

Update on the Precinct - Dr Ian Town

The aim of the Health Precinct is to bring people together to work in new ways, to foster and develop partnerships and collaborations that drive innovation across the areas of health research, health professional education and clinical services.

The Precinct will make a long-term contribution to health and wellbeing, and economic outcomes for Christchurch and the Canterbury region by attracting top quality researchers, businesses, students, and health sector staff to live and work in the city.

A fundamental strategy for the Precinct is ‘Enabling Research Excellence through Collaboration’. Christchurch is well placed and highly regarded nationally and internationally for our research and clinical expertise. The Canterbury Medical Research Foundation has played a huge role in achieving this reputation through funding and leadership.



Dr Ian Town
Health Precinct Advisory Council Chairman

Examples of how the Precinct is working to strengthen the research network include partnering with industry to identify and develop projects that can be scaled up and shared e.g. data analytics; developing joint partner strategies and streamlining research infrastructure to better enable clinicians and researchers to do what they do best; as well as exploring opportunities with ChristchurchNZ and the Innovation Precinct to better link health with the local business and innovation sectors.

With steel framing emerging skywards the Precinct is taking form from west to east along Tuam Street. The first building on the block is the new Outpatients Facility at Hospital Corner, proposed for completion in 2018. Immediately across Antigua St from the Outpatients Facility, at the corner of Antigua and Tuam Streets, is the Health Research Education Facility (HREF). The HREF is a purpose-designed building that will co-locate partners’ health education, professional development and research activities. Ara’s undergraduate nursing, radiography and midwifery students, and University of Canterbury’s postgraduate health science students together with CDHB staff will relocate into the HREF. The building includes an entire floor dedicated to clinical simulation along with spaces that can flex with future needs.

Across Tuam St from the HREF, on the Tuam and Antigua corner, a private development is underway that will accommodate health-related activities including the Christchurch Clinical Studies Trust (CCST). The University of Otago is developing a business case for constructing a building on the site it owns on Oxford Terrace. If the University approves this, the new building would be in addition to their existing main building on the Christchurch Hospital site.

While all this building work is underway it is important to note that the Health Precinct is not just about a physical space accommodating organisations adjacent to the hospital. While co-location will enable collaboration and sharing of ideas and opportunities, and proximity matters for innovation; the Precinct is very much a ‘hub and spoke’ model extending into the wider Christchurch community and beyond. The entire community is at the heart of the Precinct and every activity is ultimately focused on achieving improved health, wellbeing and economic outcomes - for the benefit of all.



Life as a PostGrad - not your 9 - 5 continued...

for human researchers into the future. The lack of good job prospects for new PhD-qualified scientists may mean we lose important intellectual capital overseas.

The improvement in career prospects for women in science was also mentioned. It was great to hear that the environment is now so much more supportive for women in these types of careers.

I asked what these four would say to their 16-year old self, given the chance and with the benefit of hindsight. Here’s what they told me:

“Be ambitious, don’t say no to a career path because it looks hard”

“Don’t be scared of making bold and positive decisions about your career early”

“Do something you love, because you will spend a long time doing it”

“Hard work definitely pays off in the long run”

Wise words indeed.

We at CMRF are so proud to support the young talent emerging from our Canterbury Universities. We focus on this because it is important for the region, for patient welfare and the community as a whole. As our supporters, you help us to do this each and every day.

Welcome to new SAC Chair and thank you to Margreet

After several years leading the Scientific Assessment Committee team, Prof Margreet Vissers is stepping aside as Chair. We are very grateful to Margreet for her generous donation of time to our work. Luckily for us, Margreet is staying on the SAC so we aren’t losing her expertise.

Welcome to the new SAC Chair, Dr Ben Hudson.

Ben graduated from the University of Newcastle upon Tyne (UK) and completed GP training in the North East of England. He has worked as a GP in Lyttelton since 2005. His research interests are in pain management in osteoarthritis, and risk communication. Ben is the convenor for the trainee intern general practice attachment. In addition to his academic and clinical roles, Ben is the clinical leader for education and a member of the clinical board at Pegasus Health.



Dr Ben Hudson

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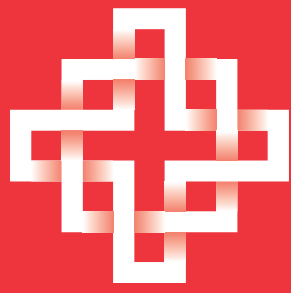
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Canterbury Medical Research Foundation

Research Saves Lives

Research News October 2017

Funded Projects 2017

Congratulations to the successful applicants in this year’s Major Projects Round. Once again, the calibre of applicants was very high and our sincere thanks go to our Scientific Advisory Committee led by Professor Margreet Vissers, who take significant time out of their research and clinical work to assess all incoming applications for us.

Dr Khoon Lim

Engineering Cartilage Constructs using 3D Bioassembly

Articular cartilage has a limited regenerative capacity, and few approaches employed are clinically capable of restoring long-term function. This research is focused on bridging the gap between regenerative medicine and the clinic by developing improved cell therapy strategies and advanced 3D printing scaffold technique for repairing damaged cartilage.



Dr Cameron Lacey

Pilot RCT of Activation Therapy for Inpatient Depression

Patients with severe depression who require admission to an in-patient psychiatric unit usually have serious impairment in many areas of functioning, particularly cognitive function (memory, concentration, planning). We have designed Activation Therapy (AT), a package of intensive psychological treatment combining cognitive activation (targeted computerised cognitive exercises to improve cognitive performance) with behavioural activation (scheduling and encouraging activity to improve mood). We believe this treatment package may improve outcomes for in-patients with depression, particularly cognitive functioning and general functioning, may speed up mood recovery and reduce the likelihood of re-admission.



Dr Martina Paumann Page

Assay development for a protein implicated in metastatic melanoma

Peroxidasin is a protein found in most tissues in the human body. Its physiological function was discovered only recently and so far its contribution to health and disease is poorly understood.

There is evidence that peroxidasin plays an adverse role in certain pathologies. Peroxidasin was shown to be upregulated in numerous types of tumors. Moreover it was identified to be vastly elevated in metastasizing melanoma skin cancer cells. Peroxidasin also appears to be involved in tissue fibrosis.



However, the underlying molecular mechanisms are largely unknown. To date there are no assays available to detect peroxidasin protein and activity. To study the involvement of peroxidasin in melanoma we will develop specific methods to measure peroxidasin in various biological samples, therefore providing important tools to improve our understanding of the reactions of peroxidasin and its implications in health and disease.

continued overleaf

🏡 Funded Projects 2017 continued...

Ms Jennifer Crowther *Towards the development of a bioassay for the early detection of pre-eclampsia*

Pre-eclampsia, a hypertensive disorder, is a potentially life-threatening condition that develops in 2 – 7% of all pregnancies worldwide. Currently, the only option in severe cases is the early delivery of the baby. Symptoms usually subside for the mother within days of giving birth, but early delivery comes at the expense of the health, or even life, of the child. Earlier intervention strategies would allow prolongment of the pregnancy, improving health outcomes for the mother and baby.

Dr Nicola Scott *Phosphodiesterase 9 inhibition as a novel therapeutic strategy in heart failure*

Heart failure (HF) remains a leading cause of death and disability in New Zealand, and new treatments are needed. The natriuretic peptides (NPs) are hormones whose actions alleviate the symptoms of HF and delay its progression. Regulating the activity of the NPs is phosphodiesterase 9 (PDE9), an enzyme that reduces NP signalling and is elevated in HF in association with blunted NP activity. With increasing evidence indicating PDE9 contributes to HF worsening, we hypothesise that inhibition of the PDE9 enzyme will restore NP efficacy with resultant beneficial effects. Our research aims are to explore PDE9 inhibition as a treatment strategy in HF.

Dr Sarah Appleby *Myoregulin: a secret code underlying heart disease*

Cardiovascular disease remains the leading cause of death in New Zealand, necessitating new biological markers that will aid in earlier diagnosis, treatment or prognosis. Recently, a potential untapped source of these markers has arisen from what was previously thought of as “junk DNA”, but has now been found to produce functional proteins. This project will explore one of these novel proteins, myoregulin, which is thought to control calcium levels in muscle cells. Keeping calcium levels balanced in the heart is extremely important for normal heart functioning, thus, myoregulin may be an important regulator of heart function.

Dr Patrice Rosengrave *The effect of vitamin C administration on long-term physical and mental health outcomes of survivors of sepsis*

Sepsis is a life-threatening condition that is widely defined as a systemic inflammatory response to severe infection resulting in multi-organ failure, and is leading cause of mortality in critically ill patients. Many survivors of sepsis have substantial long-term physical, cognitive, and psychological impairments, also known as Post Intensive Care Syndrome. Our data indicates that patients with sepsis have very low vitamin C levels. Previous studies in cancer patients have highlighted the role that vitamin C plays in improving patients' quality of life. Therefore, we hypothesise that vitamin C administration to survivors of sepsis after discharge from hospital will aid in their recovery by improving physical functioning and performance, as well as their mental health.



🏡 Congratulations to CMRF-funded researcher Rachel Purcell

Rachel was recently awarded the Northwest Society of Colon and Rectal Surgeons Award for Clinical/Podium for her presentation at the 2017 American Society of Colon and Rectal Surgeons (ASCRS) Annual Scientific and Tripartite Meeting. This award is rarely given to any researchers outside the USA, so our hearty congratulations on this honour.



🏡 Joining Forces Golf Tournament

With more than one hundred years of work in the community, two iconic charities have joined forces in the crusade against cancer.

The Cancer Society Canterbury West Coast provides support for those with cancer, helping at the coalface with practical care and support at a time when it is needed the most and funding cancer-related research. The Canterbury Medical Research Foundation support researchers in our region to delve deeper, ask more questions and find solutions into complex medical conditions that affect so many New Zealanders.

On Friday 16th March, 2018, these charities invite you to attend their inaugural golf tournament at Russley Golf Club. Here we intend to put the fun into FUNdraising as we host your business, friends and family to a great day out. The proceeds will be spent on providing practical support today, while investing in cancer research for future generations.

When someone is diagnosed with cancer, the Cancer Society is right behind them, offering information, advocacy, support programmes, transport, accommodation and practical support at a difficult time.

With so many appointments to attend, the Cancer Society can help with transport to and from the hospital. For those from out of town, they alleviate the stress of having to find accommodation, often for long periods of time. They help keep families connected.

Over the past 56 years, CMRF has helped hundreds of promising cancer research ideas to be realised and provided more than \$25 million in funding into the Canterbury region.

If you would like to know more, contact Event Manager Caroline Wagteveld McKenzie on caroline@cmrf.org.nz



🏡 Wine and Art Auction Preview

With more than fifty items on offer, the 2017 Wine and Art Auction is going to be a wonderful night raising funds for the work of Professor Stephen Chambers in Legionella as a cause of pneumonia in the community.

We have secured work from internationally recognised artist Keith Morant, a gorgeous vase from Höglund Glass, holidays in Akaroa, Queenstown and Melbourne and a wide array of collectable wines not available for sale to the public.

We are able to take bids from those not available to attend on the night so contact us if you would like a catalogue.

Bidding should be fierce on the fun “Girls Night Out” thanks to Anna Stretton and Pink Limos! If you would like to go on our mailing list for an invitation to the event in the future, please contact Event Manager, Caroline Wagteveld McKenzie on caroline@cmrf.org.nz.



🏡 Life as a PostGrad - not your 9 - 5

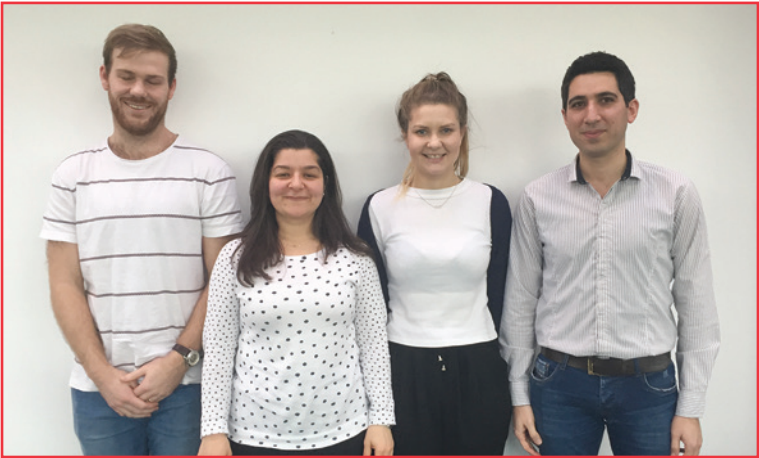
One of the most satisfying things about our work, is seeing young researchers growing and developing their careers. The legacy of Prof Don Beaven's original vision, is our focus on these emerging researchers as the future of medical science.

We sat down recently, with four Post-graduate students at the University of Otago Medical School, to ask them about what life was like as a young researcher in today's environment.

Rebekah Crake, Ali Mohammadi, George Wiggins and Bee Bathish are all working on projects which could have significant effects on how we approach the treatment of various diseases, from Breast Cancer to Legionnaires Disease.

Interestingly, none of the four described their move into medical research as the result of some sort of epiphany or rush of insight. Instead, they all described a step-wise process. For some, beginning with an interest in science at High School, leading to their choice of subjects at University and from there gradually becoming immersed in research. However, Ali's story is a little more colourful. Having been accepted, as an international student, to another NZ University, he soon realized the project was not for him and as a result of the stress he was feeling he became run down and ended up in hospital with pneumonia in Christchurch. Word got around of his specialty to the students involved in his care (Christchurch is a 'teaching' hospital) and a visit from the Christchurch Med School Dean, Prof David Murdoch, led to Ali being offered a place at Otago. From there he hasn't looked back!

The hours worked by all four are long – ranging from 50 – 70 hours per week. Hours 'ebb and flow' according to whether they have papers due, exams or experiments that require them to come in at odd times of the day or the weekend. Despite the demanding hours, all four were effusive in their praise for the Christchurch Medical School's atmosphere, saying it was a wonderful place to work, where a lot of thought is put into having social events and maintaining work-life balance and a happy, collegial environment.



From left - George Wiggins, Bee Bathish, Rebekah Crake and Ali Mohammadi

It was clear from our chat, that the driver for these young people is making a contribution to science, medicine and the community through their work. The impact on patient care and outcomes is something that provides a purpose to their work that gets them through the harder times, when funding is scarce or the work itself gets frustrating. Every day brings something new or different to their work and the amount of self-directed work is definitely a plus for most people.

One thing I have noticed in dealing with young researchers in my time with CMRF, is that the work they do develops a lot of resilience in their character. Facing many unsuccessful grant applications, some failed experiments and lines of enquiry or hypotheses that meet a dead end, all serve to create a mental and emotional toughness that I am sure, stands them in good stead in other areas of their life.

When asked what they like least about the work, failed experiments certainly rated most highly with all four, but the point was made that every 'failure' or dead-end is still important science, as it all contributes to getting each project closer to the correct answers.

One of the biggest strains on young researchers (and those more senior) is the uncertainty of funding and whether there will be a job for them at the end of each project. All four would very much like to see a higher level of government funding for medical research and recognition of the economic benefits to the country of providing that higher level of support. Much like engineering or manufacturing innovation, advances in medicine that see their genesis in this country may also produce important GDP for New Zealand's economy.

Foundations such as CMRF fill a very important gap for funding niche projects that may not otherwise get off the ground.

A background concern is the proliferation, in medicine, of robotic workers and what impact this might have on the need

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