadette Jones, *He Kara: Asthma Support for Māori Tamariki* at School $1,199,064
- A/P Beverley Lawton, *Addressing avoidable harm suffered by Māori babies* $1,199,999
- Dr Jason Gurney, *Testicular cancer in Māori men: what is driving the disparity?* $353,962

Dr Jason Gurney (Public Health) was awarded an Eru Pomare Postdoctoral Fellowship from the Health Research Council of New Zealand.

Dr Jason Gurney (with A/P Diana Sarfati) from the Department of Public Health received a University of Otago Early Career Award for Distinction in Research in 2014 and an HRC Eru Pomare Postdoctoral Fellowship to investigate disparities in testicular cancer in Māori men.
The Division has a Pacific Strategic Framework with the specific goal to support the development of Pacific research excellence. The Division established the Pacific Research and Student Support Unit (PIRSSU) in 2010 which focuses on supporting Pacific students’ success and achievement at university. Research within the Unit focuses on monitoring the progress of students and evaluating the services that support them.

The Unit's focus is two-fold: to increase the number of Pacific students engaging in research at all levels (both undergraduate and postgraduate) and to facilitate and support staff who are doing research with Pacific communities. The University of Otago has a Pacific Research Protocol which supports and guides staff engaging in research in the Pacific community. The Division has a Pacific Advisory Group which provides advice for staff who wish to engage with Pacific communities.

**PACIFIC STUDENTS AND RESEARCH**

During 2013/14, 8 Pacific students graduated with a doctoral degree and 12 Pacific students with a Master’s degree. We look forward to increasing these numbers over the next 5 years. Full details of Pacific postgraduate student numbers for 2013/14 are listed below.

<table>
<thead>
<tr>
<th>Postgraduate Degree Course</th>
<th>2013</th>
<th>2014</th>
</tr>
</thead>
<tbody>
<tr>
<td>Bachelor of Science with Honours</td>
<td>1</td>
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<tr>
<td>Doctor of Clinical Dentistry</td>
<td>2</td>
<td>2</td>
</tr>
<tr>
<td>Doctor of Philosophy</td>
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<td>6</td>
</tr>
<tr>
<td>Master’s</td>
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<tr>
<td>PG Cert</td>
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<td>16</td>
</tr>
<tr>
<td>PG Dip</td>
<td>20</td>
<td>20</td>
</tr>
</tbody>
</table>

The Division has a strong summer research scholarship programme. The Health Research Council of New Zealand has provided support for Pacific students to undertake summer projects and the PIRSSU are working to promote these opportunities to Pacific students and grow the numbers taking part in this initiative.

**Divisional staff and Pacific research**

There are approximately 50 staff within the Division undertaking research that engages Pacific populations. Projects include those involving the local Pacific community, national studies as well as projects with others within the Pacific region. Areas of research interest include: prevention of non-communicable diseases such as diabetes and cardiovascular diseases; communicable and infectious diseases such as rheumatic fever; sexually transmitted diseases and typhoid; Pacific mental health; health services and suicide prevention; health inequality research; burden of disease; ethnic and socio-economic determinants of health; tobacco and health inequalities; anthropology and pre historic health and diseases in the Pacific; cancer epidemiology; Pacific health research workforce capability and development; and gout and genetics. The recent establishment of a Pacific Academic Caucus involving staff across the University provides additional opportunities and support for Pacific academic staff to further develop their research expertise and collaborations.

**Looking ahead**

The plan looking ahead is to identify early and to nurture Pacific students who are interested in research as a career pathway. The Office of the Associate Dean (Pacific) in the Division will assist with identifying potential candidates, and we will work in collaboration with Departments within the Division to link these students with potential supervisors for both summer research projects and postgraduate study. The Office will also assist in supporting supervisors and candidates applying to external funding sources such as the Health Research Council. The Division is strengthening its engagement in the Pacific region and will assist staff and students to extend their research to this region, where research links are not already in place.
The wide range of research projects and activities of the Centre aims to examine the conventional and novel moral dilemmas arising from medical research, clinical settings, and advances brought about by life sciences and biotechnologies. Effort is focused on exploring previously rarely-chartered areas and innovative conceptual and methodological approaches. The Centre is committed to active engagements with social and public policy issues at local, national and international levels.

Major Areas of Research Strength

Genetics and ethics
Ethical considerations in the use of genetic science and technology. This includes genetic testing of children and adults, and genetic reproductive technologies such as pre-implantation genetic diagnosis.

Philosophy, psychiatry, psychology, neuroscience and mental health
How should mental health and ill-health be conceptualised, investigated, and treated? The picture today is complex, confusing and perhaps even contradictory. Is mental health to be understood in medical, neuro-psychological, psychodynamic, cultural, social or moral terms, or perhaps through some mix of all these?

Cross-cultural ethics
Māori perspectives on genetic biotechnologies and health care, the nature of indigenous knowledge, medical ethics in China, Confucian and Daoist perspectives on bioethics, Chinese voices on abortion, the ideology and ethics of China's birth control program, the ethics of population engineering in the east and west, Japan's wartime medical atrocities and international aftermath, the search for a transcultural bioethics.

Sports ethics, sports medicine ethics, enhancement, and doping
Ethical considerations that arise from the practice of medicine within sport: threats to medical professionalism from commercial interests in sport, enhancement of sporting achievement, athlete confidentiality within sporting employment structure, responding to athlete risk taking.

External Grants Awarded 2013-2014

<table>
<thead>
<tr>
<th>Year</th>
<th>PI</th>
<th>Project Title</th>
<th>Funder</th>
<th>$*</th>
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</thead>
<tbody>
<tr>
<td>2013</td>
<td>Prof John McMillan (collaborator)</td>
<td>Neurointervention in crime prevention: an ethical analysis</td>
<td>Wellcome Trust UK</td>
<td>£484,472</td>
</tr>
<tr>
<td>2014</td>
<td>Prof John McMillan</td>
<td>Mental Capacity: updating the law and practice – international research fellowship Alison Douglass</td>
<td>New Zealand Law Foundation</td>
<td>$125,000</td>
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<tr>
<td>2014</td>
<td>Dr Nicola Kerruish</td>
<td>The future of preimplantation genetic testing</td>
<td>New Zealand Law Foundation</td>
<td>$80,381</td>
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<td>2013</td>
<td>Prof John McMillan</td>
<td>Post-sentence detention and predicting dangerousness</td>
<td>New Zealand Law Foundation</td>
<td>$17,500</td>
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<td>2013</td>
<td>Dr Simon Walker</td>
<td>The 2014 New Zealand Bioethics Conference</td>
<td>Maurice and Phyllis Paykel Trust</td>
<td>$2,000</td>
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*GST exclusive

Postgraduate Students

<table>
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<tr>
<th>Total Head Count</th>
<th>2013</th>
<th>2014</th>
</tr>
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<tbody>
<tr>
<td>PhD</td>
<td>8</td>
<td>8</td>
</tr>
<tr>
<td>Master's thesis</td>
<td>14</td>
<td>20</td>
</tr>
</tbody>
</table>
The Sir John Walsh Research Institute (SJWRI) within the Faculty of Dentistry provides a focus for dental research within the University and also within New Zealand. The Institute is the host department for all research carried out in the Faculty. Research conducted within the Institute underpins the teaching of dentistry and allied professions, their clinical practice, and the identification and addressing of oral health related problems. The Institute draws together the research strengths within the three academic departments (Oral Sciences, Oral Rehabilitation, and Oral Diagnostic and Surgical Sciences) within the Faculty and groups these into seven major areas of research strength as described below.

Major Areas of Research Strength

Biomechanics and oral implantology
Biomechanical research is carried out in the areas of: dental materials, silver and gold nanomaterial technologies, craniofacial biomechanics, forensic biology, sub-concussive brain injury, dental hard tissues and evolutionary oral biology. Within the area of oral implantology research focuses on: grafting and regenerative therapies, tissue engineering, surface treatments of implant fixtures for enhanced osseointegration, the effects of implant fixture corrosion products on periodontal structures, development of ultrasonic diagnostic devices, and in vitro modelling of masticatory forces on implant overdentures and surrounding tissues.

Craniofacial biology and clinical oral physiology
This research programme encompasses a diverse range of fields, including the basic and molecular sciences relevant to craniofacial growth, the impact of malocclusions on jaw function and psychological wellbeing, and the understanding of the peripheral and central mechanisms of orofacial pain with their clinical correlates.

Dental epidemiology and public health
This work has two main strands: dental epidemiological research and dental health services research. The dental epidemiological research investigates the occurrence, determinants and natural history of the common oral conditions. This uses both prospective cohort studies and cross-sectional surveys. The dental health services research work is concerned with how the dental healthcare system works (including dental workforce research), and the extent to which users are benefitting from it. Key activities are measuring oral health outcomes and increasing understanding of how and why people use, or do not use, dental services.

Molecular microbiology
Molecular microbiology research encompasses microbiological investigations applied to a variety of disciplines including endodontics, periodontics and implantology, cariology and treatment with antimicrobials, antifungal drug development, microbial genomics and forensics.

Oral molecular and immunopathology
A variety of cellular, molecular, immunological and pathological tools including cell culture, genomic and focused microarrays, real time PCR, laser microdissection and immunohistochemistry are used to investigate a range of dental and oral mucosal conditions. Of major interest is regulation of the microenvironment in oral squamous cell carcinoma with respect to local and nodal immune regulation, influences on local invasion, angiogenesis and the reaction to endoplasmic stress and epigenetic effects.

Dental education research
Research focuses on the study of factors that affect learning and teaching. Researchers examine educational experiences and look for evidence of what is working well, and what can be improved. This information is used to identify strategies that can improve experiences and support for students and teachers, both within the Faculty and in other education environments.

Clinical research
The clinical research programme aims to improve patient care and to achieve better outcomes for patients. It focuses on studies of direct clinical relevance as well as the translation of basic research into clinical practice with the objective of delivering better and more efficient treatments. The programme has established a Practice-Based Research Network involving dentists from around New Zealand.
## External Grants > $10,000 Awarded 2013-2014

<table>
<thead>
<tr>
<th>Year</th>
<th>PI</th>
<th>Project Title</th>
<th>Funder</th>
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<td>Fungal drug resistance – not as simple as A-B-C</td>
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<td>2013</td>
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<td>The genetics of dentofacial dysplasia</td>
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<td>2013</td>
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<td>Transform a tooth with a “transformer tooth”. A novel approach for child oral health</td>
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*GST exclusive
Commercial Contracts

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Postgraduate Students

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Awards and Honours

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<th>Recipient</th>
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<tr>
<td>2014</td>
<td>Prof Murray Thomson</td>
<td>Distinguished Scientist Award, International Association for Dental Research</td>
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<td>2014</td>
<td>Prof Jules Kieser</td>
<td>Carnegie Alumni Diaspora Fellowship, University of the Witwatersrand, South Africa</td>
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<td>2014</td>
<td>Dr Don Schwass</td>
<td>Sir John Walsh Research Institute Annual Research Day Poster Competition, Staff Award</td>
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<td>2014</td>
<td>Linda Hwang</td>
<td>Junior Colgate Poster Award, International Association for Dental Research Australia &amp; NZ Division meeting</td>
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<td>2014</td>
<td>Gemma Cotton (PhD student)</td>
<td>Otago Centre for Electron Microscopy Student Research Award</td>
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<td>2014</td>
<td>Jenny McDowell (PhD student)</td>
<td>AMP National Scholarship</td>
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<tr>
<td>2014</td>
<td>Jenny McDowell (PhD student)</td>
<td>Otago Centre for Electron Microscopy Student Research Award</td>
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<td>2014</td>
<td>Alia Sagatova (PhD student)</td>
<td>International Association for Dental Research, NZ section poster prize</td>
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<tr>
<td>2014</td>
<td>Deepa Mistry</td>
<td>New Zealand Dental Research Foundation Prize</td>
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<tr>
<td>2013</td>
<td>Dr Lyndie Foster Page</td>
<td>Early Career Award for Distinction in Research, University of Otago</td>
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<td>2013</td>
<td>A/P Neil Waddell</td>
<td>Sir John Walsh Research Institute Basic Science Award</td>
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<td>2013</td>
<td>Belinda Hsu</td>
<td>ADA/Dentsply Student Clinician American Dental Association regional prize</td>
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<td>2013</td>
<td>Dr Lyndie Foster Page</td>
<td>Sir John Walsh Research Institute Clinical Research Award</td>
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<tr>
<td>2013</td>
<td>Kai Chun Li</td>
<td>Sir John Walsh Research Institute Postgraduate Publication Award</td>
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<td>2013</td>
<td>Deepa Mistry</td>
<td>International Association for Dental Research ANZ Division Colgate Poster Prize</td>
</tr>
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</table>
Research activity within the Department of Anatomy covers a wide range of topics including: neuroscience, reproductive and developmental biology, clinical and functional anatomy, and biological anthropology.

The Department boasts a number of first-rate research facilities including gene sequencers, light microscopy facilities (including a laser capture micro-dissection system and a Zeiss inverted microscope), X-ray and ultrasound systems, dedicated image analysis suites, a plastination laboratory, a behavioural phenotyping unit and an extensive human skeletal remains collection. The Department also houses the Otago Centres for Electron Microscopy and Confocal Microscopy.

Major Areas of Research Strength

Neuroscience
The Neuroscience Research Group embraces a number of different research strengths in the Department, including neuroendocrinology, basal ganglia research and research into sexual differentiation.

 Neuroendocrine research focuses on the functions of the hormone prolactin, and in particular, the role of prolactin in the neuroendocrine and neurobiological adaptations of the maternal brain. Specific interests include the control of appetite and body weight during pregnancy and obesity, plasticity in oxytocin neurons during late pregnancy and lactation, and the role of prolactin in changes in mood and behaviour in the post partum period.

 Dysfunction of the basal ganglia contributes to disorders such as Parkinson’s disease, Huntington’s disease, attention-deficit hyperactivity disorder (ADHD) and schizophrenia. The Basal Ganglia Research Group is particularly interested in the functioning of the input and output pathways of the basal ganglia, and how they are involved in learning and movement.

 A better understanding of the normal functioning of cells in the basal ganglia will pave the way to better treatments for its associated disorders.

 Research into sexual differentiation focuses on a protein called MIS/AMH which is a multi-dimensional regulator of the brain, with very distinct actions that vary with the stage of the life cycle. Projects are underway to explore the potential relationship between MIS and conditions such as autism, ADHD and some neurodegenerative diseases.

 Clinical and functional anatomy
Particular emphasis is placed on anatomical research that is relevant to surgical/orthopaedic and physiotherapy practice, as well as biomaterials and tissue engineering. Current areas of research include: the clinical anatomy of vascular structures including intracranial venous drainage; deep fasciae; the musculoskeletal system; and the head and neck region including forensic facial approximation; dysphagia; and development and biological characterisation of biomaterials. A variety of techniques are utilised including: gross dissection, microdissection, epoxy sheet plastination, corrosion casting, imaging techniques such as ultrasound and magnetic resonance, protein analytical techniques, cell culture, histology, microCT, and immunohistochemistry. Some of this expertise is utilised to provide R&D services to NZ wool, food/ingredient, and biotechnology industries.

 Reproduction, development and genomics
Research in this area focuses on both human and animal reproduction, often with strong ties with the neuroendocrinologists of the Neuroscience Research Group. Current major themes include: work on sperm function and male fertility; and prostate diseases, particularly prostate cancer. This group also has an active programme in animal development and genomics, often with a strong comparative element. Current major projects in these areas include: investigations into the evolution of developmental pathways in vertebrates; work on mammalian development, particularly early embryonic development, cellular commitment and sexual development; and sex determination in fishes. Much of the latter research is powered by the latest developments in genomic sciences, including a variety of next generation technologies such as RNA-seq and Chip seq.

 Biological anthropology
A particular area of research interest is the biological anthropology of prehistoric populations in Southeast Asia and the Pacific. This research uses skeletal remains from archaeological excavations as the primary source of data. An additional research focus is using ancient and modern DNA techniques to address questions of human migrations and interactions. This includes identifying the origins of Pacific peoples and their commensal plants and animals in order to better understand the settlement, history and prehistory of the Pacific and New Zealand.
Other research
The Department of Anatomy is a research-intensive department and has a number of other research strengths including: alcohol and brain development; medical education; molecular embryology; development of bone graft substitutes and composite surgical appliances; and molecular mechanisms of learning and memory.

External Grants > $50,000 Awarded 2013-2014

<table>
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<tr>
<th>Year</th>
<th>PI</th>
<th>Project Title</th>
<th>Funder</th>
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<td>2014</td>
<td>Prof David Grattan</td>
<td>Healthy pregnancy, healthy babies</td>
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*GST exclusive

Commercial Contracts

<table>
<thead>
<tr>
<th>Year</th>
<th>Organisation</th>
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<tr>
<td>2013-14</td>
<td>F Hoffman-La Roche Ltd</td>
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<tr>
<td></td>
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<td></td>
<td>Otago Innovation Limited</td>
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<td>Vitaco Health (NZ) Limited</td>
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Total $310,945
### Postgraduate Students

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<th>Total Head Count</th>
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<tr>
<td>Master’s thesis</td>
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### Awards and Honours

<table>
<thead>
<tr>
<th>Year</th>
<th>Recipient</th>
<th>Award</th>
</tr>
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<tbody>
<tr>
<td>2014</td>
<td>Dr Michael Knapp</td>
<td>Rutherford Discovery Fellowship, Royal Society of New Zealand</td>
</tr>
<tr>
<td>2014</td>
<td>Prof Neil Gemmell</td>
<td>Distinguished Researcher of the Year, Otago School of Medical Sciences</td>
</tr>
<tr>
<td>2014</td>
<td>Dr Charlotte King</td>
<td>Rutherford Postdoctoral Fellowship, Royal Society of New Zealand</td>
</tr>
<tr>
<td>2014</td>
<td>Dr Karen Reader</td>
<td>Rutherford Postdoctoral Fellowship, Royal Society of New Zealand</td>
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<tr>
<td>2014</td>
<td>Allan Mitchell</td>
<td>Sustained Research Support Staff Award, Otago School of Medical Sciences</td>
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<tr>
<td>2014</td>
<td>Angela Clark (PhD student)</td>
<td>Société d’Anthropologie de Paris award in recognition of the best dissertation in Biological Anthropology</td>
</tr>
<tr>
<td>2014</td>
<td>Dr Sterling Sawaya</td>
<td>Exceptional PhD thesis, Division of Health Sciences</td>
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<tr>
<td>2014</td>
<td>Fieke Neuman</td>
<td>Rotary Pride of Workmanship Award</td>
</tr>
<tr>
<td>2014</td>
<td>Megan Elder (PhD student)</td>
<td>Deutscher Akademischer Austausch Dienst Scholarship to study for three months in Germany</td>
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<td>2013</td>
<td>Prof Lisa Matisoo-Smith</td>
<td>Fellow, Royal Society of New Zealand</td>
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<td>2013</td>
<td>A/P John Reynolds</td>
<td>Selected to contribute to the Theo Murphy High Flyers Think Tank on brain research</td>
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<td>2013</td>
<td>Dr Christine Jasoni</td>
<td>Distinguished Academic Teacher Award, Otago School of Medical Sciences</td>
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<td>2013</td>
<td>Prof Ian McLennan</td>
<td>Excellence in Postgraduate Supervision, Otago School of Medical Sciences</td>
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<td>2013</td>
<td>Amanda Wyatt</td>
<td>Research Support Staff Award, Otago School of Medical Sciences</td>
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<tr>
<td>2013</td>
<td>Ross Marshall-Seeley</td>
<td>Distinguished Research Support Staff Award, Otago School of Medical Sciences</td>
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<tr>
<td>2013</td>
<td>Dr Ali Mirjalili</td>
<td>Tapan K Banerji Award for the best junior researcher of the year, 30th Annual Meeting of the American Association of Clinical Anatomists</td>
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<tr>
<td>2013</td>
<td>Dr Jason Woon</td>
<td>Exceptional PhD thesis, Division of Health Sciences</td>
</tr>
<tr>
<td>2013</td>
<td>Dr Abby Moore</td>
<td>Exceptional PhD thesis, Division of Health Sciences</td>
</tr>
</tbody>
</table>
Research in the Department is largely concerned with fundamental processes associated with a number of significant biomedical and biological problems: heart disease; cancer; diabetes, rheumatoid arthritis and gout; memory and neurological disease; pathogenic viruses, micro-organisms and fungi; flowering, pollen development, and photosynthesis; genomics, genetics and embryology development; cold adaptation; eukaryotic retroelements; developmental biology; body weight and cell signalling; molecular evolution; apoptosis; and biodiversity. Extensive use is made of bioinformatics, next-generation sequencing, structural biology and proteomics tools. The Otago Genomics Facility, the Centre for Protein Research and the X-ray facility for protein structure determination are all located within the Department.

Major Areas of Research Strength

Functional genomics, gene expression and proteomics

High throughput DNA sequencing and methods to deal with the vast amounts of data it produces, have revolutionised the way we understand biological problems. These techniques allow us to discover how all the genes in a cell or organism change their expression in response to the environment, insult or disease. Coupling this to new methods to identify and study the function of protein products (proteomics) provides a powerful way to understand how genes and gene expression link to phenotype, physiology and health. It is the expression of a set of genes in a particular cell type which defines the function of that cell. The pattern of gene expression can change, for example during development, or as a result of mutation or disease, so that analysis of altered expression profiles provides fundamental information on basic biological processes. Understanding how such changes come about requires knowledge of factors that control gene expression as well as the functions of the individual protein products. Assigning function to an unknown protein depends on knowing its precise composition and 3-dimensional structure, as well as its interaction partner. Functional proteomics leads in turn to a deeper understanding of physiological processes.

Signalling

Research into mammalian signal transduction in the Department focuses on understanding molecular mechanisms that regulate various disease-relevant processes – in particular cell death, inflammation, lipoprotein metabolism and lysosomal storage. Shedding light on the biochemistry of these processes is key to more clearly understanding the pathology and treatment of cancer, heart disease and diseases such as Batten and Alzheimer’s disease. Biochemistry staff investigating mammalian signal transduction use a spectrum of approaches from structural biology, protein biochemistry, cell culture, viral vectors and gene therapy approaches and animal models. Our strength in signalling research synergises on multiple levels with strengths in functional genomics, gene expression and proteomics.

Cancer genetics

The Centre for Translational Cancer Research: Te Aho Matatū is the hub for cancer genetics research within the department. Staff undertake research with an emphasis on studies that can be expected to improve cancer treatment. Projects range from drug development to immunotherapy and include diagnostic test design and personalised medicine. The latter includes the development of simple tests that can be used to select the best chemotherapy treatment for individual patients and other tests that predict an individual’s prognosis and the risk of treatment side-effects.

Plant Biology

Plant research within the department aims to discover how plants function at a biochemical and molecular-genetic level. Life on our planet is driven by photosynthesis. Researchers seek to understand this process and manipulate it using metabolic engineering to more efficiently generate biofuels. Flowering and fertilisation are a prerequisite for seed production, the sources of most of the world’s food. Researchers are using genetic and molecular approaches to understand these processes and are providing breeders with new tools to develop improved plant varieties.

Infectious disease

There is a worldwide resurgence in infectious diseases which pose a threat to our population and to our native and domestic animals. Researchers are seeking to develop diagnostics, antimicrobials and vaccines to address important problems caused by such diseases. The molecular structures of proteins inside infectious viruses and microbes are being probed to seek out weaknesses that can be exploited. New drugs to combat these diseases can then be designed. Specific disease targets are tuberculosis, HIV/AIDS, streptococcal disease, poxviruses, Candida and MRSA. Many staff are members of the Webster Centre for Infectious Diseases.

Autoimmune disease

Research focuses on the underlying genetics of gout and rheumatoid arthritis, two common forms of autoimmune diseases. Large databases of DNA obtained from suffers of autoimmune diseases are being used to identify causative genes. Researchers have confirmed that the gene PTPN22 is one of the factors that causes rheumatoid arthritis, only the second gene in the past 25 years to be universally accepted as a causative factor. High-throughput DNA sequencing methods are being applied to other chronic conditions in order to uncover their pathogenesis, including abdominal aortic aneurysm, schizophrenia, gout and inflammatory bowel disease.
Other research
The Department of Biochemistry is a research-intensive department and has a number of other areas of research strength including: bioinformatics, bacterial molecular biology; evolution and development; and heart disease. Many of these project areas are funded by the HRC, MBIE or Marsden grants.

External Grants > $50,000 Awarded 2013-2014

<table>
<thead>
<tr>
<th>Year</th>
<th>PI</th>
<th>Project Title</th>
<th>Funder</th>
<th>$*</th>
</tr>
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<tbody>
<tr>
<td>2014</td>
<td>A/P Tony Merriman</td>
<td>Urate and gout: genetic control, environmental and drug interactions</td>
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<td>2014</td>
<td>A/P Sally McCormick</td>
<td>Restoring HDL levels</td>
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<td>2013</td>
<td>Dr Wayne Patrick</td>
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<td>2013</td>
<td>A/P Peter Dearden</td>
<td>Selective insecticides</td>
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<td>In the cradle of the double helix: a novel proposal for the origin of life</td>
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<td>Prof Parry Guilford</td>
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<td>2013</td>
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<td>Broad spectrum antimicrobials targeting the D-Alanine pathway</td>
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<td>Prof Iain Lamont</td>
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<td>What determines estrogen receptor status in breast cancer?</td>
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<td>Angus MacKay</td>
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2013  A/P Russell Poulter  The biosynthesis of cyclic analogues of the HIV regulator Tat  New Zealand Lottery Grants Board  $71,600
2014  Dr Peter Mace  Shared equipment for protein purification  New Zealand Lottery Grants Board  $62,000
2014  Prof Kurt Krause  Broad spectrum antimicrobials targeting the D-Alanine pathway  National Institutes of Health (subcontract)  $59,524
2014  Dr Anita Dunbier  Developing better treatments for women with estrogen receptor positive breast cancer  New Zealand Lottery Grants Board  $58,254
2014  Prof Catherine Day  Targeting ubiquitin pathways to control chronic inflammation  Genesis Oncology Trust  $54,335

*GST exclusive

Commercial Contracts

<table>
<thead>
<tr>
<th>Year</th>
<th>Organisation</th>
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<td>L2 Diagnostics LLC</td>
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<td>ManukaMed Ltd</td>
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Postgraduate Students

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Awards and Honours

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<tr>
<th>Year</th>
<th>Recipient</th>
<th>Award</th>
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<tbody>
<tr>
<td>2014</td>
<td>Prof Parry Guilford</td>
<td>Sir Charles Hercus Medal, Royal Society of New Zealand</td>
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<tr>
<td>2014</td>
<td>Prof Parry Guilford</td>
<td>Beaven Medal, Health Research Council of New Zealand</td>
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<tr>
<td>2014</td>
<td>Prof Catherine Day</td>
<td>Fellow, Royal Society of New Zealand</td>
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<td>2014</td>
<td>A/P Peter Dearden</td>
<td>Callaghan Medal, Royal Society of New Zealand</td>
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<td>2014</td>
<td>A/P Peter Dearden</td>
<td>Ross Crozier Medal, Genetics Society of AustralAsia</td>
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<td>Dr Anita Dunbier</td>
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<td>Prof Warren Tate</td>
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<td>2014</td>
<td>Dr Stephen Sowerby</td>
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<td>Year</td>
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<td>2014</td>
<td>Chris Harris</td>
<td>First Place, Otago Medical School Research Society's Student Science</td>
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<td>Max Wilkinson</td>
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<td>Rutherford PhD Scholarship, Royal Society of New Zealand</td>
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<td>Tanya Flynn</td>
<td>Bob Grigor Award, New Zealand Rheumatology Association</td>
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<tr>
<td>2014</td>
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<td>Rutherford Discovery Fellowship, Royal Society of New Zealand</td>
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<td>2013</td>
<td>A/P Tony Merriman</td>
<td>Australian Rheumatology Association, Best Basic Science Paper Award 2013</td>
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<td>2013</td>
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<td>2013</td>
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<td>Commercial Research Award, Otago School of Medical Sciences</td>
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<td>2013</td>
<td>A/P Richard Macknight</td>
<td>Roger Slack Award, New Zealand Society for Plant Biologists</td>
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<tr>
<td>2013</td>
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<tr>
<td>2013</td>
<td>A/P Tony Merriman</td>
<td>Best Basic Science Paper, Australian Rheumatology Association</td>
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<tr>
<td>2013</td>
<td>Dr Anita Dunbier</td>
<td>Emerging Researcher Award, Otago School of Medical Sciences</td>
</tr>
</tbody>
</table>
The main research interests of staff in the Department of Microbiology and Immunology lie in the areas of agricultural and environmental microbiology, biotechnology, clinical and medical microbiology, infectious diseases, virology, microbial genetics and genomics, immunology, bacteriophages, molecular biology and vaccine technology.

Research is carried out in the following key areas: antimicrobial resistance, environmental microbiology, gut microbiome, milk product development, mycobacterial disease resistance in animals, nitrogen-fixing bacteria and improving plant growth, vaccine development and delivery systems, antimicrobials and wound healing, food-borne pathogens, bacteriophage resistance mechanisms, microbial biotechnology, cancer immunobiology and viral therapeutics.

Studies within the department utilise a range of modern technologies including FACS, microscopy, next-generation sequencing, proteomics, transcriptomics, molecular biology, genetics, biochemistry, bioinformatics and structural biology.

Major Areas of Research Strength

Viral technologies
A principal goal of virus research is to characterise virus-host interactions. Many viruses are a threat because they express a plethora of factors that subvert, suppress and generally manipulate human defences against infection. Viral factors that have been discovered and target critical elements of our defences, and their analysis provides important new insights into both viral pathogenesis and our own physiological processes. There is also the opportunity to exploit these novel viral factors as new therapeutics in the treatment of pathologies quite removed from virus infection, for example, non-healing wounds and inflammatory disorders.

Immunology
An understanding of the immune response underpins studies of infectious and autoimmune diseases. Cures for these diseases, as well as cancer and asthma, require knowledge of the immune response and how it can be manipulated. Research focuses on the development of vaccines and immunological manipulation to target cancer and infectious diseases such as Johne’s Disease and tuberculosis. A major theme is the study of the cells and the molecules involved in antigen presentation during immune responses. Research also seeks to understand the immunology of autoimmune inflammatory diseases.

Gastrointestinal microbiology
Complex communities of bacteria inhabit the bowels of humans and other animals and have important influences on health and disease. These communities are referred to as the gut microbiome. Research projects include the microbiology and immunology of inflammatory bowel diseases, engineering bowel communities by dietary manipulation, and the impact of bifidobacterial species on the activation of human dendritic cells with respect to atopic diseases.

Host-microbe interactions and cellular microbiology
Research also focuses on the interactions between microbes and both plant and animal hosts. Symbiotic plant-microbe interactions are important for maximising agricultural production. Research projects involve the study of symbiosis to allow nitrogen fixation and the signalling between the plant and the bacterium that enables mutualism. Within the area of host-microbe interactions, research is being undertaken on the invasion of human cells by intracellular pathogens including Listeria, Salmonella and Yersinia. A particular focus is on the cellular factors required during invasion. Studies into influenza virus replication are also a research strength.

Bacterial physiology and antibiotic resistance
Research in this area focuses on antibiotic resistance and how bacteria function under different environments, such as during infection. A major strength is the study of bacterial physiology and metabolism to understand the infection process and to identify new targets for antimicrobial development. Alternative antimicrobial approaches, such as bacteriophages (viruses specific to bacteria), are being investigated. Antibiotic resistance in clinically-relevant isolates and bacterial systems that limit the spread of resistance genes are major research areas.
### External Grants > $50,000 Awarded 2013-2014

<table>
<thead>
<tr>
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<th>Project Title</th>
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<tr>
<td>2013</td>
<td>Prof Andrew Mercer</td>
<td>Exploiting the therapeutic potential of viruses</td>
<td>Health Research Council of NZ</td>
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<td>2013</td>
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<td>Foods for health</td>
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<td>2013</td>
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<td>2013</td>
<td>Prof Gregory Cook</td>
<td>Pumping lysine to achieve metabolic homeostasis during infection</td>
<td>Royal Society of New Zealand - Marsden</td>
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<td>Prof Andrew Mercer</td>
<td>BAFFled: how does orf virus defeat the BAF cellular defence mechanism?</td>
<td>Royal Society of New Zealand - Marsden</td>
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<td>2014</td>
<td>Prof Clive Ronson</td>
<td>Improving forage legume-rhzobia performance</td>
<td>Ministry of Business, Innovation and Employment (subcontract)</td>
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<td>Dr Peter Fineran</td>
<td>Primed for action: Bacterial Adaptive Immunity</td>
<td>Royal Society of New Zealand - Marsden</td>
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<td>Dr Keith Ireton</td>
<td>Role of host cell polarized exocytosis in spread of bacterial pathogens</td>
<td>Royal Society of New Zealand - Marsden</td>
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<td>Prof Frank Griffin</td>
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<td>Weaning foods as nutritional drivers of bowel microbiota composition: implications for child growth and obesity</td>
<td>Ministry of Business, Innovation and Employment</td>
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<td>Tumour vesicle induced coagulation</td>
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<td>Designing metabiotics to combat multidrug-resistant pathogenic microorganisms</td>
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<td>Rabbit Biocontrol – Investigating the role of rabbit calcivirus in the epidemiology of RHDV in NZ</td>
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<td>Development of high throughput diagnostic testing for Johne's disease in farmed ruminant species</td>
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<td>Role of the human early secretory pathway in spreading of the bacterial pathogen Listeria monocytogenes</td>
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* GST exclusive
### Commercial Contracts

<table>
<thead>
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<th>Year</th>
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</tr>
<tr>
<td></td>
<td>Deosan Ltd</td>
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<td></td>
<td>Fonterra Co-operative Group Limited</td>
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<tr>
<td></td>
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<td></td>
<td>Mainland Minerals Southern Limited</td>
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<td></td>
<td>Meat &amp; Livestock Australia Limited</td>
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<td></td>
<td>Ministry of Business, Innovation and Employment</td>
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<td>Otago Innovation Limited</td>
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<td></td>
<td>The Commonwealth Scientific &amp; Industrial Research Organisation (CSIRO)</td>
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<tr>
<td></td>
<td>Trinity Bioactives Limited</td>
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<td></td>
<td><strong>Total</strong> $493,628</td>
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### Postgraduate Students

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### Awards and Honours

<table>
<thead>
<tr>
<th>Year</th>
<th>Recipient</th>
<th>Award</th>
</tr>
</thead>
<tbody>
<tr>
<td>2014</td>
<td>Prof Greg Cook</td>
<td>Distinguished Research Medal, University of Otago</td>
</tr>
<tr>
<td>2014</td>
<td>A/P Peter Fineran</td>
<td>Carl Smith Medal and Rowheath Trust Award, University of Otago</td>
</tr>
<tr>
<td>2014</td>
<td>Prof Greg Cook</td>
<td>Best Paper Award, Otago School of Medical Sciences</td>
</tr>
<tr>
<td>2014</td>
<td>Andrew Highton (PhD student)</td>
<td>Nuffield Medical Postdoctoral Fellowship to Oxford University</td>
</tr>
<tr>
<td>2014</td>
<td>Andrew Highton (PhD student)</td>
<td>Eli Lilley Lab Based Researcher Award, New Zealand Society for Oncology conference</td>
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<tr>
<td>2014</td>
<td>Andrew Highton (PhD student)</td>
<td>1st equal, Poster Session, Australasian Vaccines and Immunotherapeutics Development Meeting, Melbourne</td>
</tr>
<tr>
<td>2014</td>
<td>Kirsten Ward-Hartstonge (PhD student)</td>
<td>Todd Foundation Award for Excellence</td>
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<tr>
<td>2014</td>
<td>Kirsten Ward-Hartstonge (PhD student)</td>
<td>Brenda Shore Award for Women</td>
</tr>
<tr>
<td>2014</td>
<td>Sam Norton (PhD student)</td>
<td>PhD Student Speaker award, Otago Medical School Research Society Scientific Meeting</td>
</tr>
<tr>
<td>2014</td>
<td>Adrian Patterson (PhD student)</td>
<td>Student oral presentation prize, New Zealand Microbiological Society Conference</td>
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<tr>
<td>2014</td>
<td>Todd Wightman (MSc student)</td>
<td>First Prize Student Poster Competition, New Zealand Microbiological Society Conference</td>
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<tr>
<td>2013</td>
<td>Prof Greg Cook</td>
<td>Elected as Fellow, Royal Society of New Zealand</td>
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<tr>
<td>2013</td>
<td>Prof Gerald Tannock</td>
<td>James Cook Research Fellowship, Royal Society of New Zealand</td>
</tr>
<tr>
<td>Year</td>
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<td>Award Description</td>
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<tr>
<td>2013</td>
<td>Prof Frank Griffin</td>
<td>Service to the School Award, Otago School of Medical Sciences</td>
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<tr>
<td>2013</td>
<td>Dr Judith Bateup</td>
<td>Distinguished PPF/Teaching Fellow, Otago School of Medical Sciences</td>
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<tr>
<td>2013</td>
<td>Ellena Whelan</td>
<td>Sustained Research Staff Support Award, Otago School of Medical Sciences</td>
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<tr>
<td>2013</td>
<td>Catherine McGaughan</td>
<td>Sustained Research Staff Support Award, Otago School of Medical Sciences</td>
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<td>2013</td>
<td>A/P Ros Kemp</td>
<td>Otago University Students’ Association Supervisor of the Year Award</td>
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<tr>
<td>2013</td>
<td>Dr Heather Brooks</td>
<td>Otago University Medical Students’ Association Best Lecturer Award</td>
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<tr>
<td>2013</td>
<td>Dr Chris Greening</td>
<td>Exceptional PhD thesis, Division of Health Sciences</td>
</tr>
<tr>
<td>2013</td>
<td>Ed Taylor (PhD student)</td>
<td>Eli Lilly Award, New Zealand Society for Oncology Conference</td>
</tr>
<tr>
<td>2013</td>
<td>Ed Taylor (PhD student)</td>
<td>Professor Sandy Smith Memorial Scholarship</td>
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<tr>
<td>2013</td>
<td>Chris Greening (PhD student)</td>
<td>Professor Sandy Smith Memorial Scholarship</td>
</tr>
<tr>
<td>2013</td>
<td>Elyse Dunn (PhD student)</td>
<td>Todd Foundation Award for Excellence</td>
</tr>
</tbody>
</table>
DEPARTMENT OF PHARMACOLOGY AND TOXICOLOGY

Head of Department: Professor Rhonda Rosengren
Email: hod.pharmacology@otago.ac.nz
Website: otago.ac.nz/pharmacology

The Department of Pharmacology and Toxicology engages in high quality, internationally-recognised research focused on the following themes: cellular and molecular neuropharmacology, neurodegeneration, neuroprotection and neurotoxicology; cardiovascular signalling and cardioprotection; cancer drug development, drug metabolism, drug treatment of chronic pain, and vestibular pharmacology. State-of-the-art technologies, including in vivo disease models, are used to undertake integrative, cellular and molecular investigations aimed at understanding animal and human pathophysiology, and to delineate targets for novel drugs.

Major Areas of Research Strength

Vestibular and auditory research
Members of the Vestibular and Auditory Research Group are interested in the functional deficits observed in the CNS following damage to the inner ear. These deficits include balance disorders, loss of gaze holding ability, disruption of hearing including tinnitus, and of surprise to many people, cognitive dysfunction. Questions relating to these disorders are pursued in a human testing facility within the Department.

Cancer drug development
Research focuses on the development of novel treatments for cancer. This includes using medicinal chemistry to design novel glutathione peroxide mimics and nitric oxide donors, which can be used to treat a variety of cancers. Synthetic chemistry is also used to design novel drugs to specifically target triple negative breast cancer, a highly aggressive form of breast cancer. Nanotechnology and tumour homing peptides are then used to specifically deliver the drug to the tumour.

Drug treatment of chronic pain
Chronic pain is often caused by damage to the central nervous system, and can be very difficult to treat. Recent research has shown that this 'neuropathic pain' can be caused by inflammation within the central nervous system. The Department investigates the mechanisms underlying this process and how to alter them with new drugs, aiming to develop new and improved treatments for chronic pain.

Cardio-renal protection
This research area encompasses three main themes. The first is pre-transplant renal graft conditioning, which examines the reno-vascular protective value of novel gaseous agents as transplant perfusion adjuncts. The second is renal denervation, which is a fast developing clinical field into which the department has provided strong scientific evidence into the therapeutic mechanism of action in renal disease. Lastly, the department also investigates cardioprotection in status epilepticus, which determines the effectiveness of pharmacological intervention during prolonged seizure.

External Grants > $50,000 Awarded 2013-2014

<table>
<thead>
<tr>
<th>Year</th>
<th>PI Name</th>
<th>Project Title</th>
<th>Funder</th>
<th>$*</th>
</tr>
</thead>
<tbody>
<tr>
<td>2014</td>
<td>Prof Rhonda Rosengren</td>
<td>Development of a novel nanomedicine for the treatment of triple negative breast cancer (Stage 2)</td>
<td>New Zealand Breast Cancer Foundation</td>
<td>$150,000</td>
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<tr>
<td>2014</td>
<td>Prof Rhonda Rosengren</td>
<td>Development of a novel nanomedicine for the treatment of triple negative breast cancer (Stage 1)</td>
<td>New Zealand Breast Cancer Foundation</td>
<td>$100,000</td>
</tr>
<tr>
<td>2014</td>
<td>Dr Yiwen Zheng</td>
<td>Do time-dependent changes in neurotransmission in the dorsal cochlear nucleus trigger acoustic trauma-induced tinnitus?</td>
<td>Deafness Research Foundation of New Zealand</td>
<td>$84,776</td>
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<td>2013</td>
<td>Prof Paul Smith</td>
<td>Therapeutic potential of a selective melanocortin 4 receptor agonist in tinnitus treatment</td>
<td>New Zealand Guardian Trust Company Ltd</td>
<td>$81,177</td>
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<tr>
<td>2013</td>
<td>Prof Paul Smith</td>
<td>Cannabinoid drugs for the treatment of tinnitus</td>
<td>Auckland Medical Research Foundation</td>
<td>$80,976</td>
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<td>2014</td>
<td>Dr Sebastien Taurin</td>
<td>Targeted delivery of raloxifene nanomedicine as a new therapeutic strategy for the treatment of castrate resistant prostate cancer</td>
<td>Genesis Oncology Trust</td>
<td>$62,035</td>
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<td>2013</td>
<td>Dr Sebastien Taurin</td>
<td>Oestrogen receptor independent inhibition of tumour growth by raloxifene</td>
<td>New Zealand Lottery Grants Board</td>
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*GST exclusive
### Postgraduate Students

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### Awards and Honours

<table>
<thead>
<tr>
<th>Year</th>
<th>Recipient</th>
<th>Award</th>
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</thead>
<tbody>
<tr>
<td>2014</td>
<td>Dr Khaled Greish</td>
<td>Early Career Award for Distinction in Research, University of Otago</td>
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<tr>
<td>2014</td>
<td>Prof Paul Smith</td>
<td>Awarded Doctor of Science Degree</td>
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<tr>
<td>2014</td>
<td>Dr Greg Giles</td>
<td>Health Sciences Research Technology Award</td>
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<tr>
<td>2014</td>
<td>Hayley Nehoff (PhD student)</td>
<td>Kainic Medical Communications Travel Scholarship</td>
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</table>
The Department of Physiology is engaged in high quality, internationally recognised physiological research focused on the three major themes of cardiovascular and respiratory physiology, cellular and molecular neuroscience, and membrane and ion transport.

Members of the Department use state-of-the-art technologies, including transgenic mouse models, synchrotron radiation, and single molecule detection in living cells, to undertake integrative, cellular and molecular investigations aimed at understanding animal and human physiology.

Major Areas of Research Strength

Neuroendocrine control of reproduction
Fertility is declining in western societies, including New Zealand. Major research being undertaken in the Department through the Centre for Neuroendocrinology is focused on understanding the ways in which the brain controls reproduction, including the onset of puberty, ovulation, birth and lactation. Recent research has shown that a newly-discovered protein that is essential for puberty, kisspeptin, also plays a critical role in the control of ovulation by mediating estrogen's actions in the adult brain – a finding that may offer hope to the infertile. On-going work aims to determine how dysfunction of the brain circuits that regulate fertility might lead to polycystic ovarian syndrome, the leading cause of infertility in women. Other current research focuses on whether kisspeptin and another protein, prolactin, might be involved in preterm labour.

Website: otago.ac.nz/neuroendocrinology

Neurological disorders and the control of movement
Neurological disorders are an increasing health problem, particularly in an ageing population. Unfortunately, many of these disorders, including those that impair movement and restrict mobility, are common, often poorly treated and get progressively worse over time. As a result they create a significant health burden for patients and carers alike. Research in the Department aims to address these problems by exploring the brain circuits and signals that initiate and refine movement and how these signals are transmitted via the spinal cord and muscles to engage movement. Recent research has identified how even a mild miss-timing of the signals from a brain region called the cerebellum causes significant loss of fine movement control. The ultimate aim is to identify therapeutic targets, approaches and devices for the early and better treatment of Parkinson's disease, ataxia (lack of coordination), sarcopenia (age-related muscle weakness), spinal injury, multiple sclerosis, epilepsy and Alzheimer's disease.

Membrane and ion transport
This theme centres around investigations into the mechanisms and regulation of solute and water movement across cell membranes and resultant pathologies. Current areas of interest include the regulation of epithelial ion channels and transporters by mechanical forces, binding proteins, solutes and pharmacological agents; epithelial fluid and electrolyte transport in the intestine and the interaction of bacteria with the intestine; the role of calcium transport proteins in intracellular calcium signalling; and the control of sodium, potassium, urate and water handling by the kidney.

Cardiovascular and respiratory physiology
Research is conducted into cardiovascular and respiratory control and disease processes such as atherosclerosis, heart failure, obesity and diabetes, pulmonary hypertension, and systemic hypertension. Specific areas of interest include: neural control of the heart, molecular signalling within the heart, and models of heart failure, arrhythmia and atherosclerosis, with a special emphasis on diabetes and sex differences. Recent investigations have demonstrated that and that the hormone ghrelin has protective effects after a heart attack.
### External Grants > $50,000 Awarded 2013-2014

<table>
<thead>
<tr>
<th>Year</th>
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<th>Project Title</th>
<th>Funder</th>
<th>$*</th>
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<tbody>
<tr>
<td>2013</td>
<td>A/P Colin Brown</td>
<td>Central regulation of natural birth processes of NZ</td>
<td>Health Research Council</td>
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<td>2014</td>
<td>A/P Ruth Empson</td>
<td>Mapping neuroplasticity in the brain</td>
<td>Royal Society of New Zealand - Marsden</td>
<td>$820,000</td>
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<tr>
<td>2014</td>
<td>Dr Rebecca Campbell</td>
<td>Functional dissection of a novel GABAergic pathway in the brain circuitry controlling fertility</td>
<td>Royal Society of New Zealand - Marsden</td>
<td>$820,000</td>
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<td>2014</td>
<td>Dr Karl Iremonger</td>
<td>Chronic stress induced adaptations in hypothalamic brain circuits</td>
<td>Health Research Council of NZ</td>
<td>$489,062</td>
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<td>2013</td>
<td>Dr Jeffrey Erickson</td>
<td>Identifying the mechanisms by which CaMKII regulates cellular signaling in the diabetic heart</td>
<td>Royal Society of New Zealand - Marsden Fast Start</td>
<td>$300,000</td>
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<td>2014</td>
<td>Dr Karl Iremonger</td>
<td>Oxytocin- a safety brake preventing excessive activation of the stress axis</td>
<td>Royal Society of New Zealand - Marsden Fast Start</td>
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<td>2014</td>
<td>Dr Peter Jones</td>
<td>Novel mechanisms for the regulation of cardiac Ca2+-release channel (RyR2) activity in models of cellular stress</td>
<td>National Heart Foundation of NZ</td>
<td>$147,004</td>
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<td>2014</td>
<td>Dr Rajesh Katare</td>
<td>Genetic engineering of cardiac stem cells for the therapeutic regeneration of the diabetic heart</td>
<td>National Heart Foundation of NZ</td>
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<td>2013</td>
<td>Dr Regis Lamberts</td>
<td>Autonomic dysfunction and surgical cardiovascular complications in diabetes</td>
<td>New Zealand Lottery Grants Board</td>
<td>$67,500</td>
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*GST exclusive

### Commercial Contracts

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| 2013-14 | ManukaMed Ltd  
Otago Innovation Limited  
Royal Society of New Zealand |
|       | **Total** $161,370                                                          |

### Postgraduate Students

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Awards and Honours

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<th>Year</th>
<th>Recipient</th>
<th>Award</th>
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<tr>
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<td>Dr Karl Iremonger</td>
<td>Prime Minister’s MacDiarmid Emerging Researcher Prize</td>
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<tr>
<td>2014</td>
<td>Dr Karl Iremonger</td>
<td>Sir Charles Hercus Fellowship, Health Research Council of New Zealand</td>
</tr>
<tr>
<td>2014</td>
<td>Dr Pete Jones</td>
<td>Emerging Researcher Award, Otago School of Medical Sciences</td>
</tr>
<tr>
<td>2014</td>
<td>Dr Andrea Kwakowsky</td>
<td>Brain Health Research Centre Young Investigator of the Year Award</td>
</tr>
<tr>
<td>2014</td>
<td>A/P Ruth Empson</td>
<td>Brain Health Research Centre Hot Topics Award</td>
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<tr>
<td>2014</td>
<td>Dr Matt Bevin</td>
<td>OSMS Distinguished Professional Practice Fellow Award</td>
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<tr>
<td>2014</td>
<td>Dr Su Young Han</td>
<td>1st prize, Otago Medical School Research Society Research Staff Speaker Awards</td>
</tr>
<tr>
<td>2014</td>
<td>Aleisha Moore (PhD student)</td>
<td>Physiological Society of New Zealand John Hubbard Memorial Prize, Queenstown Research Week</td>
</tr>
<tr>
<td>2014</td>
<td>Emmet Power (PhD student)</td>
<td>Goddard Oral Prize, Queenstown Research Week</td>
</tr>
<tr>
<td>2014</td>
<td>Parul Dixit (PhD student)</td>
<td>Physiological Society of New Zealand Poster Prize, Queenstown Research Week</td>
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<td>2014</td>
<td>John Brady (MSc student)</td>
<td>Hope-Selwyn Foundation Scholarship</td>
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<tr>
<td>2014</td>
<td>Chris Marshall/Ivor Malahay</td>
<td>Otago Medical School Research Society PhD Student Speaker Award</td>
</tr>
<tr>
<td>2014</td>
<td>Xander Seymour (PhD student)</td>
<td>Centre for Neuroendocrinology PhD Prize</td>
</tr>
<tr>
<td>2014</td>
<td>Joe Zhang (PhD student)</td>
<td>Otago School of Medical Sciences Research Support Staff Award</td>
</tr>
<tr>
<td>2014</td>
<td>Joe Zhang (PhD student)</td>
<td>Selected to attend the JSPS 7th HOPE meeting in Japan as part of the NZ Delegation</td>
</tr>
<tr>
<td>2014</td>
<td>Navneet Lal (MSc student)</td>
<td>Best Science Poster Prize, Australian and New Zealand Association for Clinical Anatomists meeting</td>
</tr>
<tr>
<td>2013</td>
<td>Dr Matt Bevin</td>
<td>Best Lecturer Award for Med 2 and Med 3, Otago University Medical Students’ Association Teaching Awards</td>
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<tr>
<td>2013</td>
<td>Justine Fuller</td>
<td>First place, International Basal Ganglia Society poster competition</td>
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<td>2013</td>
<td>Pauline Campos (PhD student)</td>
<td>Centre for Neuroendocrinology PhD Prize</td>
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<td>2013</td>
<td>Simon de Croft (PhD student)</td>
<td>Otago Medical School Research Society PhD Student Speaker Award</td>
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<td>Simon de Croft (PhD student)</td>
<td>Physiological Society of New Zealand John Hubbard Memorial Prize, Queenstown Research Week</td>
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<td>2013</td>
<td>Helen Waddell (PhD student)</td>
<td>QMB Heart Theme Poster Prize, Queenstown Research Week</td>
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<tr>
<td>2013</td>
<td>Joe Zhang (PhD student)</td>
<td>Elman Poole Travelling Scholarship, University of Otago</td>
</tr>
<tr>
<td>2013</td>
<td>Joe Zhang (PhD student)</td>
<td>Claude McCarthy Fellowship</td>
</tr>
</tbody>
</table>
The Department of General Practice and Rural Health has four broad research themes:

- Clinical Practice
- Health Services Research
- Social Sciences and Health
- Medical Education

The Department hosts a diverse range of research activities across several fields – medical, health services, education, and social science – and also hosts expertise in a wide range of research methodologies, both quantitative and qualitative, crossing epidemiological, public health, clinical, and social science boundaries. We are an outward looking and multidisciplinary department: this is reflected in collaborations between the Department and other departments within the Otago Medical School, other disciplines across the University of Otago, and other national campuses and organisations, as well as international collaborations. It is also reflected in the close relationships that have been established between the Department and primary and secondary care organisations including WellSouth Primary Care Network, Southern District Health Board, Best Practice Advisory Centre (BPAC) and Mornington Health Centre, Dunedin.

Major Areas of Research Strength

Clinical practice
We conduct clinical practice research across the disciplines of general practice, primary care and rural health. Examples of specific areas of research include: electronic decision making support tools; patient safety; health care professional/patient relationships and clinical areas such as chronic obstructive pulmonary disease and coeliac disease. Research incorporates issues of rural practice and service provision and includes: the role of the rural hospital generalist and in particular the interface with base hospital specialists; rural hospital services; and rural hospital cardiology including pre hospital fibrinolysis and management of acute coronary syndromes in the rural setting.

Health services research
We have research strengths in health services research, notably in relation to primary care and the integration of care across the primary and secondary care interface. Research projects include: guidelines and quality standards implementation; the use of lay navigators in health care; multi-morbidity management in primary care; interprofessional teamwork in primary/ community care; access to, and effectiveness of, rural hospital services; health care fees and charges; rural health issues and rural workforce issues. We have particular strengths in the conduct of mixed methods health service evaluation research.

Social sciences and health
The social sciences and health theme encompasses a wide range of research informed by medical anthropological theoretical perspectives, notably theorising around embodiment, Foucault’s bio-power, and Wenger’s Communities of Practice. It utilises anthropological methodologies such as ethnography and narrative analysis. Philosophy and nature of practice is another thread in this area of research. Examples of research projects include: communities of clinical practice in primary care, longevity expectations, aged care, and conflicts of interest.

Medical education
We have a strong focus on medical education research with teaching staff actively conducting research into teaching and learning at undergraduate and postgraduate levels. Areas of research interest include: safe and effective outcomes in general practice; the hidden curriculum in medical education; students’ participation in, and learning through, communities of clinical practice; socialisation in medical training; distance learning; student attitudes to rural practice; professionalism in medicine; evaluation of medical courses and curricula; education and vocational training for rural hospital generalists; and reflective practice.
External Grants Awarded in 2013-2014

<table>
<thead>
<tr>
<th>Year</th>
<th>PI</th>
<th>Project Title</th>
<th>Funder</th>
<th>$*</th>
</tr>
</thead>
<tbody>
<tr>
<td>2014</td>
<td>Prof Susan Dovey</td>
<td>Patient harms in New Zealand general practices: Records review study</td>
<td>Health Research Council of NZ</td>
<td>$1,174,690</td>
</tr>
<tr>
<td>2014</td>
<td>Prof Tim Stokes</td>
<td>Delivering better primary health care to people with multimorbidity in Otago: qualitative study</td>
<td>Health Care Otago Charitable Trust</td>
<td>$25,354</td>
</tr>
<tr>
<td>2014</td>
<td>A/P Chrys Jaye</td>
<td>Quality of aged care and solutions perceived by aged care workforce and residents</td>
<td>New Zealand Geriatric Society</td>
<td>$5000</td>
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<tr>
<td>2013</td>
<td>Katie Blattner</td>
<td>What is the impact of the Division of Rural Hospital Medicine of New Zealand/ Cooks project in the Cook Islands on the NZ doctors involved?</td>
<td>RNZCGP Research and Education Charitable Trust</td>
<td>$5000</td>
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<tr>
<td>2014</td>
<td>Dr Kirstin Kenrick</td>
<td>Research costs for coeliac research</td>
<td>Coeliac New Zealand</td>
<td>$3000</td>
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*GST exclusive

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<tr>
<td>2014</td>
<td>Dr Anna Ranta</td>
<td>Exceptional PhD thesis, Division of Health Sciences</td>
</tr>
<tr>
<td>2014</td>
<td>Dr Martyn Williamson and SECO team</td>
<td>Jan Breward Award for Research Excellence in General Practice</td>
</tr>
<tr>
<td>2014</td>
<td>Dr Anel Reyneke</td>
<td>Dunedin School of Medicine Clinical Research Scholarship</td>
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<tr>
<td>2013</td>
<td>Prof Sue Dovey</td>
<td>Jan Breward Award for Research Excellence in General Practice</td>
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<tr>
<td>2013</td>
<td>Dr Martyn Williamson</td>
<td>Medical Education Innovation Teaching Award</td>
</tr>
<tr>
<td>2013</td>
<td>Dr Lik Loh</td>
<td>Academic Registrar Scholarship, Royal New Zealand College of General Practitioners and University of Otago</td>
</tr>
</tbody>
</table>
Collaborative research projects link the Department with others in the Division, as well as other universities in New Zealand and around the world. Areas of particular research strength include: kidney, rheumatological, cardiac, and gastroenterological diseases, endocrinology, diabetes, ophthalmology, older person’s health, sport and exercise medicine, cancer, and respiratory illnesses.

**Major Areas of Research Strength**

**Diabetes research**
Edgar Diabetes and Obesity Research (EDOR) houses New Zealand’s foremost diabetes research team, involving a range of disciplines, including nutrition, epidemiology, health services research, Māori health, biostatistics, public health and social marketing. Research aims to reduce the incidence of diabetes (and obesity) and its complications by finding new ways to prevent and manage the disease. Studies attempt to address the problem of diabetes and obesity by education, support and the promotion of healthy lifestyles in both children and adults.

**Website:** otago.ac.nz/diabetes

**Respiratory disease**
The causes, treatment and prevention of asthma are the central foci of the Otago Respiratory Research Group. Key studies have revealed that not all asthmatics suffer from the same type of inflammation and not all will respond to commonly used inhaled steroid treatment. Studies are being undertaken to identify alternative forms of treatment for this group. The group had previously revealed that long-term cannabis smoking is likely to produce similar adverse effects to tobacco smoking (chronic bronchitis, emphysema and lung cancer), and that obesity can worsen the impact and severity of asthma.

**Kidney disease**
Members of this group are dedicated to investigating innovative ways to prevent and treat kidney disease. The group’s expertise ranges from molecular and cellular-level investigations of kidney function, to applying therapies to prevent kidney injury or the progression of kidney disease. Efforts are underway to find new markers for early acute renal failure so it can be treated before irreversible damage or death occurs. Current research projects include: effects of lithium on renal function, therapeutic targets of polycystic kidney disease, dietary induced obesity and metabolic syndrome, clinical renal trials, renal function and high performance exercise, and progression of renal disease. There is a strong focus on clinical outcome studies. In particular, studies looking at dialysis outcomes in the older age group which are currently funded by the HRC (NZ).

**Website:** kidney.otago.ac.nz/

**Rheumatology**
Major interest centres on the pathogenic pathways of rheumatoid arthritis. This research is attempting to determine the relationships of this classification to clinical outcomes, pathophysiologic pathways and treatment responses. The genetics of rheumatoid arthritis and gout is another area of strong research focus. A key project is “Urate and gout: Genetic control, environmental and drug interactions” which is part of a an HRC programme grant led by Associate Professor Tony Merriman (Biochemistry, OSMS). Other areas of interest include ankylosing spondylitis, correlates of fatigue in chronic arthritis and scleroderma. With regard to the latter, researchers in the department contribute to EUSTAR - an international collaborative project to study the natural history of scleroderma.

**Gut health**
Recent research has suggested that the interaction of the bowel microflora with the intestinal immune system on a specific genetic background plays a much more significant role in disease than previously anticipated. Many diseases have their origin in the gut, not only inflammatory bowel diseases, but also certain rheumatological disorders, diabetes, obesity and potentially many others. Researchers in the department have set up the Gut Health Network to bring together national and international experts from various fields and disciplines to collaboratively work on these health issues.

**Website:** guthealthnetwork.com

**Cardiology**
Research in the Cardiology Research Unit involves contributing to multi-centre trials including trials of new devices for coronary angioplasty and clinical trials of new drugs for management of heart attacks, cholesterol levels and arrhythmia. Local research includes assessment of biomarkers as predictors of coronary stent re-stenosis after implantation. The unit is also performing a prospective study in patients with aortic valve disease evaluating what genes might be important in the development of narrowed heart valves in older persons.
Oncology
The Oncology Research Group is a predominantly clinical trials-focused group with a portfolio comprising of collaborative, investigator-led, and commercial trial activity. Recent projects include: the Recharge Study, investigating the use of ice-cream containing lactoferrin in order to reduce chemotherapy associated diarrhea; the CapTox Study, investigating genomic predictors of chemotherapy toxicity; and the BRACKIT study, examining predictors of melanoma recurrence from matched primary lesions and sentinel lymph nodes. The HRC-funded PIPER study is also underway and is the largest study of treatment and outcomes of colorectal cancer ever undertaken in New Zealand.

Neurology
The Neurology Research Group is involved in research into vestibular disorders, neurodegenerative diseases (including Alzheimer’s and Parkinson’s disease), and augmented reality rehabilitation, multiple sclerosis (ADVANCE/ATTAIN and PrevANZ studies), medical education research, transcranial magnetic stimulation and the role of cilia in nerve regeneration.

Clinical and interventional exercise physiology
A multidisciplinary team of researchers examining cardiovascular pathophysiology and the role of exercise as a therapeutic tool in a range of patient cohorts including diabetic heart disease patients, pre-operative patients, breast cancer patients, renal patients, and adolescent obesity and diabetic patients. This group also examines how different patient populations respond to acute exercise stress. Collaborative projects involve staff from the School of Physical Education, Departments of Physiology, Women’s and Children’s Health, Surgical Sciences, as well as international colleagues.

Glaucoma
Glaucoma is the number one cause of preventable blindness in New Zealand. The Otago Glaucoma Surgery Outcome Study is based in the department and is the world’s longest ongoing follow-up study into surgery for glaucoma. Approximately 1400 patients have been followed to determine outcomes following implant surgery or trabeculectomies at Dunedin Hospital since 1976. The electronic database of operations in the Otago Glaucoma Surgery Outcome Study now provides data for studies aimed at defining the long-term results of glaucoma drainage surgery.

External Grants > $20,000 Awarded in 2013-2014

<table>
<thead>
<tr>
<th>Year</th>
<th>PI</th>
<th>Project Title</th>
<th>Funder</th>
<th>$*</th>
</tr>
</thead>
<tbody>
<tr>
<td>2013</td>
<td>Dr Paul Hessian</td>
<td>Healthy food ingredients from shellfish and algae</td>
<td>Ministry of Business, Innovation and Employment (subcontract)</td>
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<tr>
<td>2014</td>
<td>Dr Chris Jackson</td>
<td>Primary rectal cancer management in advanced disease with chemotherapy</td>
<td>Health Research Council of NZ</td>
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<tr>
<td>2014</td>
<td>Prof Tony Molteno</td>
<td>Investigation of efficacy of pharmacological anti-inflammatory regimes to improve long-term outcomes of glaucoma drainage operations</td>
<td>New Zealand Lottery Grants Board</td>
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<tr>
<td>2013</td>
<td>Victoria Farmer</td>
<td>Improving school playgrounds to enhance physical activity and health in children: the Play Study.</td>
<td>New Zealand Lottery Grants Board</td>
<td>$85,000</td>
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<tr>
<td>2013</td>
<td>Dr Kirsten Coppell</td>
<td>Diabetes, obesity and the church: Implementing the NZ Weight Management Guidelines to achieve better health outcomes for Pacific peoples</td>
<td>Health Research Council of NZ (subcontract)</td>
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<td>2014</td>
<td>A/P Michael Williams</td>
<td>Thiamine to improve stem cell function in patients undergoing bypass surgery: a randomised control trial</td>
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<td>A/P Michael Williams</td>
<td>The systems biology of end-stage calcific stenosis</td>
<td>Southland Medical Foundation</td>
<td>$33,380</td>
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<tr>
<td>2014</td>
<td>Prof Rob Walker</td>
<td>The Sodium Lowering in Dialysate (SOLID) trial</td>
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<td>2014</td>
<td>A/P Patrick Manning</td>
<td>Imaging the obese brain: the use of EEG imaging in obese and lean individuals</td>
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*GST exclusive
Commercial Contracts

<table>
<thead>
<tr>
<th>Year</th>
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<tr>
<td>2013-14</td>
<td>Australasian Gastro-Intestinal Trials Group (AGITG)</td>
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<td>New Zealand Society for the study of diabetes Incorporated</td>
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<td></td>
<td>New Zealand Society for the Study of Diabetes Inc</td>
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Postgraduate Students

<table>
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Awards and Honours

<table>
<thead>
<tr>
<th>Year</th>
<th>Recipient</th>
<th>Award</th>
</tr>
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<tbody>
<tr>
<td>2014</td>
<td>Prof Tony Molteno</td>
<td>International Society of Glaucoma Surgery Medal</td>
</tr>
<tr>
<td>2014</td>
<td>Andrew McCombie (PhD student)</td>
<td>Best luminal poster/paper, New Zealand Society of Gastroenterology Annual Scientific Meeting</td>
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<tr>
<td>2013</td>
<td>A/P Gordon Sanderson</td>
<td>Prime Minister’s Supreme Award for Tertiary Teaching Excellence</td>
</tr>
<tr>
<td>2013</td>
<td>A/P Gordon Sanderson</td>
<td>Teaching Excellence Award, University of Otago</td>
</tr>
<tr>
<td>2013</td>
<td>A/P David Perez</td>
<td>Officer of the New Zealand Order of Merit for services to oncology</td>
</tr>
</tbody>
</table>
DEPARTMENT OF PATHOLOGY

Head of Department: Associate Professor Sarah Young
Email: sarah.young@otago.ac.nz
Website: otago.ac.nz/dsm/pathology

The Department has a strong research culture with the major themes being cancer, developmental biology and molecular pathology. Much of the research is multidisciplinary in approach, is clinically relevant, and involves collaboration with clinical and scientific colleagues in other Departments within the School, University or elsewhere in New Zealand, as well as international links.

The Department houses a number of research groups: the Cell Transformation Group (Braithwaite), Epigenetics and Cancer (Morison), the Developmental Genetics and Pathology Group (Eccles), the Chromosome Structure and Development Group (Horsfield), the Molecular Genetics Laboratory (Markie), the Immune Therapeutics Group (Young), the Immune Regulation Group (Hibma) and the Molecular Pathology Group (Hung/Slatter).

Major Areas of Research Strength

Cancer biology
A major research theme in the Department is cancer research. The over-arching interest is the identification, characterisation and functional analysis of genes that contribute to the development of cancer. There is a strong focus on identifying suitable ‘markers’ for cancer diagnosis and on developing new therapies for treating cancer. Cancers that are being studied include colorectal, breast, brain, melanoma, leukaemia, lymphoma and myelodysplastic syndrome. A particular emphasis is placed on the function of specific cancer genes, such as TP53, TES, MYCN, and YB-1 and in cancer vaccine development.

Development
When development goes wrong, human pathologies such as congenital abnormalities can arise. Researchers on the department are delving into the fundamental mechanisms of development to better understand how developmental disease arises. Some of this work involves the zebrafish animal model. Research also involves analysing the human genome to uncover the basis of human genetic conditions. In combination with functional studies, the work identifies causes for developmental disorders as well as crucial understanding of how vertebrates (including humans) develop.

Website: otago.ac.nz/zebrafish

Immunotherapy
Immunotherapy describes the way in which the immune system can be harnessed to fight disease and it is currently the most promising new approach to treating cancer. The immune system constantly carries out surveillance of the tissues in the body so that when tumours begin to develop they are recognised and quickly destroyed. However, tumours themselves employ a number of strategies to evade or suppress this immune response. Research is directed at devising ways to counteract their strategies.

Clinical pathology
Clinical pathology research involves examination of many human tissues to discover new elements of a disease. The aim is to improve the current diagnoses to obtain a better estimation of outcome and suggest ways in which the disease could be treated or a complication avoided. Researchers in the department are investigating precancerous lesions and cancer to better understand why some patients do much better compared to others, the placenta to understand why pregnancy complications occur, and autoimmune disease.

Genetics of human disease
Several of the Department’s researchers have expertise in the discovery of the genetic contribution to human disease, such as genetic influences on bipolar disorder, gene mutations in polycystic disease, mutations in congenital malformation syndromes, and mutations in familial and acquired cancer.
## External Grants > $40,000 Awarded 2013-2014

<table>
<thead>
<tr>
<th>Year</th>
<th>PI</th>
<th>Project Title</th>
<th>Funder</th>
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</tr>
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<tbody>
<tr>
<td>2013</td>
<td>Prof Antony Braithwaite</td>
<td>Does the D133p53 isoform promote cancer invasion and metastasis?</td>
<td>Health Research Council of NZ</td>
<td>$1,185,648</td>
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<tr>
<td>2014</td>
<td>Prof Antony Braithwaite</td>
<td>A role for p53 isoforms in inflammatory disease</td>
<td>Health Research Council of NZ</td>
<td>$1,176,905</td>
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<tr>
<td>2014</td>
<td>Prof Mike Eccles</td>
<td>Chair in Cancer Pathology</td>
<td>New Zealand Institute for Cancer Research Trust (subcontract)</td>
<td>$269,305</td>
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<tr>
<td>2014</td>
<td>Dr Merilyn Hibma</td>
<td>Human papillomavirus regulation of the skin immune microenvironment in premalignancy</td>
<td>Cancer Society of New Zealand</td>
<td>$201,209</td>
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<tr>
<td>2013</td>
<td>Prof Mike Eccles</td>
<td>Using circular polarised light to evaluate cell differentiation status in vivo</td>
<td>Health Research Council of NZ</td>
<td>$150,000</td>
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<tr>
<td>2014</td>
<td>Silke Neumann</td>
<td>The influence of systemic infection on post-stroke functional recovery</td>
<td>New Zealand Lottery Grants Board</td>
<td>$150,000</td>
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<td>2014</td>
<td>Dr Erin MacAuley</td>
<td>Gravida research staff</td>
<td>Tertiary Education Commission (subcontract)</td>
<td>$108,302</td>
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<tr>
<td>2013</td>
<td>Prof Ian Morison</td>
<td>The fetal origins of childhood leukaemia</td>
<td>Genesis Oncology Trust</td>
<td>$100,337</td>
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<td>2014</td>
<td>Dr Nick Fleming</td>
<td>Gammacell 3000 Elan (Best Theratronics)</td>
<td>New Zealand Lottery Grants Board</td>
<td>$100,000</td>
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<td>2013</td>
<td>Prof Mike Eccles</td>
<td>Chair in Cancer Pathology</td>
<td>New Zealand Institute for Cancer Research Trust (subcontract)</td>
<td>$97,693</td>
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<td>2014</td>
<td>Dr Julia Horsfield</td>
<td>Modelling the transgenerational effects of parental obesity in zebrafish</td>
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<tr>
<td>2014</td>
<td>Prof Ian Morison</td>
<td>New approaches to cures for childhood acute lymphoblastic leukaemia (ALL)</td>
<td>New Zealand Lottery Grants Board</td>
<td>$95,000</td>
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<tr>
<td>2014</td>
<td>Prof Mike Eccles</td>
<td>Does melanoma in NZ require a more discriminatory diagnostic test?</td>
<td>New Zealand Lottery Grants Board</td>
<td>$86,595</td>
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<td>2014</td>
<td>Dr Noelyn Hung</td>
<td>Telomere maintenance in uterine cancer: A powerful diagnostic and prognostic tool?</td>
<td>Cancer Society of New Zealand</td>
<td>$70,000</td>
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<td>2013</td>
<td>Prof Antony Braithwaite</td>
<td>p53 isoforms and melanoma</td>
<td>New Zealand Lottery Grants Board</td>
<td>$66,600</td>
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<td>2014</td>
<td>Dr Jisha Antony</td>
<td>Exploring a novel target for therapeutic intervention in acute myeloid leukaemia</td>
<td>Genesis Oncology Trust</td>
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<td>2013</td>
<td>Dr Euan Rodger</td>
<td>A New Zealand family holds the key to myelodysplastic syndrome</td>
<td>New Zealand Lottery Grants Board</td>
<td>$54,000</td>
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<td>2014</td>
<td>Erin Macaulay</td>
<td>Determining clinical markers for pre-eclampsia that can be used to improve the pre and post-natal health of mothers and infants in NZ</td>
<td>New Zealand Lottery Grants Board</td>
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<td>2014</td>
<td>Prof Ian Morison</td>
<td>DNA methylation markers of myelodysplastic syndrome</td>
<td>Leukaemia and Blood Cancer New Zealand</td>
<td>$45,797</td>
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<td>2014</td>
<td>Dr Julia Horsfield</td>
<td>Li-Cor Odyssey System</td>
<td>KD Kirby Trust (subcontract)</td>
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<td>2013</td>
<td>Dr Julia Horsfield</td>
<td>Exploring a new molecular pathway in acute myeloid leukaemia</td>
<td>Leukaemia and Blood Foundation of New Zealand</td>
<td>$40,700</td>
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*GST exclusive
Commercial Contracts

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<thead>
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<th>Organisation</th>
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<td>Seperex Nutritional Limited</td>
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<td>Vitaco Health (NZ) Limited</td>
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|          | **Total**                         | $188,640

Postgraduate Students

<table>
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Awards and Honours

<table>
<thead>
<tr>
<th>Year</th>
<th>Recipient</th>
<th>Award</th>
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</thead>
<tbody>
<tr>
<td>2014</td>
<td>Dr Louise Bicknell</td>
<td>Rutherford Discovery Fellowship, Royal Society of New Zealand</td>
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<tr>
<td>2014</td>
<td>A/P Sarah Young</td>
<td>Fulbright New Zealand Travelling Scholar Award</td>
</tr>
<tr>
<td>2013</td>
<td>Prof Antony Braithwaite</td>
<td>Elected as Fellow, Royal Society of New Zealand</td>
</tr>
</tbody>
</table>
The Department of Preventive and Social Medicine constitutes one of the leading centres for public health research in Australasia. There are a number of major research groups within the Department including: the Injury Prevention Research Unit, the Hugh Adam Cancer Epidemiology Unit, the Ngāi Tahu Māori Health Research Unit, the AIDS Epidemiology Group, the Cancer Society Social and Behavioural Research Unit, the Centre for International Health, and the Centre for Health Systems. The New Zealand Pharmacovigilance Centre, and the National Poisons Centre are also housed in the Department.

Major Areas of Research Strength

Injury prevention
The Injury Prevention Research Unit (IPRU) undertakes research that will contribute to reducing the incidence, severity, and consequences of injury in New Zealand. Research areas include unintentional and intentional injury, outcomes of injury, and injury prevention. Studies may be based on settings where injury occurs, such as in transport, sport and recreation and work, or focused on groups within the population who are at risk, such as children, young people, or older people. Injury surveillance, examination of cross cutting issues such as alcohol misuse, and the consequences of injury, both disability and rehabilitation, are also examined.

Website: blogs.otago.ac.nz/ipru

Cancer
The Department has significant expertise in cancer research, with two research centres dedicated to this field: the Hugh Adam Cancer Epidemiology Unit (HACEU) and the Cancer Society Social and Behavioural Research Unit (SBRU). The HACEU conducts research into the causes of cancer and undertakes the evaluation of screening for cancer. It has undertaken nationwide investigations into the causes of cancer of the colon, rectum, and prostate and, with colleagues, cancer of the breast, lung, head and neck and melanoma in New Zealand. The Unit is also developing methods to predict an individual’s risk for various cancers. The SBRU is the focus of research into social and behavioural aspects of cancer. Presently it has research programmes operating in the five priority areas of tobacco control, ultraviolet radiation exposure, physical activity and nutrition, psycho-social-spiritual factors, and Hauora Māori.

Websites: SBRU otago.ac.nz/sbru
HACEU otago.ac.nz/dsm-psm/research/cancer-epidemiology.html

International health
The Centre for International Health is based in the Department. The Centre aims to make a significant contribution to the understanding, development and well-being of individuals and populations in developing countries. Research projects and collaborations are underway with other institutes in the Gambia, Indonesia, Samoa and Cambodia.

Website: otago.ac.nz/internationalhealth

Hauora Māori
Rangahau hauora Māori (Māori health research) is an important part of the research portfolio of the Department. The goal of the Ngāi Tahu Māori Health Research Unit is to contribute to the body of knowledge on Māori health that will lead to positive health outcomes for Māori and their whānau. The Unit collects, collates, interprets and publishes information, data and statistics on Māori health issues. The major research focuses for the Unit are: hauora rangatahi (young people’s health); hauora wāhine (Māori women’s health), Māori and mental health, oraanga niho (dental health) and Māori and injury prevention.

AIDS epidemiology
The AIDS Epidemiology Group has been responsible for national surveillance of AIDS and HIV infection in New Zealand since 1989. The aims of the Group are to monitor the epidemic of HIV/AIDS in New Zealand through ongoing surveillance; to develop, and when appropriate to apply, new methods of monitoring and evaluation; and to contribute to the wider knowledge of HIV infection and AIDS.

Website: dnmeds.otago.ac.nz/departments/psm/research/aids

Health systems
The Centre for Health Systems facilitates and promotes research into health system improvement at the University of Otago, and across the local and national health systems, as well as internationally. The Centre’s associates come from a range of University of Otago departments including those spanning our three campuses in Dunedin, Christchurch and Wellington, as well as the School of Business. It works closely with the Southern DHB and has links with a range of national and international research groups including the Commonwealth Fund, Boston University Health Policy Institute, and London School of Economics (Health and Social Care).

Website: otago.ac.nz/healthsystems
Other research
The Department is a research-intensive department and has a number of other areas of research strength including: poisons research; pharmacovigilance; environmental health; epidemiology of infectious diseases; health policy and economics; occupational health; and alcohol-related harm.

External Grants > $40,000 Awarded 2013-2014

<table>
<thead>
<tr>
<th>Year</th>
<th>PI</th>
<th>Project Title</th>
<th>Funder</th>
<th>$*</th>
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<tbody>
<tr>
<td>2014</td>
<td>Dr Brett MacLennan</td>
<td>Evaluation of New Zealand's alcohol reform legislation</td>
<td>Health Research Council of NZ</td>
<td>$1,190,521</td>
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<td>2013</td>
<td>Prof Phillip Hill</td>
<td>TANDEM</td>
<td>European Commission (subcontract)</td>
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<tr>
<td>2014</td>
<td>Prof John Crump</td>
<td>Hazards associated with zoonotic enteric pathogens in emerging livestock meat pathways (HAZEL)</td>
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<td>2013</td>
<td>Dr Jean Simpson</td>
<td>Children's Social Health Monitor</td>
<td>Office of the Children's Commissioner (subcontract)</td>
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<td>2014</td>
<td>A/P Bob Hancox</td>
<td>Can we avoid unnecessary hospital admissions for COPD?</td>
<td>Health Research Council of NZ</td>
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<td>2014</td>
<td>Dr Alex MacMillan</td>
<td>Future streets</td>
<td>Ministry of Business, Innovation and Employment (subcontract)</td>
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<td>Prof Robin Gauld</td>
<td>The value of quality and safety in health care</td>
<td>Health Quality and Safety Commission (subcontract)</td>
<td>$220,193</td>
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<td>2014</td>
<td>A/P Bob Hancox</td>
<td>Beta-blockers in COPD: feasibility of a randomised controlled trial</td>
<td>Health Research Council of NZ</td>
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<td>2014</td>
<td>Dr Emma Wyeth</td>
<td>Māori disability outcomes: Pathways and experiences after injury</td>
<td>Health Research Council of NZ</td>
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<td>2014</td>
<td>Prof John Crump</td>
<td>Social, economic and environmental drivers of zoonoses in Tanzania (SeedZ)</td>
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<td>Dr Tai Sopoaga</td>
<td>Pacific students health, wellbeing and success in higher education</td>
<td>Health Research Council of NZ</td>
<td>$103,550</td>
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<tr>
<td>2013</td>
<td>Lindsay Robertson</td>
<td>Regulation of tobacco retailing</td>
<td>New Zealand Lottery Grants Board</td>
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<td>Dr Kirsten Lovelock</td>
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<td>2013</td>
<td>A/P Brian Cox</td>
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<td>2014</td>
<td>A/P Brian Cox</td>
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<td>Leukaemia and Blood Cancer New Zealand</td>
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<td>2013</td>
<td>Dr Kirsten Lovelock</td>
<td>Occupational health of front line workers in Christchurch</td>
<td>New Zealand Lottery Grants Board</td>
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<td>2014</td>
<td>Prof John Crump</td>
<td>Molecular epidemiology of brucellosis in northern Tanzania</td>
<td>Biotechnology and Biological Sciences Research Council (subcontract)</td>
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*GST exclusive
Commercial Contracts

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<td>Counties Manukau District Health Board</td>
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<td>Medical Research Council United Kingdom</td>
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<td>Mercy Hospital Dunedin Ltd</td>
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<td>Ministry of Business, Innovation and Employment</td>
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<td>Ministry of Health</td>
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<td></td>
<td>New Zealand Private Surgical Hospitals Association Inc</td>
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<td>New Zealand Vice-Chancellors' Committee</td>
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<td></td>
<td>NZ Transport Agency (NZTA)</td>
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Postgraduate Students

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Awards and Honours

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<thead>
<tr>
<th>Year</th>
<th>Recipient</th>
<th>Award</th>
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<tr>
<td>2014</td>
<td>Prof Robin Gauld</td>
<td>NZ-UK Link Foundation Visiting Professorship, School of Advanced Study, University of London</td>
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<tr>
<td>2014</td>
<td>Prof John Crump</td>
<td>Health Research Excellence Publication Award</td>
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<tr>
<td>2014</td>
<td>Dr Ayesha Verrall</td>
<td>Elman Poole Scholarship</td>
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<tr>
<td>2014</td>
<td>Dr Sarah Jack</td>
<td>Early Career Research Award, Department of Preventive and Social Medicine</td>
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<tr>
<td>2013</td>
<td>Dr Sarah Jack</td>
<td>Research Development Award, Dunedin School of Medicine</td>
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<tr>
<td>2013</td>
<td>Prof Philip Hill, Dr Susan Jack</td>
<td>Health Research Excellence Publication Award</td>
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<tr>
<td>2013</td>
<td>Dr Rebecca Brookland</td>
<td>Career Development Post-Doctoral Fellowship, Division of Health Sciences, University of Otago</td>
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<tr>
<td>2013</td>
<td>Dr Sue McAllister</td>
<td>Early Career Research Award, Department of Preventive and Social Medicine</td>
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</table>
The Department of Psychological Medicine consists of the two main units of Clinical Psychiatry and Behavioural Science. Both units are involved in a variety of areas of clinically relevant research, with the main themes being mental health epidemiology, public health, and psychopharmacology. Specific research areas include primary care interventions, communication and consultation skills, cognitive processes, behavioural aspects of physical health, pain, child abuse, exploration of developmentally appropriate techniques for gathering information from children, clinical audit, creation of evidence-based reviews, psychopharmacology and development of novel therapeutics.

External Grants Awarded 2013-2014

<table>
<thead>
<tr>
<th>Year</th>
<th>PI</th>
<th>Project Title</th>
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<tr>
<td>2014</td>
<td>Prof Kate Scott</td>
<td>Psychotic like experiences in the World Mental</td>
<td>National Health and Medical Research Council (subcontract)</td>
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<tr>
<td></td>
<td></td>
<td>Health Surveys</td>
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<td>2014</td>
<td>Dr Nicola Swain</td>
<td>Living well with an amputation</td>
<td>New Zealand Artificial Limb Services</td>
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*GST exclusive

Commercial Contracts

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<td>Roche Products (New Zealand) Ltd</td>
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<td>Zenith Technology Corp Ltd</td>
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Total $169,601

Postgraduate Students

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Awards and Honours

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<th>Recipient</th>
<th>Award</th>
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</thead>
<tbody>
<tr>
<td>2014</td>
<td>Dr Steve Gallagher</td>
<td>CALT Award for Enhancing Teaching and Learning with Technology</td>
</tr>
</tbody>
</table>
Major Areas of Research Strength

Vascular disease
The Vascular Research Group undertakes research in the fields of vascular biology, genetics and physiology. The group's primary research interests are:
- The genetic basis of different forms of vascular disease including abdominal aortic aneurysm, coronary artery disease, lower limb arterial disease, stroke and varicose veins.
- Determining the early processes in the formation of atherosclerosis.
- The identification of circulating markers of vascular susceptibility and/or post-interventional outcome.
- Determining the pathophysiology of venous disease.

The Vascular Research Group is currently funded by the Health Research Council of New Zealand and is a leading member of the Vascular Research Consortium of New Zealand (vrcnz.org), which aims to support collaborative vascular networks nationally.

Website: otago.ac.nz/dsm-surgery/research/vascular

Colorectal cancer
The Colorectal Translational Research Group was formed in 2010 to co-ordinate and strengthen existing strands of research into colorectal cancer and to promote the translation of laboratory discoveries into the clinical environment. It consists of a collaborative group of researchers combining expertise from a broad range of disciplines, including surgery, medical oncology, molecular biology, bioinformatics, immunology and experimental biology. One of the Group's core strengths is its clinical base from which it procures tissue samples linked to clinical outcome data for laboratory-based research, and recruits patients into clinical trials. The main research areas are:
- Genetic and epigenetic factors in colorectal cancer
- Prognostic tests for colorectal cancer
- Immune response to colorectal cancer
- Immunotherapy for colorectal cancer
- Immune mechanisms in Crohn's disease

Website: otago.ac.nz/dsm-surgery/research/colorectal-translational-research-group

Clinical audit and outcomes research
The Otago Clinical Audit and Outcomes Research Group promotes the development of clinical audit within the surgical profession and develops systems for evaluating longer term outcomes in clinical practice. The Unit has produced significant research focusing on the process of surgical audit including risk stratification in outcome assessment. A key example of the Unit's activities is the development of a successful national system for audit for vascular surgery. Data on 55,000+ patients is available in the audit database to assist peer-review, to answer enquiries from clinical management, to determine surgical workloads, to monitor training of registrars and to evaluate overall surgical performance.

Website: otago.ac.nz/ouaudit

Musculoskeletal outcomes research
The Centre for Musculoskeletal Outcomes Research aims to conduct and disseminate research addressing decision-making and outcomes for patients with musculoskeletal disorders. The centre is a multidisciplinary community of researchers and clinicians, policy makers and educators dedicated to improving patient health outcomes. This is done through translational research aimed at optimising clinical practice; from laboratory research through to clinical trials and health services research. Research interests include orthopaedic pathobiology and biomechanics, clinical diagnostic test and outcome measure evaluation, occupational and public health issues, clinical epidemiology, economic evaluations and health resource allocation issues affecting primary and secondary care settings.

Website: cmor.otago.ac.nz
### External Grants > $20,000 Awarded in 2013-2014

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<th>Year</th>
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<th>Project Title</th>
<th>Funder</th>
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<tr>
<td>2014</td>
<td>A/P Greg Jones</td>
<td>An epigenome-wide study for abdominal aortic aneurysm</td>
<td>Health Research Council of NZ</td>
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<td>2013</td>
<td>Prof Dirk de Ridder</td>
<td>Neurosurgery research</td>
<td>Neurological Foundation of NZ</td>
<td>$132,546</td>
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<td>2014</td>
<td>Dr Matthew Bailey</td>
<td>SPICE III RCT: Early goal-directed sedation compared with normal care in mechanically ventilated critically ill patients</td>
<td>National Health and Medical Research Council (subcontract)</td>
<td>$51,787</td>
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<td>2014</td>
<td>Mr Patrick Dawes</td>
<td>The role of peri-operative gabapentin in the management of pain following tonsillectomy</td>
<td>New Zealand Lottery Grants Board</td>
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<td>2013</td>
<td>Dr Helen Harcombe</td>
<td>NZ hip and knee replacement surgery: Equity in access</td>
<td>Arthritis New Zealand</td>
<td>$49,839</td>
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<td>2013</td>
<td>Dr Rebecca Roberts</td>
<td>Using pharmacogenetics to predict response to allopurinol</td>
<td>Arthritis New Zealand</td>
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*GST exclusive

### Postgraduate Students

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### Awards and Honours

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<th>Recipient</th>
<th>Award</th>
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<tbody>
<tr>
<td>2014</td>
<td>A/P Haxby Abbott</td>
<td>Carl Smith Medal and Rowheath Trust Award, University of Otago</td>
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<tr>
<td>2014</td>
<td>A/P Greg Jones</td>
<td>Faculty of Medicine Award for Special Contribution to ELM</td>
</tr>
</tbody>
</table>
DEPARTMENT OF WOMEN’S AND CHILDREN’S HEALTH

Head of Department: Professor Wayne Gillett
Email: wayne.gillett@otago.ac.nz
Website: otago.ac.nz/dsm/wch

The Department of Women’s and Children’s Health comprises the Section of Obstetrics and Gynaecology and the Section of Paediatrics and Child Health.

The Section of Obstetrics and Gynaecology has diverse research areas, specifically, reproduction and infertility, urogynaecology, urinary incontinence, contraception, menopause, obesity and weight management in pregnancy, placental pathology and management of high-risk pregnancy. Staff members are involved with the Cochrane Incontinence Review Group.

Areas of particular research strength in the Section of Paediatrics and Child Health include paediatric pharmacology, sudden unexpected death syndrome in infancy, sleep and obesity in childhood, clinical genetics and clinical ethics.

The Department is also home to: 1) the New Zealand Child and Youth Epidemiology Service (NZYES); 2) The New Zealand Mortality Review Data Group (NZMRDG); and, 3) the New Zealand Paediatric Surveillance Unit (NZPSU). These groups are now known collectively as the CYPRESS Group (Child and Youth Policy, Research and Support Service).

Major Areas of Research Strength

Clinical genetics
The Clinical Genetics Group study single gene disorders in children. These are typically rare but in aggregate account for a sizeable fraction of morbidity in the community. We have a particular interest in a group of disorders called the filaminopathies. These are caused by mutations in a family of genes encoding proteins called filamins. Mutation in one of the filamin genes causes both disorders of brain development and bone development and we are studying the development of both of these organ systems. Insights gained from these disorders have filled gaps in understanding how bone develops in response to chemical and mechanical forces, and how stem cells in the brain produce neurons that build the human cerebral cortex. We have close links with clinicians worldwide who submit samples to our research programme, making clinical translation a key component of our work. Insights gained from our studies have the ability to define risk of recurrence, and prognosis, for the families affected by these disorders.

Website: otago.ac.nz/dsm/clinicalgeneticsgroup

Sleep disordered breathing
The main research focus is on developing a better understanding of how the complexities of sleep problems, including sleep disordered breathing (SDB) and obesity-related sleep problems, relate to outcomes of poorer daytime functioning, behavioural adjustment and learning problems in children. A further focus is advancing technology for the measurement of sleep and SDB within paediatric clinical and community settings. The main body of our research has yielded important information enabling us to begin planning for one of our long-term research goals - a randomised controlled trial for the treatment of children with combined SDB and poor academic performance.

Childhood obesity
Becoming overweight is one of the biggest threats to health in the twenty first century in many countries including New Zealand. Growth in early childhood sets the pattern for future growth. What babies eat, how they play, and how well they sleep may all be important in how fast babies put on weight. The Prevention of Overweight in Infancy study (POLNZ) is a Health Research Council funded study designed to work out whether extra information and support for families can improve eating and activity, encourage better sleep for babies and parents, reduce post-natal depression, improve a family’s well-being and reduce the rate of excessive weight gain during infancy.

Paediatric pharmacology
This research focuses on two main themes: pharmacokinetics/pharmacodynamics and pharmacoepidemiology. Both themes are based on extensive collaborations with the School of Pharmacy, the Department of Anaesthesia (UOC), and the Department of General Practice (UOC).
## External Grants > $40,000 Awarded 2013-2014

<table>
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<th>Year</th>
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<td>2014</td>
<td>Prof Stephen Robertson</td>
<td>Defining genetic regulators of neurogenesis in humans</td>
<td>Health Research Council of NZ</td>
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<td>2014</td>
<td>Prof Stephen Robertson</td>
<td>Studying the genetic of malformations in children</td>
<td>Cure Kids</td>
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<td>2013</td>
<td>Prof Stephen Robertson</td>
<td>Understanding how WT1 and its binding partner WTX cause renal disease</td>
<td>Health Research Council of NZ (subcontract)</td>
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<td>2013</td>
<td>Dr Liz Craig</td>
<td>Work Statement 12 – NZ Level Report – Health of Children and Young People in New Zealand</td>
<td>Ministry of Health (subcontract)</td>
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<td>2013</td>
<td>Prof Barry Taylor</td>
<td>Pepi-pods for a safe infant sleep? A video, physiological and thermal evaluation</td>
<td>Health Research Council of NZ</td>
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<td>2014</td>
<td>Prof Stephen Robertson</td>
<td>Cure Kids Chair of Child Health Research</td>
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<td>2013</td>
<td>Dr Pamela Jackson</td>
<td>RV3 Rotovirus Vaccine: A Phase 2 clinical trial for a human neonatal rotavirus vaccine for the global community</td>
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<td>Dr Jean Simpson</td>
<td>Children's social health monitor</td>
<td>J R McKenzie Trust</td>
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<td>2014</td>
<td>A/P Roland Broadbent</td>
<td>Family Integrated Care Project</td>
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*GST exclusive

### Commercial Contracts

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| 2013-14 | Canterbury District Health Board  
Capital and Coast District Health Board  
Health Quality & Safety Commission  
MidCentral District Health Board  
Northern Regional Alliance Ltd |

**Total $2,588,064**

### Postgraduate Students

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### Awards and Honours

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<th>Award</th>
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<tbody>
<tr>
<td>2014</td>
<td>Prof Stephen Robertson</td>
<td>Otago University Students' Association Supervisor of the Year Award</td>
</tr>
</tbody>
</table>
UNIVERSITY OF OTAGO, CHRISTCHURCH

DEPARTMENT OF ANAESTHESIA

Head of Department: Professor Edward Shipton
Email: ted.shipton@otago.ac.nz
Website: otago.ac.nz/christchurch/departments/anaesthesia

The Department of Anaesthesia has a small but active research programme. Recent areas of interest include volatile anaesthetic uptake and distribution; acute and chronic pain, and model-based therapies.

Major Areas of Research Strength

Anaesthetic uptake and distribution

Research has focused on anaesthetic monitoring particularly with the predictive use of computer modelling. A computer programme has been developed to model volatile anaesthetic uptake and distribution. The relationship between calculated effect-site volatile anaesthetic levels and awakening from anaesthesia has been studied. The safe delivery of anaesthesia has also been examined in patients with mitochondrial myopathies and prolonged QT syndromes. Other research projects include: effect-site guided opioid administration in the immediate postoperative period; effect of low dose intravenous premedication on cardiac output and induction of anaesthesia; and estimating the relative potency of morphine and fentanyl levels by modelling using data from PCA administration.

Pain

An ongoing area of interest is persistent pain and its management. Research focuses on complex regional pain syndrome (CRPS), post surgical neuropathic pain and chronic pain. The predictors and risk factors in the development of persistent acute postoperative pain have been looked at as well. The psychosocial adjustment and physical health of children living with mothers with chronic pain has been explored. The role of parenting as a mediator has been probed. Novel methods of perioperative pain relief have been developed particularly in the paediatric population with the intranasal route and with the use of analgesic drops. The comparison of usual surgical advice versus a non-aggravating six-month gym-based exercise rehabilitation program post-lumbar discectomy with three years of accumulated data has been researched as well. Two ongoing studies are the effect of pre-emptive gabapentin on chronic neuropathic pain following inguinal hernia repair, and the efficacy and safety of bisphosphonates in CRPS.

Intensive care

There is collaborative work on effect site concentrations of volatile and intravenous anaesthetic agents with bioengineering at Canterbury University. There is potential for feedback loops for target-controlled infusions to be tested in clinical anaesthesia and in pain medicine. There is active collaborative research in model-based therapeutics in the application of physiological modelling and computation. This occurs in the following areas: Tight Glycaemic Control and Specialised Insulin and Nutrition Tables; Metabolic Markers of Critical Illness; Optimising Mechanical Ventilation; Cardiovascular Modelling; and Control Agitation Sensing and Optimising Sedation Delivery. Other research projects include: cardiovascular monitoring for circulatory dysfunction; continuous glucose monitoring and subcutaneously delivered insulin in critically ill patients; and acoustic sensing of ‘crackles’ in patients undergoing mechanical ventilation.

Postgraduate Students

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<tr>
<th>Total Head Count</th>
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</table>
DEPARTMENT OF GENERAL PRACTICE

Head of Department: Professor Les Toop
Email: les.toop@otago.ac.nz
Website: otago.ac.nz/christchurch/departments/generalpractice/index.html

Major Areas of Research Strength

General Practice Research
The Christchurch General Practice Research Group is involved in research into many areas of primary healthcare in New Zealand. The Group focuses on clinical research, where the results can be directly translated into clinical practice. The two central research themes underpinning this are rational use of medicines and innovative models of primary care.

External Grants Awarded 2013-2014

<table>
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<tr>
<th>Year</th>
<th>PI</th>
<th>Project Title</th>
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<tr>
<td>2014</td>
<td>Dr Ben Hudson</td>
<td>A randomised controlled trial of Nortriptyline in knee osteoarthritis</td>
<td>Health Research Council of NZ</td>
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*GST exclusive

Awards and Honours

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<th>Award</th>
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</thead>
<tbody>
<tr>
<td>2014</td>
<td>Dr Ben Hudson</td>
<td>Outstanding Teaching Award, University of Otago</td>
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<tr>
<td>2013</td>
<td>Dr Ruth Savage</td>
<td>KC Singhal Oration Award, Society of Pharmacovigilance, India</td>
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</tbody>
</table>
The Department of Medicine has diverse research interests and hosts a number of productive research groups. Areas of research include cardioendocrinology, gastroenterology, respiratory, renal disease, clinical pharmacology, neurology, rheumatology; and healthcare of the elderly.

Major Areas of Research Strength

Christchurch Heart Institute (CHI)
The CHI is a large (40 staff) integrated bench-bed-community interdisciplinary research centre. It undertakes research aimed at identifying, characterising and defining plasma peptides, cardiac imaging features, and genotypes that provide insight into new diagnostic and prognostic biomarkers for detection and management of heart failure and other cardiac diseases and new therapeutic agents for their treatment. The Group is also involved in a community heart study to assess the proportion of Māori living with undiagnosed heart disease, diabetes, hypertension, high cholesterol or other significant cardiovascular disease risk factors. The work of the CHI has provided a large bank of practical knowledge that is used by cardiologists to monitor the prognosis and treatment of patients who have suffered heart attacks. The Group's world leading research on natriuretic peptides has informed multiple international guidelines.

Website: otago.ac.nz/christchurch/research/cardioendocrine

New Zealand Brain Research Institute (NZBRI)
Department of Medicine researchers form the core of the NZBRI which includes researchers from the University of Canterbury and CDHB. Department of Medicine researchers within the institute cover a spectrum of world class research including Parkinson's research, a multidisciplinary team with the major aim of establishing biomarkers of cognitive decline to mild cognitive impairment (MCI) and dementia, particularly advanced MRI markers. The eye movement research team have established one of the most sophisticated and active eye movement research laboratories in the southern hemisphere with established research programs in Parkinson's disease, head injury and normal health, and most recently Huntington's disease. The research is now extending into functional imaging with MRI (fMRI) of saccadic eye movements in these disorders.

Another research focus is spearheading the nationally and linked multiple sclerosis study group.

Clinical pharmacology
The clinical application of pharmacology knowledge is the focus of the Clinical Pharmacology Research Group. This Group includes staff from the Clinical Pharmacology Department at Christchurch Hospital, the Drug Information Service and the Drug Utilisation Review Service. Current research interests include: pharmacogenetics; drug metabolism in the elderly; drug use in pregnancy and lactation; antibiotic dosing regimens – especially for the aminoglycosides; phase III drug trials of gastroenterology drugs; provision of drug information; adverse drug reactions; and thiopurine drugs.

Website: otago.ac.nz/christchurch/research/clinicalpharmacology

Rheumatology and immunology
The Canterbury Rheumatology and Immunology Research Group conducts research in the broad field of rheumatic diseases. The group aims to promote public awareness and support for arthritis, and to improve the standard of care for patients with rheumatic and immunologic disorders in the Canterbury regions. Research interests include: pharmacokinetics and pharmacogenomics of disease modifying anti-rheumatic therapies; management of gout; novel markers in early arthritis; Wegener's granulomatosis; and genetics of rheumatic disease. Many of the staff involved in this group are members of the University of Otago's Arthritis Research Theme.

Gastroenterology and hepatology research
The Department hosts key principal investigator's of the Gastroenterology Research Group. The group plays a key role in clinical studies in the fields of inflammatory bowel disease, irritable bowel syndrome and aspects of nutrition. In addition to pharma led clinical trials there is an increasing emphasis on nutrition-focused industry trials for New Zealand produced nutritional supplements and foods. Other members of the group focus on the development of treatments for chronic hepatitis C. Research also focuses on the field of autoimmune liver diseases.

Kidney disease – Cochrane reviews
This small but highly productive group is headed by A/P Suetonia Palmer. Their work utilises innovative statistical methods to determine the benefits and harms of widely prescribed drugs in the fields of diabetes, hypertension and kidney disease. They specialise in formal Cochrane analysis methodology.
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<thead>
<tr>
<th>Year</th>
<th>PI</th>
<th>Project Title</th>
<th>Funder</th>
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<tr>
<td>2014</td>
<td>Prof Mark Richards</td>
<td>Heart failure: markers and management of NZ</td>
<td>Health Research Council</td>
<td>$4,980,858</td>
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<td>2013</td>
<td>A/P Lisa Stamp</td>
<td>Predicting response to anti-TNF therapy based on serum cytokine and gene profile</td>
<td>Health Research Council of NZ</td>
<td>$1,199,969</td>
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<td>2013</td>
<td>Prof Mark Richards</td>
<td>Renal denervation in heart failure with preserved ejection fraction</td>
<td>Health Research Council of NZ</td>
<td>$1,195,997</td>
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<td>2014</td>
<td>Prof Tim Anderson</td>
<td>Genetics, brain imaging, and cognitive decline in Parkinson’s disease</td>
<td>Health Research Council of NZ</td>
<td>$1,178,803</td>
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<tr>
<td>2013</td>
<td>A/P Suetonia Palmer</td>
<td>Improving evidence for decision-makers in chronic kidney disease</td>
<td>Royal Society of NZ – Rutherford Discovery Fellowship</td>
<td>$800,000</td>
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<tr>
<td>2014</td>
<td>Dr Anna Pilbrow</td>
<td>To discover new circulating biomarkers to support better assessment of cardiovascular risk in communities</td>
<td>National Heart Foundation of NZ</td>
<td>$360,000</td>
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<tr>
<td>2013</td>
<td>Dr Allamanda Faatoese</td>
<td>Lipoprotein biomarkers and cardiovascular risk in Māori and Pacific communities</td>
<td>Health Research Council of NZ</td>
<td>$243,003</td>
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<td>2013</td>
<td>Dr Tracy Melzer</td>
<td>Mapping cognitive decline in Parkinson’s disease using MRI</td>
<td>Neurological Foundation of New Zealand</td>
<td>$178,551</td>
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<td>2013</td>
<td>Dr Chris Pemberton</td>
<td>EPO signal peptides and the detection of recombinant EPO</td>
<td>World Anti-Doping Agency</td>
<td>$160,254</td>
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<td>2014</td>
<td>Dr Barry Palmer</td>
<td>s-Flt-1 as a diagnostic and prognostic marker of congestive heart failure</td>
<td>National Heart Foundation of NZ</td>
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<td>2013</td>
<td>A/P Miriam Rademaker</td>
<td>Kidney injury in heart failure: Underlying mechanisms and potential therapy</td>
<td>National Heart Foundation of NZ</td>
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<td>Dr Tracy Melzer</td>
<td>Imaging markers of imminent cognitive decline in Parkinson’s disease</td>
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<td>2013</td>
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<td>Making better clinical decisions to prevent kidney disease</td>
<td>Health Research Council of NZ</td>
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<td>2014</td>
<td>Prof Lisa Stamp</td>
<td>Managing gout in the community</td>
<td>Health Research Council of NZ</td>
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<td>2013</td>
<td>Prof Chris Charles</td>
<td>Novel ANP/BNP peptides in ischaemia/reperfusion injury</td>
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<td>2013</td>
<td>Dr Tim Prickett</td>
<td>Plasma NTproCNP: a putative marker of vascular risk</td>
<td>NZ Lottery Grants Board</td>
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<td>2013</td>
<td>Dr Leigh Ellmers</td>
<td>The role of hydrogen sulphide post myocardial infarction</td>
<td>National Heart Foundation of NZ</td>
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<td>2014</td>
<td>Dr Tracy Melzer</td>
<td>MRI to predict dementia in Parkinson’s disease</td>
<td>Canterbury Medical Research Foundation</td>
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<td>2014</td>
<td>Dr Leigh Ellmers</td>
<td>Can hydrogen sulphide treatment protect heart structure and function after a heart attack?</td>
<td>NZ Lottery Grants Board</td>
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<td>2013</td>
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<td>An evidence framework for protecting kidney function</td>
<td>Canterbury Medical Research Foundation</td>
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### 2013

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<td>2013</td>
<td>Dr Tracy Melzer</td>
<td>Four year serial MRI and cognition in Parkinson’s disease</td>
<td>NZ Lottery Grants Board</td>
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<td>2013</td>
<td>Dr Claire Heppenstall</td>
<td>Telephone follow-up to reduce adverse outcomes in frail elders</td>
<td>NZ Lottery Grants Board</td>
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*GST exclusive

### Commercial Contracts

<table>
<thead>
<tr>
<th>Year</th>
<th>Organisation</th>
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</table>
| 2013-14 | Alere San Diego Inc  
|         | Amgen Australia Pty Ltd  
|         | BioMarin Pharmaceutical Inc  
|         | Canterbury District Health Board  
|         | Covance Pty Ltd (Roche)  
|         | Medical Research Institute of New Zealand  
|         | Medtronic International Ltd (Singapore Branch)  
|         | Otago Innovation Limited  
|         | PharmaNet-i3  
|         | Roche (Switzerland)  
|         | Zespri International Ltd  |

Total $509,829

### Postgraduate Students

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### Awards and Honours

<table>
<thead>
<tr>
<th>Year</th>
<th>Recipient</th>
<th>Award</th>
</tr>
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<tbody>
<tr>
<td>2014</td>
<td>Dr Anna Pilbrow</td>
<td>Early Career Award for Distinction in Research, University of Otago</td>
</tr>
<tr>
<td>2014</td>
<td>Dr Ken Chin</td>
<td>Exceptional PhD thesis, Division of Health Sciences</td>
</tr>
<tr>
<td>2013</td>
<td>A/P Suetonia Palmer</td>
<td>Rutherford Discovery Fellowship, Royal Society of New Zealand</td>
</tr>
<tr>
<td>2013</td>
<td>Dr Jeffrey Ngu</td>
<td>Exceptional PhD thesis, Division of Health Sciences</td>
</tr>
<tr>
<td>2013</td>
<td>Dr Allamanda Faatoese</td>
<td>Eru Pomare Postdoctoral Fellowship, Health Research Council of New Zealand</td>
</tr>
</tbody>
</table>
DEPARTMENT OF OBSTETRICS AND GYNAECOLOGY

Head of Department: Associate Professor Peter Sykes
Email: peter.sykes@otago.ac.nz
Website: otago.ac.nz/christchurch/departments/obgyn

The Department of Obstetrics and Gynaecology has a number of established research projects in progress which are funded from a variety of sources. The main themes are maternal and fetal medicine, gynaecological cancer, endocrine regulation of reproduction, and reproductive steroids in cardiovascular disease.

Staff are members of a number of advisory bodies, serve on a variety of grant assessing committees including the HRC, are guest editors of international journals, present invited talks at international conferences and peer review journal submissions and grant applications.

Major Areas of Research Strength

Gynaecological cancer and precancer
The Department is closely affiliated with the regional gynaecological cancer service as well as local colposcopy and pathology services. Such collaborative links permit bench to bedside research. The Department takes part in, and leads, international multicentre clinical trials, local clinical trials, retrospective clinical studies and commercial research.

Cell and protein regulation
The Laboratory for Cell and Protein Regulation is interested in characterising the communities of chemical factors that make up physiological systems and to describe the dynamic interactions that occur. The main research themes are gynaecological cancers, endocrine regulation of reproduction, female fertility, and assessment of fetal welfare. The research is undertaken in collaboration with other scientists both locally and internationally in basic science and clinical areas. There have been long-standing interactions with the Schools of Biological Sciences and Engineering at the University of Canterbury.

Website: otago.ac.nz/christchurch/research/cellproteinregulation

Maternal and fetal medicine
Research covers both maternal and fetal health and outcomes. One area of research interest is database development. Ongoing data is collected for the (i) Fetal Medicine Clinical Unit which reviews women with complicated fetal problems or those at risk for them, and the (ii) Maternal Medical Clinic where women with underlying medical problems attend. This enables both audit and follow up of specific cases. The Department is also running two substantial local studies exploring the prognostic value of HbA1c and C-type Natriuretic Peptide (CNP) in pregnancy. Researchers in the department are also involved in multicentre trials related to control of hypertension in pregnancy, preterm birth and predictors of preeclampsia.

Website: otago.ac.nz/christchurch/research/maternalfetalhealth

External Grants > $10,000 Awarded 2013-2014

<table>
<thead>
<tr>
<th>Year</th>
<th>PI</th>
<th>Project Title</th>
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<tr>
<td>2013</td>
<td>A/P Peter Sykes</td>
<td>The conservative management of young women with CIN2</td>
<td>Health Research Council of NZ</td>
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<td>2013</td>
<td>Dr Joanna Gullam</td>
<td>Magneta: Magnesium sulphate at 30 to 34 weeks gestational age – neuroprotection trial</td>
<td>National Health and Medical Research Council (subcontract)</td>
<td>$48,800</td>
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<td>2014</td>
<td>Dr Kenny Chitcholtan</td>
<td>Targeting EGFR/Her-2 co-activation in ascitic ovarian cancers</td>
<td>Ovarian Cancer Research Foundation</td>
<td>$32,538</td>
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<td>2014</td>
<td>Dr Ruth Hughes</td>
<td>Intensity of glycaemic control in gestational diabetes: impact on health</td>
<td>Health Research Council of NZ (subcontract)</td>
<td>$31,730</td>
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<tr>
<td>2013</td>
<td>Dr Kenny Chitcholtan</td>
<td>Targeting EGFR/Her-2 co-activation in ascitic ovarian cancers</td>
<td>Ovarian Cancer Research Foundation</td>
<td>$18,502</td>
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*GST exclusive

Postgraduate Students

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</tr>
<tr>
<td>Master’s thesis</td>
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</tbody>
</table>

DIVISION OF HEALTH SCIENCES 73
DEPARTMENT OF ORTHOPAEDIC SURGERY AND MUSCULOSKELETAL MEDICINE

Head of Department: Professor Gary Hooper
Email: gary.hooper@otago.ac.nz
Website: otago.ac.nz/christchurch/departments/orthomsm

The Department of Orthopaedic Surgery and Musculoskeletal Medicine is unique in New Zealand in that both the academic and service departments are combined so that the surgical and medical components of musculoskeletal diseases and injuries come under the roof of one department.

The focus of departmental research is embodied in our mission statement of "Improving the ACTIVE function of all." There are four separate themes of research each headed by a member of the Department who is dedicated to the area of research.

Improving tissue healing and repair in the musculoskeletal system
This theme involves our tissue engineering and regenerative medicine group which examines strategies which aim to combine a patient's own cells, biodegradable scaffolds and growth factors which potentially may offer considerable advantages over current surgical interventions used to repair or regenerate damaged tissues following trauma or disease. This is the focus of the Christchurch Regenerative Medicine and Tissue Engineering Group (CReaTE). Using advanced 3D scaffolds and in-vitro culture techniques, combined with adult human stem cells, this group is attempting to identify the complex cellular environments controlling tissue growth in 3D. We are also researching their application in translating cell-based therapies to the clinic. Areas of particular interest include: articular cartilage and bone regeneration, advanced scaffold design and biofabrication, orthopaedic medical device design and research related to spine and total joint arthroplasty interventions.

Improving clinical outcomes in musculoskeletal conditions
This theme is centered around prospective clinical outcome studies, with several randomised controlled trials assessing the outcome following surgery. Studies underway are mainly long term prospective outcome studies on various types of total joint replacements. In addition the department is responsible for the National Joint Replacement Registry which was established by the New Zealand Orthopaedic Association to record information about total hip and knee surgery performed in New Zealand (including patient outcome measures) and includes all joint replacements performed in this country since 1999. The registry now has over 200,000 patients and has been the basis of multiple published studies on outcomes following replacement surgery. Several collaborative studies investigating varied outcome measures are underway including: joint replacement revision due to infection (Pathology/Infectious Disease Departments, UOC), bone density adjacent to implants (Health Care of the Elderly Department), acoustic monitoring of implants (Engineering, University of Canterbury), as well as ongoing assessment of wear in implants with different articulations.

Improving rehabilitation after musculoskeletal injury
This theme explores the rehabilitation outcomes following traumatic injuries and surgical intervention with an emphasis on joint replacement and spinal injuries. Reconstructive surgery for tetraplegia has been carried out at the Spinal Injuries Unit at Burwood Hospital since 1982. The Unit is now one of the leaders in the world, not only for the surgery itself but also for outcome studies including the development of new surgical procedures. An active research programme includes studies into: changes in tendon length during postsurgical rehabilitation; development of a device for accurate measurement of joint torque; patterns of shoulder motion; and wheelchair kinematics. A spinal cord injury registry is being developed in collaboration with Vancouver to improve our national database.

Improving pain management in musculoskeletal disorders
This theme investigates the problem of ongoing pain following musculoskeletal conditions including psycho-social causes, concentrating on unexplained pain and methods for improving patient outcomes.
External Grants > $10,000 Awarded 2013-2014

<table>
<thead>
<tr>
<th>Year</th>
<th>PI</th>
<th>Project Title</th>
<th>Funder</th>
<th>$*</th>
</tr>
</thead>
<tbody>
<tr>
<td>2014</td>
<td>Dr Tim Woodfield</td>
<td>Amplifying bone growth in titanium implants</td>
<td>Ministry of Business, Innovation and Employment</td>
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<td>2014</td>
<td>Dr Tim Woodfield</td>
<td>Establishment of an NZ-Korea Regenerative Medicine Consortia for Treating Cartilage Disease in Humans and Horses</td>
<td>Ministry of Business, Innovation and Employment</td>
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<td>2013</td>
<td>Dr Tim Woodfield</td>
<td>3D BioPlotter shared equipment for Biomedical research</td>
<td>New Zealand Lottery Grants Board</td>
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<tr>
<td>2014</td>
<td>Dr Tim Woodfield</td>
<td>Drains that actually drain: Fundamental re-design of surgical drainage catheters</td>
<td>MedTech CoRE Seed project (subcontract)</td>
<td>$50,000</td>
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<td>2014</td>
<td>Dr Tim Woodfield</td>
<td>Developing Advanced Histology Capabilities for Evaluating Treatments of Acetabular Defects</td>
<td>New Zealand Orthopaedic Association</td>
<td>$15,816</td>
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<td>2014</td>
<td>Dr Tim Woodfield</td>
<td>Three Dimensional Printing of the Intervertebral Disc</td>
<td>Royal Society of New Zealand</td>
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*GST exclusive

Commercial Contracts

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<tr>
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<td>Johnson &amp; Johnson (New Zealand)</td>
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<td>Stryker Australia Pty Ltd</td>
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Postgraduate Students

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Awards and Honours

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<tr>
<th>Year</th>
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<th>Award</th>
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<tr>
<td>2014</td>
<td>Emeritus Prof Alastair Rothwell</td>
<td>Lifetime Award for Excellence, the Australia and New Zealand Spinal Cord Society</td>
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<tr>
<td>2014</td>
<td>Emeritus Prof Alastair Rothwell</td>
<td>Colin McRae Medal, Royal Australasian College of Surgeons</td>
</tr>
<tr>
<td>2014</td>
<td>Dr Bronwyn Lennox Thompson</td>
<td>Outstanding Teaching Award, University of Otago, Christchurch</td>
</tr>
</tbody>
</table>
The Department of Paediatrics has an active research programme. Long-established research interests include paediatric urology especially reflux, community child health, sudden infant death syndrome, and neonatal research. Ongoing research activities include respiratory medicine, gastroenterology, nutrition, neonatal medicine, infectious diseases and childhood cancer.

Major Areas of Research Strength

Neonatology
The Cure Kids Chair in Paediatric Research is held in the Department by Professor Brian Darlow. Research interests concern the care of newborn, sick and premature babies, including trying to identify the causes of health problems associated with premature birth and ways to prevent them. Follow-up studies of the health outcomes of extremely premature infants are also carried out. A specific interest is free radical disease in the newborn.

Childhood cancer
The Children's Cancer Research Group is working on a variety of projects, from the basic biology of cancer in children, to the complex long-term effects of its treatment. Researchers are interested in the biology and genetics of childhood solid tumours. Current projects involve investigating the molecular genetics of neuroblastomas and hepatoblastomas using microarray gene expression technology, tissue arrays and protein analysis. More specifically, projects are underway to investigate the role of histone methylation and DNA methylation in both neuroblastoma and hepatoblastoma, and the role of the sonic hedgehog developmental pathway in paediatric solid tumours.

Gastrointestinal disorders
In recent years, a new research focus has been developed on host:pathogen interactions within the gastrointestinal tract, with particular emphasis upon inflammatory bowel disease (IBD) and Crohn’s disease. Underway at present is the Crohn’s and Colitis in Children Study and the Nutritional Therapy and Gut Inflammation in Crohn’s Disease Study.

External Grants > $10,000 Awarded 2013-2014

<table>
<thead>
<tr>
<th>Year</th>
<th>PI</th>
<th>Project Title</th>
<th>Funder</th>
<th>$*</th>
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<tbody>
<tr>
<td>2013</td>
<td>Prof Andrew Day</td>
<td>Chronic gastrointestinal consequences of acute Campylobacter infection</td>
<td>New Zealand Lottery Grants Board</td>
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<tr>
<td>2014</td>
<td>A/P Philip Pattemore</td>
<td>COMBAT CF: Can Azithromycin prevent bronchiectasis in infants with cystic fibrosis</td>
<td>Health Research Council of NZ (subcontract)</td>
<td>$72,150</td>
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<tr>
<td>2014</td>
<td>A/P Philip Pattemore</td>
<td>COMBAT CF: Can Azithromycin prevent bronchiectasis in infants with cystic fibrosis</td>
<td>Health Research Council of NZ (subcontract)</td>
<td>$39,579</td>
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<td>2013</td>
<td>Prof Andrew Day</td>
<td>Nutritional modulation of gut inflammation in adults with newly diagnosed Crohn’s disease</td>
<td>New Zealand Society of Gastroenterology</td>
<td>$35,000</td>
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</table>

*GST exclusive

Postgraduate Students

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<tbody>
<tr>
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</table>
The Department of Pathology is one of the largest and most research intensive departments at the University of Otago, Christchurch. Research groups within the Department include: the Centre for Free Radical Research; the Gene Structure and Function Laboratory; the Haematology Research Group; the Inflammation Research Group; the Mackenzie Cancer Research Group; The Infection Group and the Molecular Pathology Laboratory. The Department also hosts the Carney Centre for Pharmacogenetics.

Major Areas of Research Strength

Free radical research
Free radical biology, carried out in the Centre for Free Radical Research is one of the Department's major research interests. The Centre consists of biochemists and cell biologists undertaking a range of interrelated research projects on aspects of oxidative stress and antioxidant action. Current areas of research include: oxidant production by neutrophils, with emphasis on the enzymology of myeloperoxidase; the molecular and cellular reactions of the neutrophil oxidant, hypochlorous acid; mechanisms and consequences of thiol protein oxidation; redox regulation of cell signalling; oxidative stress and apoptosis; radical scavenging mechanisms and reactions of superoxide radicals. The group has an active programme of developing biomarker assays for specific oxidants and applying them to investigating oxidative injury in disease. Collaborative clinical projects include investigations of the role of oxidants in lung disease and brain injury in premature infants, cystic fibrosis, inflammatory conditions such as asthma, gout and sepsis; and gastrointestinal diseases.

Website: otago.ac.nz/christchurch/research/freeradical

Cancer research
The Mackenzie Cancer Research Group is investigating the biology of human tumours with a focus on the molecular regulation of blood (angiogenesis) and lymphatic vessel formation (lymphangiogenesis) and function during human tumour growth and metastasis. Specific research interests include: expression and regulation of angiogenic factors in human cancers; effects of the tumour microenvironment on tumour angiogenesis; targeting tumour endothelium; links between cancer, inflammation, and thrombosis; ethnicity and cancer biology; metabolism, insulin resistance and chronic low-grade inflammation in cancer biology; and skin cancers in immune-suppressed renal transplant recipients.

Website: otago.ac.nz/christchurch/research/mackenzie/otago011636.html

Gene structure and function
Much of the current research centres on the areas of psychiatric genetics and pharmacogenetics (the impact of genetic variation on responses to drugs) and is carried out within the Gene Structure and Function Laboratory. The laboratory's psychiatric genetics research is a collaboration with Professor Peter Joyce in the Department of Psychological Medicine. Another important collaboration exists with the Christchurch Health and Development Study. Laboratory expertise includes DNA banking, gene structure and expression analysis, polymorphism discovery and genotyping, DNA sequence analysis, tissue culture, proteomics, microarray analysis, and genomics.

Website: otago.ac.nz/christchurch/research/genestructure

Infectious diseases
The Infection Group is a research collaboration between scientists and clinicians from the University of Otago and the Canterbury District Health Board. The group is interested in all aspects of human infection, and research aims to provide new insights into the prevention, management, surveillance and control of infections of global importance. The Group is currently involved in projects based in Africa and Asia, as well as in New Zealand. The group has expertise in the following areas: adult and paediatric infectious diseases, clinical microbiology and diagnostic test development, epidemiology, pharmacology and antimicrobials, vaccinology, clinical trials, and surveillance.

Website: otago.ac.nz/infection-group

Inflammation
The Inflammation Research Group has an active research programme on the molecular pharmacology and molecular pathology of various inflammatory conditions such as acute pancreatitis, polymicrobial sepsis and burns with the long-term goal of developing clinically effective therapeutic approaches.

Website: otago.ac.nz/christchurch/research/inflammation

Molecular pathology
The Molecular Pathology Laboratory is one of the leading molecular diagnostic laboratories in Australasia. The group is a collaboration between scientists from the University of Otago and Canterbury Health Laboratories. The group perform a wide range of diagnostic DNA genetic analyses for inherited disorders and are continually developing new tests for these disorders.
The research focus of the group originates from, and is under pinned by, its role in providing a molecular diagnosis for a host of diverse genetic and acquired diseases. The group has made a major contribution to the understanding of molecular disease at the DNA, RNA, protein and whole organ level, and provided unique insights into the intracellular processing of proteins, and protein conformational disease.

### External Grants $>40,000 Awarded 2013-2014

<table>
<thead>
<tr>
<th>Year</th>
<th>PI</th>
<th>Project Title</th>
<th>Funder</th>
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</thead>
<tbody>
<tr>
<td>2014</td>
<td>Prof David Murdoch</td>
<td>Legionnaires’ disease in New Zealand: improving diagnostics and treatment</td>
<td>Health Research Council of NZ</td>
<td>$999,467</td>
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<td>2013</td>
<td>Prof Anthony Kettle</td>
<td>Tying knots in proteins with chlorine bleach: Novel post-translational modifications catalysed by mammalian peroxidases</td>
<td>Royal Society of New Zealand</td>
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<td>2014</td>
<td>Prof Mark Hampton</td>
<td>Redox regulation of necroptotic cell death</td>
<td>Royal Society of New Zealand</td>
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<tr>
<td>2014</td>
<td>Dr Margaret Currie</td>
<td>Improving chemotherapy outcome in obese breast cancer patients</td>
<td>Cancer Society of New Zealand</td>
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<td>2013</td>
<td>Prof Christine Winterbourn</td>
<td>Testing for the efficacy of functional foods: Collaborative development of an assay to determine impacts of foods on antioxidant activity</td>
<td>Ministry of Business, Innovation and Employment</td>
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<td>Dr Caroline Kuiper</td>
<td>Control of epigenetics and HIF-1 by hydroxylases</td>
<td>Genesis Oncology Trust</td>
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<td>2013</td>
<td>A/P Gabi Dachs</td>
<td>The role of ascorbate in controlling hypoxia in renal cell carcinoma</td>
<td>Genesis Oncology Trust</td>
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<tr>
<td>2014</td>
<td>Dr Amy Scott-Thomas</td>
<td>Can a non-invasive breath test distinguish between a non-mucoid and mucoid P. aeruginosa infection in the cystic fibrosis lung?</td>
<td>Cure Kids</td>
<td>$104,091</td>
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<tr>
<td>2013</td>
<td>Dr Heather Parker</td>
<td>Superoxide dismutase and infection with Mycobacterium tuberculosis</td>
<td>Canterbury Medical Research Foundation</td>
<td>$82,019</td>
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<tr>
<td>2014</td>
<td>Dr Nina Dickerhof</td>
<td>Oxidative stress in the pathology and treatment of cystic fibrosis</td>
<td>Canterbury Medical Research Foundation</td>
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<td>2014</td>
<td>Dr Amy Scott-Thomas</td>
<td>Development of a non-invasive breath test for Legionnaires’ disease</td>
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<tr>
<td>2014</td>
<td>Dr Stephanie Bozonet</td>
<td>Regulation of endothelial cell death by hypothiocyanous acid</td>
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<td>Dr Paul Pace</td>
<td>Redox regulation of neuronal development by the antioxidant Prx2</td>
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<td>Prof Mark Hampton</td>
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<td>Evaluation of pneumococcal conjugate vaccine effectiveness and impact in urban Nepal</td>
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<td>Dr Louisa Forbes</td>
<td>Screening for potent inhibitors of myeloperoxidase</td>
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<td>2013</td>
<td>Dr Logan Walker</td>
<td>Cytomegalovirus and Epstein-Barr virus in breast cancer</td>
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<td>Prof Margreet Vissers</td>
<td>High performance liquid chromatography pump and analyser with electrochemical detection capability</td>
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*GST exclusive
Commercial Contracts

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Awards and Honours

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<th>Award</th>
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<tbody>
<tr>
<td>2014</td>
<td>Prof Martin Kennedy</td>
<td>Gold Medal for Research, University of Otago, Christchurch</td>
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<tr>
<td>2014</td>
<td>A/P Gabi Dachs</td>
<td>Teaching Award, University of Otago, Christchurch</td>
</tr>
<tr>
<td>2014</td>
<td>Dr Gavin Harris</td>
<td>Teaching Award, University of Otago, Christchurch</td>
</tr>
<tr>
<td>2014</td>
<td>Dr Margaret Currie</td>
<td>Teaching Award, University of Otago, Christchurch</td>
</tr>
<tr>
<td>2014</td>
<td>Dr Sean MacPherson</td>
<td>Christchurch Medical Students’ Association, Best Vertical Module – 4th and 5th Years</td>
</tr>
<tr>
<td>2014</td>
<td>Annika Seddon (PhD student)</td>
<td>Postgraduate Tassell Scholarship in Cancer Research</td>
</tr>
<tr>
<td>2014</td>
<td>Helena Trollope</td>
<td>Best Laboratory Project Prize, University of Otago, Christchurch Summer Student programme</td>
</tr>
<tr>
<td>2014</td>
<td>Sam Hall-McMaster</td>
<td>Best Overall Project Prize, University of Otago, Christchurch Summer Student programme</td>
</tr>
<tr>
<td>2013</td>
<td>Prof David Murdoch</td>
<td>Gold Medal for Research, University of Otago, Christchurch</td>
</tr>
<tr>
<td>2013</td>
<td>Dr Jack Rivers-Auty</td>
<td>Career Development Postdoctoral Fellowship, Division of Health Sciences</td>
</tr>
<tr>
<td>2013</td>
<td>Helen Morrin</td>
<td>Award for Exceptional Performance by a member of the general staff, University of Otago</td>
</tr>
<tr>
<td>2013</td>
<td>Dr Andrew Miller</td>
<td>Teaching Award, University of Otago, Christchurch</td>
</tr>
<tr>
<td>2013</td>
<td>Dr Alastair Murray</td>
<td>Teaching Award, University of Otago, Christchurch</td>
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<tr>
<td>2013</td>
<td>Dr Sean MacPherson</td>
<td>Christchurch Medical Students’ Association, Best Vertical Module – 4th Year</td>
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<td>2013</td>
<td>Dr Sean MacPherson</td>
<td>Christchurch Medical Students’ Association, Best Vertical Module – 5th Year</td>
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<tr>
<td>2013</td>
<td>Hannah Palmer</td>
<td>Best Overall Project Prize, University of Otago, Christchurch Summer Student programme</td>
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<tr>
<td>2013</td>
<td>Dr Caroline Kuiper</td>
<td>Exceptional PhD thesis, Division of Health Sciences</td>
</tr>
</tbody>
</table>
Research in our Department draws from a broad range of disciplines, all of which are essential to addressing public health issues. Embracing the significant overlap and synergy between the three broad groupings represented in the Department; Epidemiology and Biostatistics, Environment and Health, Social Science, Humanities and Health, our researchers focus on areas such as:

- The marginalisation of vulnerable populations
- Public health economics
- Quality and safety in health care
- Infectious disease
- Surveillance and management
- Food environments
- Hauora Māori
- Health promotion
- Public health pedagogy

Staff are also actively involved in the public health field as advocates offering advice to government, in professional associations and working with public health services and groups in the community.

Major Areas of Research Strength

Public health draws from a wide range of disciplines. The Department has core strengths in the fields of qualitative methods and the application of understandings from social science and humanities to issues in public health. Key areas of existing and emerging research include: living with chronic diseases; understanding and improving outcomes for vulnerable population groups; managing role change for health professionals; and identifying and mitigating the impact of unintended negative consequences of public health interventions and public policy analysis. Departmental research into the impact of legislation on the health and safety of sex workers in New Zealand has been influential in informing policy both in New Zealand as well as internationally.

External Grants Awarded 2013-2014

<table>
<thead>
<tr>
<th>Year</th>
<th>PI</th>
<th>Project Title</th>
<th>Funder</th>
<th>$*</th>
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<tbody>
<tr>
<td>2013</td>
<td>Dr Gillian Abel</td>
<td>The 'lived experience' of HIV: ageing, place and social isolation</td>
<td>New Zealand Lottery Grants Board</td>
<td>$51,400</td>
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*GST exclusive

Commercial Contracts

<table>
<thead>
<tr>
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<td>2013-14</td>
<td>Health and Safety Commission</td>
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<tr>
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Postgraduate Students

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Awards and Honours

<table>
<thead>
<tr>
<th>Year</th>
<th>Recipient</th>
<th>Award</th>
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<tbody>
<tr>
<td>2014</td>
<td>Dr Lee Thompson</td>
<td>Award for outstanding contribution to teaching, University of Otago</td>
</tr>
<tr>
<td>2014</td>
<td>Jen Desrosiers</td>
<td>Best Convenor 4th Year, Christchurch Medical Students’ Association Awards</td>
</tr>
<tr>
<td>2013</td>
<td>Jen Desrosiers</td>
<td>Best Convenor 5th Year, Christchurch Medical Students’ Association Awards</td>
</tr>
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</table>
The Department of Psychological Medicine is one of the largest Departments at the University of Otago, Christchurch and has a very active research programme. The Department hosts a number of research groups including: the Christchurch Health and Development Study; the Mental Health Clinical Research Unit; and the National Addiction Centre.

Major Areas of Research Strength

**Life course research**
The Christchurch Health and Development Study (CHDS) has been in existence for more than thirty years. During this time it has followed the health, education and life progress of a group of 1,265 children born in the Christchurch urban region during mid 1977. This cohort has now been studied from infancy into childhood, adolescence and adulthood. Research projects in this study span a wide range of disciplines including psychology, psychiatry, epidemiology, paediatrics, health economics and sociology.

**Mental health research**
The Clinical Research Unit (Mental Health) continues to be involved with a platform of research related to improving current treatments of serious mental disorders. This has primarily involved conducting randomised controlled medication trials and comparative psychotherapy trials. Research themes include: examining the influence of genetics; brain imaging and neuropsychological functioning; personality functioning; thinking styles; the psychobiology of conditions; and therapy-related factors in relation to the effectiveness of treatments.

**Addiction research**
The National Addiction Centre (NAC) is dedicated to developing and promoting effective interventions for people with alcohol, drug and addiction related problems in Aotearoa New Zealand. Ongoing research projects include: Treatment Evaluation of Alcohol and Mood (TEAM) Study; Youth Retention Study; CUDIT Revision Study; Odyssey Youth Outcome Study; The Effectiveness of Naltrexone in Reducing the Craving of People with Pathological Gambling; Resilience in Indigenous Health Networks; Nicotine Study; and Development of Māori AOD Services and Workforce in Aotearoa New Zealand.

**External Grants > $10,000 Awarded 2013-2014**

<table>
<thead>
<tr>
<th>Year</th>
<th>PI</th>
<th>Project Title</th>
<th>Funder</th>
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<tr>
<td>2013</td>
<td>Prof Doug Sellman</td>
<td>Recovery from obesity - Kia Akina: A community-based food addiction programme</td>
<td>Health Research Council of NZ</td>
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<td>2014</td>
<td>Dr Sally Keeling</td>
<td>Enabling participation by all older people: Targeting the past and future predictors of ageing well</td>
<td>Ministry of Business, Innovation and Employment (subcontract)</td>
<td>$61,110</td>
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<td>2013</td>
<td>Dr Sally Keeling</td>
<td>The participation of older people</td>
<td>Ministry of Business, Innovation and Employment (subcontract)</td>
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<td>2013</td>
<td>Dr Jenny Jordan</td>
<td>Changing narratives and post-traumatic stress disorder after the Christchurch earthquakes</td>
<td>New Zealand Lottery Grants Board</td>
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<tr>
<td>2014</td>
<td>Prof David Fergusson</td>
<td>Investigating the relationships between alcohol and other drug use, mental health, early-life factors and life course outcomes</td>
<td>National Health and Medical Research Council (subcontract)</td>
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<tr>
<td>2013</td>
<td>A/P Lois Surgenor</td>
<td>Outcomes after mild traumatic brain injury</td>
<td>Health Research Council of NZ (subcontract)</td>
<td>$15,916</td>
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*GST exclusive*
### Commercial Contracts

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### Postgraduate Students

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</table>
The Department has a small but active research programme. Recent research projects include: the development of a national thoracic aortic stent database to collect and assess data from all implants performed in New Zealand; the development of new detectors that have applications in medical imaging; and bioengineering and nanomedicine.

Major Areas of Research Strength

Bioengineering and nanomedicine
Researchers in the department are involved in the University of Otago Centre for Bioengineering and Nanomedicine. The Centre aims to facilitate the commercial delivery of biomedical and scientific innovations for the benefit of New Zealand and the international community. Research within the Centre at UOC is currently focused on medical imaging, tissue engineering, and medical computing.

Aneurysm repair
Research seeks to evaluate the safety and efficacy of new devices and techniques in interventional radiology.

External Grants Awarded 2013-2014

<table>
<thead>
<tr>
<th>Year</th>
<th>PI</th>
<th>Project Title</th>
<th>Funder</th>
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<tbody>
<tr>
<td>2014</td>
<td>A/P Anthony Butler</td>
<td>Taking MARS spectral CT to human imaging</td>
<td>Ministry of Business, Innovation and Employment (subcontract)</td>
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<td>A/P Anthony Butler</td>
<td>USA collaboration for MARS spectral CT</td>
<td>Royal Society of New Zealand</td>
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<tr>
<td>2014</td>
<td>Dr Raja Aamir</td>
<td>Spectral imaging for non-invasive quantification of gold nanoparticles in a model mouse tumour</td>
<td>Cancer Society of New Zealand</td>
<td>$3,000</td>
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*GST exclusive

Postgraduate Students

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Awards and Honours

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<th>Award</th>
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<td>Kishore Rajendran (PhD student)</td>
<td>RHT Bates Scholarship, Royal Society of New Zealand</td>
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<tr>
<td>2014</td>
<td>Dr Mike Hurrell</td>
<td>Outstanding Teacher Award, University of Otago, Christchurch</td>
</tr>
</tbody>
</table>
DEPARTMENT OF SURGERY

Head of Department: Professor Frank Frizelle
Email: frank.frizelle@cdhb.govt.nz
Website: otago.ac.nz/christchurch/departments/surgery

Major research interests in the Department of Surgery include emergency medicine; gastrointestinal research; ophthalmology; otolaryngology; general, oral and maxillofacial, paediatric, vascular, endovascular and transplant surgery; and urology. Another focus is in the Developmental Genetics Research Group, working in collaboration with Paediatrics.

Major Areas of Research Strength

Gastrointestinal research
Within the department, a range of projects relating to host-pathogen interactions in the human gut are being carried out, with particular emphasis on understanding how carriage of specific bacterial species may be associated over time with increased risk of pre-cancerous changes in the colon and rectum. The department is also involved in research into the molecular basis of colorectal cancer, and in collaboration with the McKenzie Cancer Group is undertaking a clinical study of RNA biomarkers in CRC. In addition, a clinical study of the effect of high dose vitamin C on CRC cells has commenced, in collaboration with the Centre for Free Radical Research.

Emergency medicine
Research includes diagnostic decision-making, particularly in relation to the diagnosis of acute coronary syndrome and venous thromboembolism, the health implications of seismic events, toxicology, ethics and emergency nursing.

General surgery
The department has considerable expertise in clinically-based research. A number of clinical trials are underway including: A La CaRT – an Australasian multicentre randomised controlled trial of laparoscopic versus open resection for rectal cancer; and the Cimetidine trial – a multicentre phase 3 randomised controlled trial on the effect of Cimetidine on outcomes in patients with colorectal cancer.

The role of mindfulness in improving survivorship amongst patients with colorectal cancer is being explored in a multidisciplinary team involving nursing and psychiatry departments of the UOC. Other work looking at outcome and quality of life after treatment for locally recurrent rectal cancer is being undertaken as part of an international research group focused on management of recurrent rectal cancer.

In addition to colorectal cancer, the department has a strong track record with research in diverticulitis and inflammatory bowel disease and has a number of on-going projects researching the natural history and outcomes of these diseases.

External Grants Awarded 2013-2014

<table>
<thead>
<tr>
<th>Year</th>
<th>PI</th>
<th>Project Title</th>
<th>Funder</th>
<th>$*</th>
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</thead>
<tbody>
<tr>
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<td>Prof Justin Roake</td>
<td>Vascular research fund</td>
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<tr>
<td>2014</td>
<td>Dr Jacqueline Keenan</td>
<td>Gut bacteria and colorectal cancer</td>
<td>Rotary Club of Christchurch, Sunrise Charitable Trust</td>
<td>$6,000</td>
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<tr>
<td>2014</td>
<td>Dr Jacqueline Keenan</td>
<td>STX2 Electrode in EVOM</td>
<td>Cancer Society of New Zealand – Canterbury/West Coast Division</td>
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*GST exclusive

Postgraduate Students

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<tr>
<td>Master’s thesis</td>
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</table>
CENTRE FOR POSTGRADUATE NURSING STUDIES

Centre Director: Dr Philippa Seaton
Email: philippa.seaton@otago.ac.nz
Website: otago.ac.nz/christchurch/departments/nursing

The Centre's research focus is on improving clinical outcomes for people with long-term, acute and complex conditions. Within this overarching focus, our research involves interventions for the management of long-term conditions such as diabetes and bipolar disorder, women’s health needs and for people with intellectual disability. This involves studies of both patient-centred and family-centred care. The Centre has a number of international and national collaborations and conducts research in the multidisciplinary environments that reflect the realities of the clinical practice world.

External Grants Awarded 2013-2014

<table>
<thead>
<tr>
<th>Year</th>
<th>PI</th>
<th>Project Title</th>
<th>Funder</th>
<th>$*</th>
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<tr>
<td>2014</td>
<td>Dr Beverley Burrell</td>
<td>A pilot intervention with older adults with long-term conditions</td>
<td>Canterbury Medical Research Foundation</td>
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<td>2013</td>
<td>A/P Lisa Whitehead</td>
<td>Building research capability: Nursing and allied health</td>
<td>Tertiary Education Commission (subcontract)</td>
<td>$9,280</td>
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<tr>
<td>2013</td>
<td>Dr Sandra Richardson</td>
<td>An exploration of nurses experiences of continuing educational studies during the Canterbury earthquakes</td>
<td>New Zealand Nursing Education and Research Foundation</td>
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*GST exclusive

Postgraduate Students

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Awards and Honours

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<th>Year</th>
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<th>Award</th>
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<tbody>
<tr>
<td>2013</td>
<td>Dr Mandie Foster</td>
<td>Centre for Postgraduate Nursing Studies Postdoctoral Fellowship</td>
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<tr>
<td>2013</td>
<td>Jenny Conder</td>
<td>University of Otago Outstanding Teaching Award</td>
</tr>
</tbody>
</table>
Major Areas of Research Strength

Rehabilitation
Research into the process and outcomes of rehabilitation is conducted at the Rehabilitation, Teaching and Research Unit (RTRU). Research is aimed at improving the quality of life of people with disabilities in New Zealand. Specific interests include qualitative methodologies, psychometrics, continence, kinetic video games, multiple sclerosis, rheumatic disorders, theory of mind, stroke, spinal cord injury and family therapy.
Website: otago.ac.nz/wellington/departments/medicine/postgraduate/rehabilitation

Asthma
The Wellington Asthma Research Group's (WARG's) research programme covers clinical, biomedical and public health aspects of allergy, asthma and respiratory research, including studies to understand the causes of these disorders and investigate novel treatments. The group is also part of the Housing and Health research programme and the ASPIRE network for tobacco control, both in the Department of Public Health. They also collaborate with UCLA Berkeley on studies of chronic hydrogen sulphide exposure and health.
Website: otago.ac.nz/wellington/research/waarg/otago016711.html

Sleep disorders
Sleep research is the focus of WellSleep – a comprehensive sleep investigation centre which carries out diagnosis, treatment and research into a variety of sleep disorders including sleep apnoea, nocturnal hypoventilation, periodic limb movements during sleep, narcolepsy, and parasomnias. Recent research topics include: Technical performance and patient acceptability of laboratory and home setup polysomnography; Effectiveness of two forms of positive airway pressure (CPAP and C-Flex™) in severe obstructive sleep apnoea; Measures of cardiovascular performance in adults with severe obstructive sleep apnoea; AutoPAP: it's effectiveness in severe obstructive sleep apnoea; Cardioventilatory coupling during sleep in human adults, children and infants; Factors affecting CPAP compliance in sleep apnoea patients; and Insomnia – evaluation of a new milk product.
Website: otago.ac.nz/wellington/about/services/wellsleep

External Grants > $10,000 Awarded 2013-2014

<table>
<thead>
<tr>
<th>Year</th>
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<th>Project Title</th>
<th>Funder</th>
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<tbody>
<tr>
<td>2013</td>
<td>Bernadette Jones</td>
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<td>Health Research Council of NZ</td>
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<td>Prof Julian Crane</td>
<td>Probiotic intervention to reduce streptococcal disease burden in New Zealand children</td>
<td>Health Research Council of NZ</td>
<td>$790,322</td>
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<td>2013</td>
<td>Dr Brent Caldwell</td>
<td>Taking the best NRT direct to smokers</td>
<td>Ministry of Health</td>
<td>$757,466</td>
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<tr>
<td>2014</td>
<td>Prof Julian Crane</td>
<td>Non-inflammatory mechanisms in asthma</td>
<td>Health Research Council of NZ (subcontract)</td>
<td>$118,692</td>
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<tr>
<td>2014</td>
<td>Prof Julian Crane</td>
<td>Prevention of the common cold with topical nasal Carrageenan</td>
<td>Health Research Council of NZ</td>
<td>$98,614</td>
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<tr>
<td>2013</td>
<td>Prof Mark Weatherall</td>
<td>Living well with neurological conditions: Toolkit</td>
<td>Health Research Council of NZ (subcontract)</td>
<td>$81,731</td>
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<tr>
<td>2013</td>
<td>Dr Richard Carroll</td>
<td>Mechanisms of obesity and type 2 diabetes: Insights from bariatric surgery</td>
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<tr>
<td>Year</td>
<td>Recipient</td>
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<td>Organisation and Grant holder</td>
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</tr>
<tr>
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</tr>
<tr>
<td>2013</td>
<td>Dr Kyle Perrin</td>
<td>RCT of invasive versus conservative treatment of pneumothorax</td>
<td>Health Research Council of NZ (subcontract)</td>
<td>45,507</td>
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<tr>
<td>2013</td>
<td>Prof Julian Crane</td>
<td>A new measurement system for fungal exposure: Are levels of qPCR fungi linked to new onset asthma in NZ children?</td>
<td>Asthma Foundation</td>
<td>33,833</td>
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<tr>
<td>2013</td>
<td>A/P Jean Hay-Smith</td>
<td>OPAL – optimal PFMT for aAherence Long-term</td>
<td>Secretary of State for Health UK (subcontract)</td>
<td>25,512</td>
</tr>
<tr>
<td>2013</td>
<td>Prof Mark Weatherall</td>
<td>Improving participatory outcomes in TBI: A feasibility study</td>
<td>Health Research Council of NZ (subcontract)</td>
<td>19,522</td>
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<tr>
<td>2014</td>
<td>A/P Rob Siebers</td>
<td>Umbilical cord serum cytokines and the development of atopic dermatitis in infancy</td>
<td>New Zealand Lottery Grants Board</td>
<td>15,315</td>
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<tr>
<td>2014</td>
<td>Dr Jeremy Krebs</td>
<td>Gut peptide responses following bariatric surgery: long term follow up and impact on diabetic status</td>
<td>Wellington Medical Research Foundation</td>
<td>13,000</td>
</tr>
</tbody>
</table>

*GST exclusive

### Commercial Contracts

<table>
<thead>
<tr>
<th>Year</th>
<th>Organisation</th>
</tr>
</thead>
</table>
| 2013-14 | AbbVie Limited  
Air Matters Ltd  
Canterbury District Health Board  
Fisher & Paykel Healthcare  
Medical Research Institute of New Zealand  
University of Auckland  
Washington State Building and Construction Trades Council |
|       | Total $131,959                                                             |

### Postgraduate Students

<table>
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<th>Total Head Count</th>
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### Awards and Honours

<table>
<thead>
<tr>
<th>Year</th>
<th>Recipient</th>
<th>Award</th>
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<tbody>
<tr>
<td>2014</td>
<td>Prof Julian Crane and colleagues</td>
<td>Prime Minister's Science Prize for He Kainga Oranga, the Housing and Health Research Programme</td>
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<tr>
<td>2014</td>
<td>Ben Johnston</td>
<td>Ramazzini Prize for best scientific paper by a trainee, Annual Scientific Meeting of the Australasian Faculty of Occupational and Environmental Medicine</td>
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<tr>
<td>2014</td>
<td>Emily Thomas (PhD student)</td>
<td>British Society of Rehabilitation Medicine grant for PhD studies</td>
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<tr>
<td>2013</td>
<td>Dr David Powell</td>
<td>Boothby Edwards Award, Aerospace Medicine Association</td>
</tr>
<tr>
<td>2013</td>
<td>Julie Myers</td>
<td>Prize for Best Research, Aeromedical Society of Australasia 25th Annual Scientific Meeting, Melbourne</td>
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</table>
Research interests in the Department of Obstetrics and Gynaecology are varied and include fertility and assisted reproductive techniques, endometrial cancers, renal disorders, prenatal diagnosis and therapy, endometriosis, incontinence following delivery, perinatal outcomes following caesarean section, perinatal pathology, and sudden infant death syndrome.

### Major Areas of Research Strength

**Reproductive medicine**

The Reproductive Medicine team within the Department is involved in collaborative research with the School of Biological Sciences, Victoria University of Wellington. Studies underway include: the possible regulatory role of proteins from the human egg in IVF patients undergoing intracytoplasmic sperm injection; a clinical audit of the effectiveness of two different approaches to the management of infertile patients presenting with anovulation.

### Awards and Honours

<table>
<thead>
<tr>
<th>Year</th>
<th>Recipient</th>
<th>Award</th>
</tr>
</thead>
<tbody>
<tr>
<td>2014</td>
<td>Prof Kevin Pringle</td>
<td>Lifetime Achievement Award, International Fetal Medicine and Surgery Society</td>
</tr>
</tbody>
</table>
The members of the Department of Paediatrics and Child Health are committed to conducting high quality research into common and important childhood diseases and to ensuring the knowledge gained is translated into improved adolescent and child health outcomes. Current research focuses on paediatric infectious disease; vascular complications of diabetes and hypoglycaemia; genetics of childhood epilepsy; respiratory control in newborn babies and preterm infants; long-term cardiovascular sequelae of prematurity; childhood asthma, eczema and allergy, and the effect of pre- and probiotics on the development of these disorders.

Major Areas of Research Strength

Epilepsy
The main research focus of the Wellington Epilepsy Research Group is epilepsy genetics. The aims are to identify new genetic epilepsy syndromes, refine emerging genetic epilepsy syndromes and to discover the causative genes for these epilepsies. Ultimately, this will lead to better and faster diagnosis, more accurate prognostic information, effective therapies and improved long term outcome for individuals with epilepsy. The methodology is based on sophisticated phenotyping and clinical genetic analysis followed by novel molecular genetic strategies. Researchers predominantly study children with severe epilepsy as well as large families with multiple affected individuals with epilepsy. There are international collaborative ties with epilepsy genetic research groups in Australia and the United States of America.

Sleep and breathing
Current research focuses on assessment of cardiorespiratory stability at neonatal discharge for very preterm infants. Another area of interest is the cause of perinatal death and SUDI. Staff are involved with the national SUDI case-control study. With regard to sleep in children, projects focus on parent knowledge about sleep, children's sleep problems and genetic predisposition to obstructive sleep apnoea.

Diabetes
Research in this area involves investigation of the acute and chronic complications of diabetes, particularly their pathophysiology and early development, and also treatment. The aims of this research are to identify factors involved in the early pathogenesis of the vascular complications of diabetes, when interventions will have the greatest effect. A particular current area of research is changes in heart rate variability in adolescents with diabetes.

Allergy probiotics, wheeze and infectious disease
Recent research has looked at the role of probiotics in preventing infant eczema, asthma and atopy; probiotics for the prevention of gestational diabetes; topical probiotics for childhood eczema and super-infection; comparing emollients in childhood eczema; Vitamin D and housing conditions in bronchiolitis; dampness and fungal spores in childhood wheeze; gut permeability in eczema; the use of exhaled nitric oxide in assessing asthma control; and predicting the effectiveness of allergen desensitization; exposure to feathers to prevent asthma; the microbiome of the lung in severe asthma; irreversible airways disease in asthma; paracetamol and asthma; the effect of probiotics on polymorphisms that predict eczema; probiotics and streptococcal sore throat. There are strong research links in these areas with the Wellington Asthma Research Group and the Housing and Health Research Programme.

Long-term physiological outcomes after extremely preterm birth
This is a newly developing research area for the Department. Initial studies have been completed looking at cardiorespiratory stability of preterm infants at time of discharge. Long-term follow-up studies looking at the effects of extreme prematurity on cardiac and respiratory function are being planned both in a preterm infant cohort and in a translational animal model paradigm.
## External Grants > $5000 Awarded 2013-2014

<table>
<thead>
<tr>
<th>Year</th>
<th>PI</th>
<th>Project Title</th>
<th>Funder</th>
<th>$*</th>
</tr>
</thead>
<tbody>
<tr>
<td>2014</td>
<td>Dr Max Berry</td>
<td>Premature celebration? The late effects of early birth</td>
<td>Neonatal Trust</td>
<td>$172,431</td>
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<tr>
<td>2014</td>
<td>A/P Lynette Sadleir</td>
<td>Discovering genes that cause epilepsy in children</td>
<td>Cure Kids</td>
<td>$100,000</td>
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<tr>
<td>2013</td>
<td>Dr Max Berry</td>
<td>The long term cardiovascular consequences of preterm birth</td>
<td>The Royal Australasian College of Physicians New Zealand</td>
<td>$70,588</td>
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<td>2014</td>
<td>Dr Max Berry</td>
<td>Equipment grant for Radio-telemetry data acquisition system</td>
<td>New Zealand Lottery Grants Board</td>
<td>$40,000</td>
</tr>
<tr>
<td>2013</td>
<td>Dr Max Berry</td>
<td>The impact of changes in mechanical ventilation and systemic perfusion on brain blood flow and oxygenation in sheep</td>
<td>Wellington Medical Research Foundation Incorporated</td>
<td>$14,405</td>
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<tr>
<td>2013</td>
<td>Dr Max Berry</td>
<td>The long-term cardiovascular implications of preterm birth</td>
<td>Neonatal Trust</td>
<td>$10,510</td>
</tr>
<tr>
<td>2013</td>
<td>A/P Esko Wiltshire</td>
<td>Heart rate variability in adolescents with type 1 diabetes: Use of non-linear analysis methods to identify early cardiac autonomic neuropathy</td>
<td>Diabetes Wellington</td>
<td>$10,000</td>
</tr>
<tr>
<td>2014</td>
<td>Prof Dawn Elder</td>
<td>Equipment grant for Masimo RAD-8 oximeters and software</td>
<td>New Zealand Lottery Grants Board</td>
<td>$6,642</td>
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<tr>
<td>2014</td>
<td>Prof Dawn Elder</td>
<td>Goodnight Kiwi: Kei te moe ngā mokopuna?</td>
<td>Wellington Medical Research Foundation</td>
<td>$5,415</td>
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*GST exclusive

## Commercial Contracts

<table>
<thead>
<tr>
<th>Year</th>
<th>Organisation</th>
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<tbody>
<tr>
<td>2013-14</td>
<td>Capital and Coast District Health Board</td>
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|        | **Total**                                     | $10,000

## Postgraduate Students

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<tr>
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<td>1</td>
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</table>

## Awards and Honours

<table>
<thead>
<tr>
<th>Year</th>
<th>Recipient</th>
<th>Award</th>
</tr>
</thead>
<tbody>
<tr>
<td>2014</td>
<td>A/P Esko Wiltshire (course convenor)</td>
<td>Commendation for best 5th year Module, Wellington Medical School Students Association</td>
</tr>
<tr>
<td>2014</td>
<td>Dr Thorsten Stanley</td>
<td>Commendation for consultant who has shown commitment and quality on teaching, Wellington Medical School Students Association</td>
</tr>
<tr>
<td>2013</td>
<td>A/P Esko Wiltshire (course convenor)</td>
<td>Best 5th year Module, Wellington Medical School Students Association</td>
</tr>
<tr>
<td>2013</td>
<td>Hamish Green</td>
<td>UOW prize for best summer student project and presentation</td>
</tr>
</tbody>
</table>
The Department of Pathology and Molecular Medicine is a multidisciplinary unit in which the subdisciplines of haematology, microbiology, chemical pathology, anatomical pathology and molecular pathology are represented. Current research activities within the Department focus on the causes and behaviour of various cancers with a specific emphasis on breast, cervix, kidney, prostate and bladder malignancy. Dental research and urogenital pathology are also areas of research interest.

Major Areas of Research Strength

Urogenital pathology
Research activities are focussed on the classification, diagnosis, molecular biology, growth kinetics and outcome prediction for adult and childhood renal tumours. Other areas of research are the diagnosis, classification and outcome prediction of prostate cancer and behaviour of testicular tumours and prostate cancer; and progeria kidney.

Molecular pathology
The Wakefield Biomedical Research Unit moved to the department from Wakefield Hospital in 2009. It has a strong research focus on the molecular basis of the spread of colorectal cancer and the fundamental cause of insulin resistance, type 2 diabetes and obesity.

Prostate cancer
The Prostate Cancer Trials Unit is a research unit within the Department participating in international and local clinical trials to treat prostate cancer. Research activities are focussed on early diagnosis and effective treatment of prostate cancer.

Dental research
The Dental Research Unit has an extensive research programme investigating dental mineralisation, causes of tooth decay and oral microbiology. Studies to date include plaque growth and development, regulation of plaque pH, urea metabolism, plaque mineralisation by calcium phosphates, enamel demineralisation and fluoride effects, antibacterial agents, and the biodiversity and ecology of dental plaque bacterial communities. The Unit houses a novel computer-controlled ‘multiplaque artificial mouth’. This allows the development of realistic plaque microcosm biofilm model systems.

Microbiology
Investigations into the incidence of antibiotic resistance in hospitals and community infections.

External Grants Awarded 2013-2014

<table>
<thead>
<tr>
<th>Year</th>
<th>PI</th>
<th>Project Title</th>
<th>Funder</th>
<th>$*</th>
</tr>
</thead>
<tbody>
<tr>
<td>2013</td>
<td>Dr David Lamb</td>
<td>Prostate cancer: Protein markers to determine which patients require treatment</td>
<td>Cancer Society of New Zealand (subcontract)</td>
<td>$114,088</td>
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<tr>
<td>2014</td>
<td>Dr Sara Filoche</td>
<td>Antibiotic resistance and childhood hospital admissions: A concern for urinary tract infections?</td>
<td>Wellington Medical Research Foundation</td>
<td>$2,000</td>
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</tbody>
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*GST exclusive

Postgraduate Students

<table>
<thead>
<tr>
<th>Total Head Count</th>
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## Awards and Honours

<table>
<thead>
<tr>
<th>Year</th>
<th>Recipient</th>
<th>Award</th>
</tr>
</thead>
<tbody>
<tr>
<td>2014</td>
<td>Prof Brett Delahunt</td>
<td>Appointed to the World Health Organisation Tumour Classification Panel</td>
</tr>
<tr>
<td>2014</td>
<td>Prof Brett Delahunt</td>
<td>Distinguished Pathologist Medal, New Zealand Society of Pathologists</td>
</tr>
<tr>
<td>2014</td>
<td>Prof Brett Delahunt</td>
<td>Visiting Professor, Karolinska Institute and Hospital, Stockholm</td>
</tr>
<tr>
<td>2014</td>
<td>Prof Brett Delahunt</td>
<td>New Zealand Society of Pathologists AB Pearson Memorial Lecturer for 2014</td>
</tr>
<tr>
<td>2013</td>
<td>Prof Brett Delahunt</td>
<td>Distinguished Pathologists Medal, International Academy of Pathology in recognition of an outstanding contribution to the discipline of pathology</td>
</tr>
<tr>
<td>2013</td>
<td>Prof Brett Delahunt</td>
<td>Grawitz Medal, International Society of Urological Pathology for distinguished service to the discipline of urological pathology</td>
</tr>
<tr>
<td>2013</td>
<td>Prof Brett Delahunt</td>
<td>International Academy of Pathology South Pacific Visiting Fellow</td>
</tr>
</tbody>
</table>
DEPARTMENT OF PRIMARY HEALTH CARE AND GENERAL PRACTICE

Head of Department: Associate Professor Sue Pullon
Email: sue.pullon@otago.ac.nz
Website: otago.ac.nz/wellington/departments/primaryhealthcaregeneralpractice

The interdisciplinary research undertaken within the Department informs practitioners and consumers, patients and policy makers about many aspects of health and primary health care. Our research strengths are in women’s health, mental health, communication in health care and health services research – with a focus on primary health care.

Major Areas of Research Strength

Women's health
Many diseases including osteoporosis, depression, breast cancer, menopause and Alzheimer’s disease differentially affect women. The Women's Health Research Centre (WHRC) works collaboratively, both internationally and locally, to explore important health challenges for New Zealand women. Key areas of research focus include: mid-life health, diabetes and heart disease, health and well-being for young pregnant women, and sexual health. Research is conducted within a kaupapa Māori framework. Other areas of interest include: osteoporosis, contraception, fertility, unplanned pregnancy, maternity and health of the newborn.

Website: otago.ac.nz/wellington/research/whrc

Communication in health care
The Applied Research on Communication in Health Group (ARCH) studies all aspects of communication in health care, with a special focus on analysing how people interact in real-life health care interactions. Members of the ARCH core group have been collecting and analysing video recordings of naturally occurring interactions between health practitioners and patients since 2003. These have now been permanently archived along with various related data in the ARCH Corpus, a searchable digitised collection of health care interactions and related data for use in interaction analysis and education; this is the first data set of its kind in New Zealand. More recently, the ARCH Group has started researching patient and service user experiences of health and illness using the validated narrative interview methodology followed by 12 other countries as part of DIPEX International, a consortium led by Oxford University's Health Experiences Research Group.

Website: otago.ac.nz/wellington/research/arch

Mental health
The Department has a longstanding involvement in mental health care research. In collaboration with the Department of Psychological Medicine, staff were responsible for producing the landmark Mental Health in General Practice (MaGPie) study which described the prevalence, form, course and outcome of common mental disorders in New Zealand general practices. The Department has also been responsible, together with colleagues from Psychological Medicine, for the evaluation of the Ministry of Health funded programme of Primary Mental Health Initiatives, the development of toolkits for primary mental health care and the production of an ultra-brief psychological intervention for consultation use. The Department is currently involved in two randomised controlled trials in mental health care, the first of light and exercise therapy in dementia and the second of anti-depressant cessation in general practice. A staff member is also working with a WHO panel involved in the mental health component of the revised international classification of disease (ICD-11).

Health services research
A variety of projects and studies in health services research have been completed and include: the evaluation of Mid Central District Health Board mobile nursing service; Pathways Study; Primary Health Care Nurse Education Nelson Bays Primary Health Care Report; utilisation of primary health care: analysis of routinely collected data (HURA); performance indicators in primary care, and the capacity of routine primary care to manage pandemic influenza. The Study of Interprofessional Practice in Primary care (SIPP) investigating collaborative practice and teamwork is in progress, and is related to evaluation of interprofessional education for undergraduate health professionals in clinical settings.

Interprofessional research
This work stream has developed over the 2013-2014 period, with the Study of Interprofessional Practice in Primary care (SIPP), the Interagency Collaboration study (patients with chronic conditions) (IACCC) and the Interagency collaboration study (services for young people) (IACY) investigating collaborative practice and teamwork. Evaluation of, and research into, interprofessional education for undergraduate health professionals in clinical settings continues. The Tairawhiti Longitudinal Study (LIP study) commenced in 2014.

Addictive and lifestyle research
The Taboo (Tackling Obesity) study builds on earlier work undertaken by the ARCH group (above). A study on families living with addiction has just been completed, and an investigation into addictive behaviour education for medical students is in progress.
## External Grants > $5,000 Awarded 2013-2014

<table>
<thead>
<tr>
<th>Year</th>
<th>PI</th>
<th>Project Title</th>
<th>Funder</th>
<th>$*</th>
</tr>
</thead>
<tbody>
<tr>
<td>2014</td>
<td>A/P Beverley Lawton</td>
<td>Addressing avoidable harm suffered by Māori babies</td>
<td>Health Research Council of NZ</td>
<td>$1,199,999</td>
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<tr>
<td>2013</td>
<td>A/P Beverley Lawton</td>
<td>Addressing the burden and preventability of severe acute maternal morbidity of NZ</td>
<td>Health Research Council of NZ</td>
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<td>2013</td>
<td>Prof Tony Dowell</td>
<td>The morbidity patterns of childhood illness in general practice</td>
<td>New Zealand Lottery Grants Board</td>
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<td>2014</td>
<td>Dr Sally Rose</td>
<td>Same-day LARC insertion at abortion clinics: are there regional differences in access or uptake in New Zealand?</td>
<td>ISTAR Ltd</td>
<td>$9,765</td>
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<tr>
<td>2014</td>
<td>Dr Sara Filoque</td>
<td>Evaluating access between publically funded and private vasectomy services</td>
<td>ISTAR Ltd</td>
<td>$7,593</td>
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<tr>
<td>2014</td>
<td>Dr Sally Rose</td>
<td>Is the rising popularity of long-acting contraception impacting on Chlamydia rates?</td>
<td>Wellington Medical Research Foundation</td>
<td>$5,900</td>
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<td>2013</td>
<td>Dr Jenny Visser</td>
<td>Illness and injury in long term aid workers</td>
<td>Intl Society of Travel Medicine</td>
<td>$5,113</td>
</tr>
<tr>
<td>2013</td>
<td>Dr Ben Gray</td>
<td>Understanding interpreted consultations</td>
<td>Royal New Zealand College of General Practitioners</td>
<td>$5,001</td>
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*GST exclusive

## Commercial Contracts

<table>
<thead>
<tr>
<th>Year</th>
<th>Organisation</th>
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<tr>
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<td>Bayer New Zealand Limited</td>
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<td>bioCSL (NZ) Ltd</td>
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<tr>
<td></td>
<td>Foundation Trust University of Otago</td>
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<td></td>
<td>KPMG</td>
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<tr>
<td></td>
<td>Malatest International Consulting and Advisory Services Limited</td>
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<td></td>
<td>Ministry of Health</td>
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<td>Southern Primary Health Organisation</td>
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Total $201,069

## Postgraduate Students

<table>
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<td>5</td>
</tr>
<tr>
<td>Master’s thesis</td>
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</table>
The Department of Psychological Medicine’s research programme is configured around several themes relevant to mental health practice in the New Zealand setting, including:

- mental health service delivery and evaluation, including in primary care
- the interface between psychological and physical health
- social psychiatry
- psychiatric epidemiology
- suicide
- education in the clinical professions.

Major Areas of Research Strength

Psychiatric disorders
These studies include epidemiology, schizophrenia and sleep disorders. This stream includes the epidemiological work of A/P Kate Scott in connection to Te Rau Hinengaro, The New Zealand Mental Health Survey, part of the WHO World Mental Health Surveys studies on schizophrenia and sleep disorders.

Interventional therapies
Research activity here ranges from psychopharmacological to cognitive-behavioural therapies and includes work with consumers and government agencies.

External Grants Awarded 2013-2014

<table>
<thead>
<tr>
<th>Year</th>
<th>PI</th>
<th>Project Title</th>
<th>Funder</th>
<th>$*</th>
</tr>
</thead>
<tbody>
<tr>
<td>2014</td>
<td>Dr Susanna Every-Palmer</td>
<td>Antipsychotic induced gastrointestinal hypomotility</td>
<td>Maurice and Phyllis Paykel Trust</td>
<td>$8,000</td>
</tr>
<tr>
<td>2014</td>
<td>Dr Susanna Every-Palmer</td>
<td>Antipsychotic induced gastrointestinal hypomotility</td>
<td>Wellington Medical Research Foundation</td>
<td>$3,500</td>
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</table>

*GST exclusive

Postgraduate Students

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<thead>
<tr>
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Awards and Honours

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<tr>
<th>Year</th>
<th>Recipient</th>
<th>Award</th>
</tr>
</thead>
<tbody>
<tr>
<td>2013</td>
<td>Dr Fiona Mathieson</td>
<td>Fanny Evans Postgraduate PhD Scholarship for Women</td>
</tr>
</tbody>
</table>
For a number of years the main focus of the Department’s research work has been monitoring, understanding and mitigating inequalities in health. The Department has research strengths in the areas of housing and health, sustainable cities, health promotion and policy in relation to tobacco, nutrition and obesity, health service and preventive intervention prioritisation research, Māori health, cancer control and screening, infectious diseases and health impact assessment.

Major Areas of Research Strength

Housing and health

He Kainga Oranga, the Housing and Health Research Programme, examines and clarifies the links between Housing and Health. Although the association between poor housing and ill health is known, the links that make up the causal chain have until recently been poorly understood. Conducting our own studies and examining existing evidence enables us to identify and evaluate housing-related interventions to improve individual, family and community health. Our multi-disciplinary team has expertise in both qualitative and quantitative disciplines.

Website: healthyhousing.org.nz

Sustainable cities

The New Zealand Centre for Sustainable Cities was established by members of the He Kainga Oranga programme. The Centre is dedicated to providing the research base for innovative solutions to the economic, social, environmental and cultural development of New Zealand’s urban centres. In 2012, the Centre was awarded $9.2 million from the Ministry of Business, Innovation and Employment for the Resilient Urban Futures project.

Website: sustainablecities.org.nz

Health inequalities research

The Health Inequalities Research Programme (HIRP) is an HRC funded programme established in 2005 to explore, explain and provide solutions for systematic health inequalities in New Zealand. There are nine projects within the HIRP programme: CancerTrends; Differential Colon Cancer Survival by Ethnicity in New Zealand; Neighbourhoods and Health; the New Zealand Census-Mortality Study; Socioeconomic Deprivation Indexes (NZDep, NZiDep); SoFIE-Health; SoFIE-Primary Care; Supermarket Healthy Options Project (SHOP); and Unequal Treatment – the Role of Health Services.

Website: otago.ac.nz/wellington/departments/publichealth/research/hirp

Health service and preventive intervention prioritisation research

This area of research covers the spectrum from prevention to palliation. A major study is the HRC funded Burden of Disease Epidemiology, Equity and Cost-Effectiveness (BODE3) study. The aim of this study is to build capacity and academic rigour in New Zealand in the estimation of disease burden, cost-effectiveness and equity impacts of proposed interventions, and undertake a range of such assessments. Major collaborative partners include the University of Queensland and the Ministry of Health.

Website: otago.ac.nz/wellington/departments/publichealth/research/bode3

Māori health

The focal point for Māori health research in the department is Te Rōpū Rangahau Hauora a Eru Pōmare. The goals of the Centre are to promote and foster health research by, and for, Māori and to provide an environment in which Māori can be trained in a variety of research techniques. Health disparities and unequal treatment between Māori and non-Māori are the foundation of the Centre’s research. Current research themes include breast cancer screening, cancer incidence and statistics, ethnicity, caring for young pregnant Māori women, oral health, rural Māori health, and access to health services.

Website: otago.ac.nz/wellington/departments/publichealth/research/erupomare

Tobacco and healthy eating - health promotion and policy research

The Health Promotion and Policy Research Unit (HePPRU) is the hub for policy-oriented research into tobacco, food and obesity within the department. ASPIRE2025 is the major thrust in terms of tobacco research and policy. This a partnership between major New Zealand research groups carrying out research to help achieve the Government’s goal of a tobacco-free Aotearoa by 2025. With regard to food and obesity, investigations are underway into policy-relevant issues in nutrition and food policy such as food marketing in sport settings and Pacific perspectives on promoting children’s healthy eating.

Website: otago.ac.nz/wellington/research/heppru
Cancer control and screening

The Cancer Control and Screening Research Group is a collaborative group of researchers working on a range of projects that focus on the social determinants and clinical aspects of cancer and cancer control, and policy and research aspects of population screening. Our work intersects with other research groups in the Department of Public Health, and involves collaborations with the Dunedin and Christchurch campuses of University of Otago, University of Auckland, Massey University, Cancer Council Australia, Ministry of Health, Primary Health Care Organisations and clinicians in a number of DHBs.

Website: otago.ac.nz/wellington/departments/publichealth/research/cancercontrol

Social psychiatry and mental health

While the Social Psychiatry and Mental Health (SoPop) Group maintains a strong association with the Department of Public Health it now exists within the Dean’s Department, UOW. The purpose of SoPop is to contribute to knowledge, policy, and services by conducting research and teaching in the areas of mental health, mental illness, and suicide prevention. The group takes the perspective that understanding mental health and mental illness cannot be achieved without acknowledging the social context.

External Grants > $40,000 Awarded 2013-2014

<table>
<thead>
<tr>
<th>Year</th>
<th>PI</th>
<th>Project Title</th>
<th>Funder</th>
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<tbody>
<tr>
<td>2014</td>
<td>Prof Tony Blakely</td>
<td>Modelling to prioritise intervention studies in the Healthier Lives National Science Challenge</td>
<td>Ministry of Business, Innovation and Employment</td>
<td>$2,948,052</td>
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<td>2014</td>
<td>A/P Diana Sarfati</td>
<td>Multimorbidity: the most common chronic condition of all</td>
<td>Health Research Council of NZ</td>
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<tr>
<td>2013</td>
<td>Prof Michael Baker</td>
<td>Identifying risk factors for rheumatic fever in New Zealand</td>
<td>Health Research Council of NZ</td>
<td>$799,362</td>
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<td>2014</td>
<td>Dr Ricci Harris</td>
<td>Understanding the impact of racial discrimination on adult health and wellbeing</td>
<td>Health Research Council of NZ</td>
<td>$452,777</td>
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<td>2013</td>
<td>Dr Jason Gurney</td>
<td>Testicular cancer in Māori men: what is driving the disparity?</td>
<td>Health Research Council of NZ</td>
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<tr>
<td>2013</td>
<td>Prof Philippa Howden-Chapman</td>
<td>Household crowding and rheumatic fever study</td>
<td>Health Research Council of NZ</td>
<td>$300,000</td>
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<tr>
<td>2014</td>
<td>Bridget Robson</td>
<td>Oranga Waha – oral health research priorities for Māori</td>
<td>Health Research Council of NZ/Ministry of Health</td>
<td>$288,702</td>
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<tr>
<td>2013</td>
<td>Dr Paula King</td>
<td>Transforming research into child health equity: a 21st century approach</td>
<td>Health Research Council of NZ</td>
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<td>2014</td>
<td>Bridget Robson</td>
<td>District Health Board Māori profiles 2015</td>
<td>Ministry of Health</td>
<td>$210,725</td>
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<td>2013</td>
<td>Bridget Robson</td>
<td>Breast Screen Aotearoa Māori Monitoring III</td>
<td>Ministry of Health</td>
<td>$189,571</td>
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<tr>
<td>2014</td>
<td>Prof Tony Blakely</td>
<td>Life-course predictors of mortality inequalities</td>
<td>Health Research Council of NZ (subcontract)</td>
<td>$152,747</td>
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<tr>
<td>2014</td>
<td>Kim O’Sullivan</td>
<td>Cool? The insights and experiences of New Zealand youths living in, or at risk of, fuel poverty.</td>
<td>New Zealand Lottery Grants Board</td>
<td>$150,000</td>
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<td>2014</td>
<td>Donna Cormack</td>
<td>Ethnicity data</td>
<td>Ministry of Health</td>
<td>$123,783</td>
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<td>2014</td>
<td>Jane Oliver</td>
<td>Could improving homes prevent children developing GAS pharyngitis and rheumatic fever</td>
<td>New Zealand Lottery Grants Board</td>
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<td>2013</td>
<td>Prof Michael Baker</td>
<td>Southern hemisphere influenza vaccine effectiveness research and surveillance (SHIVERS)</td>
<td>Centers for Disease Control and Prevention (subcontract)</td>
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<td>2014</td>
<td>Dr Lucy Telfar-Barnard</td>
<td>Effects of proprietary mechanised home ventilation systems on health</td>
<td>BRANZ</td>
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2014  Christina McKerchar  Food availability for Māori children – A rights based approach  Health Research Council of NZ (HRC)  $85,000

2013  Prof Tony Blakely  Preventable Māori mortality  Health Research Council of NZ (subcontract)  $72,270

2014  Kate Amore  Severe housing deprivation 2013  New Zealand Lottery Grants Board  $45,095

2014  Prof Michael Baker  Is the family pet a risk factor for multidrug resistant bacterial infections?  Health Research Council of NZ (subcontract)  $40,750

*GST exclusive

Commercial Contracts

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<tr>
<th>Year</th>
<th>Organisation</th>
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<td>Health Quality &amp; Safety Commission</td>
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<td>Hutt Valley District Health Board</td>
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<td></td>
<td>Ministry of Business, Innovation and Employment</td>
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<td>Ministry of Health</td>
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<td>Ministry of Social Development</td>
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<td>Royal Society of New Zealand</td>
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<td>Waitemata District Health Board</td>
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Total  $1,260,770

Postgraduate Students

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Awards and Honours

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<tr>
<th>Year</th>
<th>Recipient</th>
<th>Award</th>
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<tbody>
<tr>
<td>2014</td>
<td>Prof Philippa Howden-Chapman and colleagues</td>
<td>Prime Minister’s Science Prize for He Kainga Oranga, the Housing and Health Research Programme</td>
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<tr>
<td>2014</td>
<td>Dr Jason Gurney</td>
<td>Early Career Award for Distinction in Research, University of Otago</td>
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<tr>
<td>2014</td>
<td>A/P Di Sarfati</td>
<td>Exceptional PhD thesis, Division of Health Sciences</td>
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<tr>
<td>2013</td>
<td>Prof Philippa Howden-Chapman</td>
<td>Elected as Fellow, Royal Society of New Zealand</td>
</tr>
<tr>
<td>2013</td>
<td>Prof Michael Baker</td>
<td>Liley Medal, Health Research Council of New Zealand</td>
</tr>
<tr>
<td>2013</td>
<td>Dr Jason Gurney</td>
<td>Eru Pomare Postdoctoral Fellowship, Health Research Council of New Zealand</td>
</tr>
<tr>
<td>2013</td>
<td>Dr Mary-Ann Carter</td>
<td>Exceptional PhD thesis, Division of Health Sciences</td>
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</table>
The Radiation Therapy Department has a very varied research portfolio reflecting the interests of staff: ranging from preclinical cancer research and educational research to research into radiation-induced side effects, cancer patient education, self-care of radiation therapists, interprofessional education and advanced radiation therapy practice.

Major Areas of Research Strength

Cancer biology
Cancer research is being undertaken in conjunction with the Malaghan Institute of Medical Research, Victoria University Wellington and the University of Otago, Christchurch. The focus is on highly glycolytic cancers that are very aggressive and resistant to radiation and chemotherapies. One project investigates the mechanism(s) of action of radio-sensitisation of highly aggressive GBM and other non-CNS solid cancers, by high dose ascorbate in cell and animal models. Another project is focused on the dosimetric assessment for whole brain irradiation in live mice using a gamma irradiator.

Clinical trials
A number of clinical trials for treatment of acute side effects of radiation treatment are being conducted in collaboration with the Southern DHB, Capital and Coast DHB, MidCentral DHB and Auckland Radiation Oncology. Open for recruitment in 2013-2014 was the use of soft silicone dressings for radiation-induced skin reactions in women treated for breast cancer; and the efficacy of cranberry capsules in managing radiation induced cystitis in men with prostate cancer.

Radiation physics
Current research focuses on spectral X-ray CT imaging of brain tumours in mice utilising the MARS CT system in collaboration with the University of Otago, Christchurch and with Australian researchers on dual energy X-ray analysis (DEXA) using synchrotron CT.

Supportive cancer care
Cancer patients frequently experience disjointed transition from specialist oncology care to primary healthcare, and confusion about who provides their ongoing care. Research aims to determine how GPs and oncologists view the role of GPs in this setting and to provide a framework for better communication to facilitate a seamless transition from specialist to primary care. Effective communication with cancer patients is a key area of quality cancer care. Research is undertaken to evaluate the effectiveness of student participation in high-fidelity simulated clinical scenarios with professional actors as a teaching tool to improve student communication and professionalism. Student professional development is affected by their own learning styles. Research aims to identify learning styles to foster self-awareness as part of professional self-management in order to promote more effective relationships between staff and with patients in the workplace.

Simulation in education
The Virtual Environment Radiotherapy Trainer or VERT system is recognised internationally as having significant potential in radiation therapy education. The Department has been engaged in a number of formal studies investigating the impact of the system on aspects of the teaching curriculum, its ability to aid teaching complex concepts in a novel manner and its use in patient education.

Interprofessional education
The overarching goal of interprofessional education (IPE) is to prepare all health professional students for deliberately and collaboratively working together to reach a common goal of well-coordinated, high quality patient/client-centred care. Research in this area continues to develop and expand with the inclusion of Radiation Therapy.
External Grants Awarded 2013-2014

<table>
<thead>
<tr>
<th>Year</th>
<th>PI</th>
<th>Project Title</th>
<th>Funder</th>
<th>$*</th>
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<tbody>
<tr>
<td>2013</td>
<td>Dr Patries Herst</td>
<td>Effect of high dose ascorbate and radiation on tumour progression in an orthotopic mouse model: stage II</td>
<td>Neurological Foundation of New Zealand</td>
<td>$10,588</td>
</tr>
<tr>
<td>2013</td>
<td>Dr Patries Herst</td>
<td>The effect of high dose ascorbate combined with radiation on tumour progression in an intracranial mouse glioma model: stage II.</td>
<td>The Surgical Research Trust</td>
<td>$5,000</td>
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<tr>
<td>2014</td>
<td>Dr Nanette Schleich</td>
<td>Dosimetric assessment for whole brain irradiation in live mice using a gamma irradiator</td>
<td>Cancer Society of New Zealand, Wellington Division</td>
<td>$5000</td>
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<tr>
<td>2014</td>
<td>Dr Nanette Schleich</td>
<td>Dosimetric assessment for whole brain irradiation in live mice using a gamma irradiator</td>
<td>Capital &amp; Coast District Health Board, Small Research Grant</td>
<td>$5000</td>
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*GST exclusive

Commercial Contracts

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<tr>
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<td>2013-14</td>
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Postgraduate Students

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Awards and Honours

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<tr>
<th>Year</th>
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<th>Award</th>
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<tbody>
<tr>
<td>2014</td>
<td>Gay Dungey</td>
<td>New Zealand Institute of Medical Radiation Technology, President's Award for service to the national professional organisation</td>
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<tr>
<td>2014</td>
<td>Karen Coleman</td>
<td>NZIMRT Award for best radiation therapy paper</td>
</tr>
<tr>
<td>2013</td>
<td>Dr Patries Herst</td>
<td>NZIMRT Award for best scientific research paper</td>
</tr>
</tbody>
</table>
The Department of Surgery and Anaesthesia is involved in a range of research fields including clinical cardiovascular physiology and medicine, surgical practice, anaesthesia, resuscitation, and emergency medicine.

Major Areas of Research Strength

**Circulation control (PI S. Tzeng)**
- Minimisation of brain injury after stroke
- Effects of alcohol consumption on brain flow regulation
- Influence of tobacco smoking on dynamic cerebral autoregulation
- Mechanisms of cerebral autoregulation
- The cardiovascular effects of renal nerve ablation in resistant hypertension
- Baroreflex sensitivity and cerebral autoregulation in heart failure

**Ventricular rhythm disturbances (PI P. Larsen)**
- Platelet reactivity and inflammation in ischaemic heart disease
- Technical aspects of interventional cardiology
- Mechanisms of ventricular arrhythmia
- Provision of implantable cardioverter defibrillator therapy
- Applications of novel imaging techniques to aid in diagnostic processes
- Scoring tools for risk stratification in cardiac disease.

**Prehospital emergency care (PI A. Swain)**
- Does a dual fire service and paramedic response improve survival from community cardiac arrest
- Is survival from community cardiac arrest linked to socioeconomic status or location in the Wellington area
- Extended care paramedics – do they reduce hospital emergency attendances?
- Extended care paramedics – a randomised controlled trial of ECP care versus standard paramedic care
- Extended care paramedics – what do the patients think and what is the clinical outcome of ECP care?

External Grants > $5000 Awarded 2013-2014

<table>
<thead>
<tr>
<th>Year</th>
<th>PI</th>
<th>Project Title</th>
<th>Funder</th>
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<tbody>
<tr>
<td>2014</td>
<td>Mr Mickey Fan</td>
<td>The role of nitric oxide bioavailability enhancement in acute stroke</td>
<td>National Heart Foundation of NZ</td>
<td>$225,000</td>
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<td>2014</td>
<td>Dr Shieak Tzeng</td>
<td>STABLE – Stroke Therapy Aimed at Blood Pressure Lability Reduction</td>
<td>National Heart Foundation of NZ</td>
<td>$15,000</td>
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<td>2013</td>
<td>Dr Shieak Tzeng</td>
<td>STABLE – Stroke Therapy Aimed at Blood Pressure Lability Reduction</td>
<td>Wellington Medical Research Foundation</td>
<td>$12,600</td>
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<tr>
<td>2013</td>
<td>Dr Shieak Tzeng</td>
<td>Defining the role of arterial elasticity in the regulation of cerebral blood flow</td>
<td>Wellington Medical Research Foundation</td>
<td>$7,371</td>
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*GST exclusive

Postgraduate Students

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<tr>
<td>Master’s thesis</td>
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<td>1</td>
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</tbody>
</table>
The School of Pharmacy has a very active research programme, with disciplines ranging from science to humanities with each having a strong contextual link to health sciences.

Major Areas of Research Strength

**Pharmaceutical Sciences**

Research in this area includes drug discovery, drug metabolism and drug action to extend the range of drugs available and to provide a scientific basis for the quality use of medicines and bioactive substances. Specific areas of research include: computational methods encompassing rational, structure and analogue based drug design techniques, QSAR, drug target identification and lead optimisation; preclinical assessment of new chemical entities including small molecular weight and polypeptide bioactives; development of analytical methods for drugs in formulations and body fluids; studies on drugs of abuse aimed at harm minimization and for application in forensic toxicology; and pharmacokinetic and toxicity studies on synthetic bioactives and those extracted from natural sources.

**Clinical pharmacy**

Clinical pharmacy is the area of pharmacy concerned with patient care and the optimisation of medicine use in order to promote health and wellness, and prevent disease. Research in this area includes biopharmaceutical, pharmacokinetic and pharmacodynamic strategies to optimise drug therapy in patients; consideration of adverse or toxic events to minimise harm; the study of special populations; and optimal use of medicines.

**Social pharmacy**

Social pharmacy is a growing area of research within the School. Research focuses mainly on access to and use of medicines. Research on access to medicines involves looking at which medicines are licensed and funded in New Zealand compared with other countries, how much people pay for their medicines in New Zealand, and who gets what medicines. This involves developing new methods for inter-country comparisons, analysing large datasets of dispensed medicines, and survey research. Research on use of medicines includes looking at medicines wastage and adherence to instructions, elderly people’s use of medicines, decision-making about minor ailments, and how culture affects people’s use of medicines. In addition to work within New Zealand, members of the social pharmacy research group have a strong interest in developing countries, particularly Nepal and Samoa, and are members of the Otago International Health Network.

### External Grants > $10,000 Awarded 2013-2014

<table>
<thead>
<tr>
<th>Year</th>
<th>PI</th>
<th>Project Title</th>
<th>Funder</th>
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<tbody>
<tr>
<td>2014</td>
<td>Dr Alesha Smith</td>
<td>Integrating patient data to optimise medicines and reduce polypharmacy</td>
<td>Health Research Council of NZ</td>
<td>$178,273</td>
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<tr>
<td>2014</td>
<td>Dr Allan Gamble</td>
<td>Bioorthogonal prodrug activation for targeted chemotherapy</td>
<td>Health Research Council of NZ</td>
<td>$144,275</td>
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<tr>
<td>2013</td>
<td>Nagham Ailabouni</td>
<td>De-prescribing: Safely reducing unnecessary medicines in frail older people in residential care</td>
<td>New Zealand Lottery Grants Board</td>
<td>$115,950</td>
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<td>2014</td>
<td>A/P Natalie Medlicott</td>
<td>Liquid chromatography with mass spectrometry (QTrap 5500)</td>
<td>New Zealand Lottery Grants Board</td>
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<td>2014</td>
<td>Dr Prasad Nishtala</td>
<td>‘Real-world’ haemorrhagic rates for warfarin and dabigatran using population level data</td>
<td>New Zealand Lottery Grants Board</td>
<td>$50,662</td>
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<td>2013</td>
<td>Dr Biju Balakrishnan</td>
<td>Enhancing antimicrobial drug delivery in inflamed tissues</td>
<td>New Zealand Lottery Grants Board</td>
<td>$46,800</td>
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<td>2014</td>
<td>Dr Shakila Rizwan</td>
<td>Designing novel biological capsules to improve delivery and efficacy of anti-epileptic drugs in drug-resistant epilepsy</td>
<td>New Zealand Lottery Grants Board</td>
<td>$30,000</td>
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<td>2013</td>
<td>Dr Joel Tyndall</td>
<td>Second generation protease inhibitors targeting HtrA in Chlamydia</td>
<td>New Zealand Pharmacy Education and Research Foundation</td>
<td>$12,948</td>
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</table>
2014  Prof Sarah Hook  Use of a dual COX/LOX inhibitor for treatment of cancer  Otago Medical Research Foundation  $11,484

2013  Prof Sarah Hook  Vaccine to reduce methane emissions in ruminants  Ministry for Primary Industries (subcontract)  $12,500

2013  Dr Arlene McDowell  Can puha antioxidants reduce cell ageing?  New Zealand Pharmacy Education and Research Foundation  $11,040

2013  Prof Sarah Hook  Vaccine to reduce methane emissions in ruminants  Ministry for Primary Industries (subcontract)  $10,000

2014  Prof Stephen Duffull  Brown Bag Clinics: Community Pharmacy Education  Ako Aotearoa  $10,000

*GST exclusive

Commercial Contracts

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<td>Bayer Animal Health GmbH</td>
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<td>Bayer New Zealand Limited</td>
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<td>Douglas Pharmaceuticals Ltd</td>
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<td>Innate Immunotherapeutics Ltd</td>
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<td>Riken BioResource Centre</td>
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Total  $1,731,592

Postgraduate Students

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Awards and Honours

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<th>Year</th>
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<tr>
<td>2013</td>
<td>Dr Korbinian Loebmann</td>
<td>Exceptional PhD thesis, Division of Health Sciences</td>
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<tr>
<td>2013</td>
<td>Dr Prasad Nishtala</td>
<td>Otago University Students' Association New Supervisor of the Year award</td>
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Research and knowledge transfer are integral parts of the School's activities, and these areas continue to develop rapidly. The School has active research programmes in a variety of rehabilitation related areas, which are managed through the Centre for Health, Activity, and Rehabilitation Research (CHARR).

Major Areas of Research Strength

Healthy ageing
Healthy ageing research encompasses both quantitative and qualitative research into the health and wellness of people across the lifespan. Current projects are focused on: postural stability in older adults with Alzheimer's disease; the prevention of falls in older adults and in adults with intellectual disability; posture and balance performance; improving the health and wellness of support workers and caregivers in the aged care sector; Hauā Mana Māori: Living unique and enriched lives; the role of mobility scooters in community mobility; and multiple sclerosis research.

Physical activity and health
This project area specifically covers the concept of physical activity as a non-medical intervention applied throughout the lifespan to maximise quality of life and movement potential within the spheres of promotion, prevention, treatment/intervention, habilitation, and rehabilitation. Current projects include: neurological conditions and physical activity; musculoskeletal conditions, such as low back pain, and physical activity; physical activity and amputees; participation of children with physical disability in leisure activities; health behaviours among New Zealand adults with prediabetes; and blue prescription – physical activity for chronic conditions. CHARR researchers work with a number of colleagues from around the University and have hosted two Physical Activity and Health Colloquia (2012 and 2014).

Injury prevention and sports concussion
The safe and injury free participation in sport, recreation, and work activities is the focus of our research. Current projects include: The Northland Rugby Union “Blue Card” concussion management programme; ACL injury prevention and rehabilitation; understanding the role of social media in concussion awareness/management; sideline assessment of a sports concussion and the development of return-to-play protocol; long-term health consequences of a sports-related concussion; musculoskeletal screening protocols for elite and community athletes and in military personnel; injury prevention of quad bike accidents; the role of footwear design in injury prevention; and understanding mechanisms of common sport and activity related injuries.

Clinical biomechanics and medical technologies
Current projects in the area of clinical biomechanics include: exploring novel rehabilitation exercises for shoulder osteoarthritis treatment; posture and low back pain; hamstring injury; shoulder biomechanics; postural stability; and jaw kinematics. Research into medical technologies involves: laser, acupuncture, virtual reality, lumbo-pelvic postural monitoring and postural feedback and rehabilitation.
### External Grants > $10,000 Awarded 2013-2014

<table>
<thead>
<tr>
<th>Year</th>
<th>PI</th>
<th>Project Title</th>
<th>Funder</th>
<th>$*</th>
</tr>
</thead>
<tbody>
<tr>
<td>2013</td>
<td>Ricky Bell</td>
<td>Huarahi Hauora: Identifying a pathway forward to wellness for Māori</td>
<td>New Zealand Lottery Grants Board</td>
<td>$120,000</td>
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<tr>
<td>2013</td>
<td>Prof John Sullivan</td>
<td>Mobility scooters keeping older New Zealanders on the move</td>
<td>New Zealand Lottery Grants Board</td>
<td>$49,500</td>
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<tr>
<td>2014</td>
<td>Dr Prasath Jayakaran</td>
<td>Early detection of hip/knee osteoarthritis to improve physical activity and self-efficacy</td>
<td>Otago Medical Research Foundation</td>
<td>$28,926</td>
</tr>
<tr>
<td>2014</td>
<td>Dr Daniel Cury-Ribeiro</td>
<td>Shoulder muscle activity: A study on patients with pain-limited shoulder elevation</td>
<td>Otago Medical Research Foundation</td>
<td>$24,455</td>
</tr>
<tr>
<td>2013</td>
<td>A/P Leigh Hale</td>
<td>Blue Prescription: Enhancing physical activity for people living with disability</td>
<td>Physiotherapy New Zealand</td>
<td>$11,438</td>
</tr>
<tr>
<td>2014</td>
<td>Dr Steve Tumilty</td>
<td>Effects of spinal manipulation on the stress systems – a randomized controlled study</td>
<td>NZ Manipulative Physiotherapists' Association</td>
<td>$10,913</td>
</tr>
<tr>
<td>2013</td>
<td>Dr Daniel Cury-Ribeiro</td>
<td>Can we optimise rotator cuff motor control? Exploring novel rehabilitation exercises for shoulder osteoarthritis treatment</td>
<td>Otago Medical Research Foundation</td>
<td>$10,127</td>
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*GST exclusive

### Postgraduate Students

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<td>PhD</td>
<td>19</td>
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<tr>
<td>Master's thesis</td>
<td>10</td>
<td>6</td>
</tr>
</tbody>
</table>

### Awards and Honours

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<tr>
<th>Year</th>
<th>Recipient</th>
<th>Award</th>
</tr>
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<tbody>
<tr>
<td>2014</td>
<td>Dr Steve Tumilty</td>
<td>Achieved specialist status as a Musculoskeletal Physiotherapist</td>
</tr>
<tr>
<td>2014</td>
<td>Dr Lesley Ward</td>
<td>Exceptional PhD thesis, Division of Health Sciences</td>
</tr>
<tr>
<td>2013</td>
<td>Ricky Bell (PhD student)</td>
<td>Te Apa Māreikura award, Ministry of Health</td>
</tr>
<tr>
<td>2013</td>
<td>Dr Margot Skinner</td>
<td>Honorary Fellowship, Physiotherapy New Zealand</td>
</tr>
<tr>
<td>2013</td>
<td>Dr Meredith Perry</td>
<td>Informa Best Paper award, Journal of Disability and Rehabilitation</td>
</tr>
</tbody>
</table>
RESEARCH FACILITIES AND SUPPORT SERVICES

The Division of Health Sciences has a range of specialist research equipment, facilities, and consulting expertise available on its campuses in Dunedin, Christchurch, and Wellington. These are available to researchers within the University of Otago and many are also available to external researchers and commercial interests.

Anatomy Museum and Human Skeletal Collection
The W.D. Trotter Anatomy Museum in the Department of Anatomy was established in 1874 and holds a large collection of anatomical specimens and models, many of which date back to the late 1800s. The Museum also holds many osteological specimens and an extensive collection of normal and abnormal radiographs.

The Department has a well-equipped plastination laboratory which provides many of the new material for the Museum's collections. A number of plastination techniques are undertaken including the silicone technique for plastinated prosections, E12 for transparent body slices, and P35 for thin brain slices.

The Department's anthropological collection of human skeletal material is the largest in New Zealand. Postgraduate students and staff from any department in the University may apply for research-based access to the Museum and skeletal collections.

Website: anatomy.otago.ac.nz/services-and-resources/153-anatomy-museum

Behavioural Phenotyping Unit
The Behavioural Phenotyping Unit is a testing suite allowing experiments to be carried out in a controlled, homogenous environment. The facility houses rats and mice under normal or reverse light cycles. There are dedicated rat and mouse testing rooms, two operant conditioning suites and a catwalk room (locomotor studies). Various testing apparatus is available for communal use. The Unit provides cameras and tracking software. There is also a chemical preparation room and a surgery.

Contact: bpu@otago.ac.nz

Biostatistical Services
Biostatistical consulting provides statistical expertise for clinical, epidemiological and other health-related research. There are consulting biostatisticians available to meet with researchers on the Dunedin, Christchurch, and Wellington campuses. The consultancy service is available free of charge to staff and PhD students within the Division of Health Sciences.

Website: otago.ac.nz/healthsciences/research/facilities/otago080966.html

Centre for Protein Research
The Centre for Protein Research is a facility strongly supported by the Departments of Biochemistry and Microbiology and Immunology but available to all researchers within the University of Otago. It combines both a service facility and a user laboratory that supports research projects largely within the University of Otago. The centre also provide service analyses for external institutes.

The facility is equipped with contemporary technologies for protein and proteome analyses such as Triple TOFF 5600+, MALDI tandem of Flight and ESI-coupled LTQ-Orbitrap mass spectrometry, different HPLC-systems for peptide and protein separation, large scale 2-D gel electrophoresis and Digest Robot and Probot workstations.

Website: cpr.otago.a.nz

Genomics and Bioinformatics
New Zealand Genomics Limited (NZGL)
NZGL is a collaborative infrastructure serving New Zealand scientists. Several of the countries universities and Crown Research Institutes have pooled their resources in a collaborative national infrastructure designed to accelerate New Zealand's genomic research and technology. Otago has led this initiative. NZGL provides genomics technology and bioinformatics services to underpin research in a broad range of areas, including medicine, agriculture and the environment. Through its collaborating partners, NZGL offers: next generation sequencing, a microarray service, bioinformatics, genotyping, nanoString nCounter, and IT cloud for data storage and processing.

Website: nzgenomics.co.nz

Otago Genomics and Bioinformatics Facility
Otago Genomics delivers end-to-end customised genomics solutions to researchers and industry using high-throughput Illumina sequencing platforms. Contact: genomics@otago.ac.nz

Otago Bioinformatics offers a wide range of data analysis services customised to individual project needs.

Contact: bioinformatics@otago.ac.nz
Histology Unit
The Division houses the Histology Unit Hercus which provides histology services for University researchers as well as researchers based at outside companies. It also offers diagnostic dental services for the whole of New Zealand. The Unit undertakes processing, cutting and staining of all types of tissue. Routine staining, immunoperoxidase and fluorescent techniques are all catered for. Qualified Medical Laboratory Scientists are available to advise on all aspects of histology and to instruct users in either staining techniques or use of equipment. Equipment available for use includes: a cryostat, an embedding machine, microtomes, staining machines and a light microscope.

Contact: amanda.fisher@otago.ac.nz

Laser Capture Microdissection
Laser capture microdissection is a method for isolating pure cells of interest from specific microscopic regions of tissue sections. Isolated cells can be used for downstream reactions such as RNA extraction for gene analysis, or protein extraction and analysis. Facilities are located in the Department of Anatomy.

Contact: andrew.mcnaughton@otago.ac.nz

MRI Scanner
A General Electric 3 Tesla HDx MRI scanner is located at the New Zealand Brain Research Institute, Christchurch. The MRI facility is well equipped for imaging all parts of the body, but the specific research focus at the Institute is brain imaging. Researchers can access the MRI scanner through the Institute which offers technical support including establishing scanning protocols, help with general imaging troubleshooting, and advice on image processing and image analysis.

Contact Tracy Melzer, MRI Research Manager: tracy.melzer@otago.ac.nz

Otago Centres for Electron and Confocal Microscopy
The Otago Centre for Electron Microscopy (OCEM) is well-equipped for all conventional electron microscopy applications. The Centre specialises in a range of cryopreparation techniques (both transmission and scanning electron microscopy) and immunocytochemical techniques. There are two transmission electron microscopes, a JEM-2200FS Cryo-TEM and a Phillips CM 100TM.

The scanning electron microscopes include a JEOL 6700 Field Emission scanning electron microscope and a Zeiss Sigma VP FEG SEM. The JEOL 6700 FE-SEM is fitted with a Gatan Alto 2500 high resolution cryostage for working with frozen hydrated specimens and an elemental analysis (JEOL 2300F EDS) system.

The Otago Centre for Confocal Microscopy (OCCM) works in close association with the OCEM. It has a Nikon A1R Multi-photon confocal microscope, a Zeiss LSM 710 confocal microscope and two Zeiss LSM 510 confocal laser scanning microscopes: one configured for fixed, slide mounted material, the other for live cell investigations. There is an Olympus AX70 research grade microscope configured for brightfield, phase contrast, darkfield and fluorescence microscopy. It is fitted with a Spot RT 5 megapixel camera and associated software for digital image capture. The Centres also have other equipment available and a full list can be found on the website.

Website: ocem.otago.ac.nz

Otago Flow Cytometry Facility
The Flow Cytometry Facility provides instrumentation that enables single-cell analysis or sorting of live or fixed cells based on their expression of cell surface proteins, cytoplasmic proteins, transcription factors, as well as their DNA and RNA content, all of which can be labelled with fluorescent molecules. The applications for this technology are extremely broad and include: cell viability, cell cycle analysis, cell phenotyping, fluorescent protein detection, flow FISH, apoptosis detection, signal transduction pathways, autophagy, oncosis, necrosis, functional analysis, rare event analysis, translocation, FRET, bacterial assays, CBA, insect cell detection, NADPH, DNA and RNA content, transcription factor expression and more.

The facility also houses a Bioplex machine that allows simultaneous quantification of multiple soluble analytes, such as cytokines, within biological samples, and a magnetic-bead based cell sorter. The facility is situated in two locations: two flow cytometric analysers, the fluorescent and magnetic bead-based cell sorters and the Bioplex analyser are housed on north campus within the Department of Microbiology and Immunology; another flow cytometric analyser is housed on south campus within the Department of Pathology.

Contact: michelle.wilson@otago.ac.nz
Otago Zebrafish Facility
The University of Otago’s Zebrafish Facility (OZF) offers researchers access to one of the most technically advanced zebrafish facilities in Australasia. The 1200-tank facility was commissioned in May 2009 and completed March 2011. The OZF services several high-profile teams, both within the University of Otago and externally, researching cancer, developmental disorders, sex determination, stem cell biology, oxidative stress, behaviour, epigenetics and evolution. Researchers have the option of either “renting” tank space in the facility or contracting OZF staff to undertake the hands-on laboratory work on their behalf. The facility also provides on-site toxicology, pathology, microinjection and imaging services.

Website: otago.ac.nz/zebrafish

PC3 Facility
The Division’s PC3 biocontainment laboratory is located in the Department Microbiology and Immunology. This facility enables researchers to work directly on human disease causing infections and pathogens. This facility facilitates work in virology, tuberculosis, and other pathogens.

Contact: greg.cook@otago.ac.nz

Protein Crystallography Facility
Dr Sigurd Wilbanks serves as the Director of the protein crystallography facility within the Division. The facility consists of three large temperature controlled rooms. One is devoted to crystallisation and contains a MosquitoTM crystallisation robot. The second room contains computer control and modelling facilities. The third room contains a MicroMax007HF with an R-axis IV++ area detector. It is equipped with both chromium and copper anodes and separate optics. Chromium radiation is used for single wavelength anomalous diffraction (SAD) determination of protein structures, mitigating in most cases the need to visit a synchrotron. This approach has been effective for proteins with 2% or more S or Se containing residues. The flux of this machine is roughly equivalent to the protein crystallography beamline at the LSU-CAMD synchrotron facility in Baton Rouge, La. Cryo-cooling is carried out using a Rigaku X-stream 2000 cooling system. The University is also part of a consortium that has regular access to the protein beamlines at the Australia Synchrotron in Melbourne. Beamlines there are optimised for MAD structure determination, micro crystals and native data collection.

Researchers interested in pursuing a protein crystal structure determination should email Dr Wilbanks at: sigurd.wilbanks@otago.ac.nz

DIVISIONAL SUPPORT FOR RESEARCH
The Division has a Research Committee, consisting of the Associate Deans of Research from each School plus other representatives. This Committee meets four or more times annually and controls an annual budget which provides:

- Postdoctoral fellowships
- PhD conference travel funding
- An annual Divisional Research Forum
- Mentoring for targeted grant applications
- Review of applications
- Oversight of PBRF Evidence Portfolio preparation
- Research workshops
- Other support as decided

The Committee is Chaired by the Division’s Associate Dean for Research, Associate Professor Peter Dearden. The Division employs Dr Michele Coleman as its Research and Development Manager and Dr Kerry Galvin to support research.

For further information please contact: michele.coleman@otago.ac.nz
UNIVERSITY OF OTAGO RESEARCH AND ENTERPRISE OFFICE

The Research and Enterprise Office deals with research funding and assists researchers in gaining funding from the application/proposal stage right through to contracting and reporting stages. Research and Enterprise staff provide the liaison between the funding bodies, industry or businesses and staff at the University. The Research and Enterprise Office deal with a range of activities including:

- Research grants, proposals and contracts (externally funded travel and equipment grants)
- Fellowships
- University of Otago Research Grants
- Technology transfer
- Intellectual property protection (including patents and trademarks)
- Material transfer agreements

Under the auspices of the Research and Enterprise Office, research in the Division of Health Sciences is supported by a number of Research Advisors and Administrators, and additional staff at the University of Otago, Christchurch and Wellington.

Staff with Health Sciences Responsibilities:

University of Otago, Wellington
Christine Groves, Research Advisor
christine.groves@otago.ac.nz

University of Otago, Christchurch
Rebecca Coombes, Research Manager
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Karen Chaney, Research Advisor
karen.chaney@otago.ac.nz
Kosta Tabakakis, Research Advisor
kosta.tabakakis.otago.ac.nz

Dunedin School of Medicine
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Dr Edwin Meijerink, Research Advisor, Health Research South
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Ali Cameron, Research Advisor, Health Research South
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Ruth Sharpe, Clinical Research Advisor, Health Research South
ruth.sharpe@otago.ac.nz

Research and Enterprise Office, Dunedin
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Dr Eric Lord, Research Advisor
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Dr Melony Black, Research Advisor
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Dr Diana Rothstein, Research Advisor
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Dr Victoria Jameson, Enterprise Manager – Biotech, Agritech and Public health
victoria.jameson@otago.ac.nz
Dr May Gower, Enterprise Manager – Advanced Technologies and Materials
mary.gower@otago.ac.nz
David Grimmett, Enterprise Manager – Biomedical Technologies and Asia Partnerships
david.grimmets@otago.ac.nz


2013


Journal - Research Article

2014


2014


McMillan, J. (2014). Surgical castration, coercive offers and coercive effects: It is still not about consent [Commentary]. *Journal of Medical Ethics, 40*(9), 596. doi: 10.1136/medethics-2013-101507


2013


2014


2013


Commissioned Report for External Body

2014


2013


Government Submission

2013


FACULTY OF DENTISTRY
OFFICE OF THE DEAN

Authored Book - Research

2013


Journal - Research Article

2014


2013


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2013


2014


2013


2014


2013


*Journal - Research Other*

2013


2014


*Journal - Professional & Other Non-Research Articles*

2013


Commissioned Report for External Body

2013


2013


**Journal - Research Other**

2014


Chandler, N. (2014). Electronic apex locators may be better at determining endodontic working length than radiographs and could reduce patient radiation exposure [Review analysis & evaluation]. *Journal of Evidence-Based Dental Practice. Advance online publication. doi: 10.1016/j.jebdp.2014.12.004


2013


**Journal - Professional & Other Non-Research Articles**

2014


2013


**FACULTY OF DENTISTRY**

**ORAL SCIENCES**

Chapter in Book - Other

2013


**Journal - Research Article**

2014


DIVISION OF HEALTH SCIENCES

125


Journal - Research Other

2014


2013


Journal - Professional & Other Non-Research Articles

2014

2013


FACULTY OF DENTISTRY
SIR JOHN WALSH RESEARCH INSTITUTE

Journal - Research Article

2014


2013


Wittmann, W., & McLennan, I. S. (2013). The bed nucleus of the stria terminalis has developmental and adult forms in mice, with the male bias in the developmental form being dependent on testicular AMH. *Hormones & Behavior*, 64(4), 605-610. doi: 10.1016/j.yhbeh.2013.08.017


**Journal - Research Other**

2014


2013


Journal - Professional & Other Non-Research Articles

2014


2013


Awarded Doctoral Degree

2014


Journal - Research Article

2014


2013


**Journal - Research Other**

2014


2013


**Journal - Professional & Other Non-Research Articles**

2014


2013


2013


Awarded Doctoral Degree

OTAGO SCHOOL OF MEDICAL SCIENCES
MICROBIOLOGY AND IMMUNOLOGY
Chapter in Book - Research

2014


2013


Journal - Research Article

2014


Neumann, S., Burkert, K., Kemp, R., Rades, T., Dunbar, P. R., & Hook, S. (2014). Activation of the NLRP3 inflammasome is not a feature of all particulate vaccine adjuvants. *Immunology & Cell Biology*. Advance online publication. doi: 10.1038/icb.2014.21


2013


Ussher, J. E., Bilton, M., Attwood, E., Shadwell, J., Richardson, R., de Lara, C., … Willberg, C. B. (2013). CD161+CD8+ T cells, including the MAIT cell subset, are specifically activated by IL-12+IL-18 in a TCR-independent manner. *European Journal of Immunology*. Advance online publication. doi: 10.1002/eji.201343509


Journal - Research Other

2014


Journal - Professional & Other Non-Research Articles


Intellectual Property

OTAGO SCHOOL OF MEDICAL SCIENCES

PHARMACOLOGY & TOXICOLOGY

Chapter in Book - Research


Journal - Research Article


160 RESEARCH REPORT 2013/2014
2013


2013


Journal - Professional & Other Non-Research Articles


OTAGO SCHOOL OF MEDICAL SCIENCES
PHYSIOLOGY

Journal - Research Article

2014


RESEARCH REPORT 2013/2014


2013


Condiffe, S. B., Fratangeli, A., Munasinghe, N. R., Saba, E., Passafaro, M., Montrasio, C., ... Carrera, P. (2013). The E1015K variant in the synprint region of the Ca_{2.1} channel alters channel function and is associated with different migraine phenotypes. *Journal of Biological Chemistry*. Advance online publication. doi: 10.1074/jbc.M113.497701


Ly, K., McIntosh, C. J., Biasio, W., Liu, Y., Ke, Y., Olson, D. R., ..., McDonald, F. J. (2013). Regulation of the delta and alpha epithelial sodium channel (ENaC) by ubiquitination and Nedd8. *Journal of Cellular Physiology*. Advance online publication. doi: 10.1002/jcp.24390


DUNEDIN SCHOOL OF MEDICINE
DEAN’S DEPARTMENT

Chapter in Book - Research

2014

Chapter in Book - Other

2013

Journal - Research Article

2014

2013

Journal - Research Other

2014

DUNEDIN SCHOOL OF MEDICINE
GENERAL PRACTICE AND RURAL HEALTH

Authored Book - Research

2013

Chapter in Book - Research

2014
2014

2013


2013


2014


2013


Awarded Doctoral Degree


2014


2013


Journal - Research Article

2014


Pinto, D., Robertson, M. C., Abbott, J. H., Hansen, P., Campbell, A. J., on behalf of the MOA Trial Team. (2013). Manual therapy, exercise therapy, or both, in addition to usual care, for osteoarthritis of the hip or knee. 2: Economic evaluation alongside a randomized controlled trial. *Osteoarthritis & Cartilage*, 21(10), 1504-1513. doi: 10.1016/j.joca.2013.06.014


2013


Journal - Professional & Other Non-Research Articles

2014


2013


Awarded Doctoral Degree

2013


DUNEDIN SCHOOL OF MEDICINE

PATHOLOGY

Edited Book - Research

2013


Chapter in Book - Research

2013


Journal - Research Article

2014


2013


2013


Journal - Research Article

2014


2013


Journal - Research Other

2014


2013


Journal - Professional & Other Non-Research Articles

2013

Moffitt, T. E., Meier, M. H., Caspi, A., & Poulton, R. (2013). Reply to Rogeberg and Daly: No evidence that socioeconomic status or personality differences confound the association between cannabis use and IQ decline. *PNAS*, 110(11), E980-E982. doi: 10.1073/pnas.1300618110


2014


2013

Awarded Doctoral Degree

DUNEDIN SCHOOL OF MEDICINE
PREVENTIVE AND SOCIAL MEDICINE
HUGH ADAM CANCER EPIDEMIOLOGY UNIT

Journal - Research Article
2014

2013

Journal - Research Other
2014

2013


Nocon, R. S., Gao, Y., Gunter, K. E., Jin, J., Casalino, L. P., Quinn, M. T., Derrett, S., ... Chin, M. H. (2014). Associations between medical home characteristics and support for patient activation in the safety net: Understanding differences by race, ethnicity, and health status. Medical Care, 52(11 (Suppl. 4)), S48-S55. doi: 10.1097/NMR.0000000000000198


2013


Coggan, D., Ntani, G., Palmer, K. T., Felli, V. E., Harari, R., Barrero, L. H., ... Harcombe, H., ... Derrett, S., McBride, D., Herbison, P., Gray, A. (2013). Disabling musculoskeletal pain in working populations: Is it the job, the person, or the culture? Pain, 154(6), 856-863. doi: 10.1016/j.pain.2013.02.008


Journal - Research Other


2013


2014


2013

Chapter in Book - Research

Journal - Research Article
2014

2013

Journal - Research Other
2014

Authored Book - Research

Authored Book - Other

Chapter in Book - Research

Chapter in Book - Other


Hancox, R. J., Stewart, A. W., Braithwaite, I., Beasley, R., Murphy, R., Mitchell, E. A., and the ISAAC Phase Three Study Group, including Crane, J. (2014). Association between breastfeeding and body mass index at age 6-7 years in an international survey. Pediatrict Obesity. Advance online publication. doi: 10.1111/joio.266


Braithwaite, I., Stewart, A. W., Hancock, R. J., Beasley, R., Murphy, R., Mitchell, E. A., the ISAAC Phase Three Study Group, including Crane, D., MacKay, R., Moyes, C., Pattemore, P. (2013). The worldwide association between television viewing and children and adolescents: Cross sectional study. *PLoS ONE*, 8(9), e74263. doi: 10.1371/journal.pone.0074263


2013


Commissioned Report for External Body

2014


2013


2014

2013


Awarded Doctoral Degree


DUNEDIN SCHOOL OF MEDICINE

Chapter in Book - Research

2014

2013


2013


2013


Pinto, D., Robertson, M. C., Abbott, J. H., Hansen, P., Campbell, A. J., on behalf of the MOA Trial Team. (2013). Manual therapy, exercise therapy, or both, in addition to usual care, for osteoarthritis of the hip or knee. 2: Economic evaluation alongside a randomized controlled trial. *Osteoarthritis & Cartilage, 21*(10), 1504-1513. doi: 10.1016/j.joca.2013.06.014

Journal - Research Other

2014

2013

Commissioned Report for External Body

DUNEDIN SCHOOL OF MEDICINE
SURGICAL SCIENCES
SURGERY SECTION
Edited Book - Research

2014

2013

Chapter in Book - Research

2014
2013


Journal - Research Article

2014


2013

International Multiple Sclerosis Genetic Consortium (IMSGC), and also Mason, D., Barclay, M., Roberts, R., & Gearry, R. (2013). Analysis of immune-related loci identifies 48 new susceptibility variants for multiple sclerosis. *Nature Genetics, 45*(11), 1353-1360. doi: 10.1038/ng.2770


Vanneste, S., Congedo, M., & De Ridder, D. (2013). Pinpointing a highly specific pathological functional connection that turns phantom sound into distress. Cerebral Cortex. Advance online publication. doi: 10.1093/cercor/bht068


Journal - Research Other

2014


**Journal - Research Other**

2014


2013


**Journal - Professional & Other Non-Research Articles**

2014


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Cappello, S., Gray, M. J., Badouel, C., Lange, S., Einsiedler, M., Srou, M., ... Jenkins, Z. A., Morgan, T., Prentner, N., ... Black, M. A., Markie, D., ... Robertson, S. P. (2013). Mutations in genes encoding the cadherin receptor-ligand pair DCHS1 and FAT4 disrupt cerebral cortical development. *Nature Genetics*, 45(11), 1300-1308. doi: 10.1038/ng.2765

Journal - Research Other

2014


2013


Journal - Professional & Other Non-Research Articles

Commissioned Report for External Body

2014


2013


Chapter in Book - Other
2013

Journal - Research Article
2014


2013


Shipton, E., Ponnamperuma, D., Wells, E., & Trewin, B. (2013). Demographic characteristics, psychosocial measures, and pain in a sample of patients with persistent pain referred to a New Zealand tertiary pain medicine center. Pain Medicine, 14(7), 1101-1107. doi: 10.1111/pme.12113


Shipton, E., Ponnamperuma, D., Wells, E., & Trewin, B. (2013). Demographic characteristics, psychosocial measures, and pain in a sample of patients with persistent pain referred to a New Zealand tertiary pain medicine center. Pain Medicine, 14(7), 1101-1107. doi: 10.1111/pme.12113


2013


UNIVERSITY OF OTAGO, CHRISTCHURCH
DEAN'S DEPARTMENT
Edited Book - Other

2013

Chapter in Book - Other

2013


Journal - Research Article

2014


2013


2014


Awarded Doctoral Degree

2013


UNIVERSITY OF OTAGO, CHRISTCHURCH

GENERAL PRACTICE

Journal - Research Article

2014


Journal - Research Other

2014


**UNIVERSITY OF OTAGO, CHRISTCHURCH**

**MEDICINE**

**Authored Book - Other**


**Edited Book - Other**


**Chapter in Book - Research**


**Chapter in Book - Other**


Hughes, R. C. E., Moore, M. P., Gullam, J. E., Mohamed, K., & Rowan, J. (2014). An early pregnancy HbA<sub>1c</sub> ≥5.9% (41 mmol/mol) is optimal for detecting diabetes and identifies women at increased risk of adverse pregnancy outcomes. *Diabetes Care*. Advance online publication. doi: 10.2337/dc14-1312


Murgatroyd, S. E., Frampton, C. M. A., & Wright, M. S. (2014). The effect of body mass index on outcome in total hip arthroplasty: Early analysis from the New Zealand Joint Registry. Journal of Arthroplasty. Advance online publication. doi: 10.1016/j.arth.2014.05.024


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