Chairman’s Note

The past four months since CMDT Quarterly Issue 4 have seen a range of medtech companies making waves internationally and in NZ. Nexus-6 (now Adherium), a digital health company specialising in respiratory disease adherence, successfully listed on the ASX in August bringing A$35M into the NZ economy. More exciting perhaps, is the long term contract with partner Astra Zeneca to supply smart inhalers for use in global patient support programmes.

Hot on the heels of this was AREA360’s Series A capital raising in the US which closed in September with $5.5M. AREA360 has an elegant platform to create meaningful pathway finding experience in large frequently visited places such as airports, museums and hospitals. This combines their i-beacon navigation technology with a history of connecting digital content to physical locations through the STQRY app.

Closer to home, ARANZ Medical was named Exporter of the Year to the US in the recent American Chamber of Commerce Awards. The company designs and manufactures a wound care system that has transformed the clinical process in skin assessment supporting for better health outcomes. ARANZ Medical’s US clients are amongst the world’s largest healthcare providers such as Kaiser Permanente and the Department of Veteran Affairs. For the latest stories on the NZ medtech sector visit the CMDT website Events and Stories page.

The growing contribution of the medtech sector was recognised in the 2015 preview of the TIN100 Top Ten Companies to Watch and Hot Emerging Companies. The first category of firms with revenues from $14M to $1B featured Fisher & Paykel Healthcare in fourth place. SimplHealth and Pacific Edge were in the second emerging companies list of entities in the $2M - $14M range. The full TIN100 report is out at the end of October and it will be interesting to see how the overall medtech sector has performed this last financial year.

A recent article on the “10 disruptive technologies that will disrupt pharma” is an interesting read on healthcare trends going forward. Many such as body sensors, gamification of therapy, and 3D printing are already here to stay; these are also areas where NZ research and firms are active in. The next big ticket item to watch is possibly the mainstreaming of individually customised therapy based on our own genetic data for personalised medicine.

Finally, let us reflect on Healthtech Week in June, co-hosted by MTANZ, NZ Health IT and the CMDT. This was a showcase of the best NZ has to offer in the health sector and to encourage further collaboration, idea sharing and cross-pollination to grow our medtech industry. The week started with the inaugural MedTech Centre of Research Excellence Day, bringing together those involved in R&D in one place to share ideas and to work together. The NZ Healthcare Congress followed and brought a broad range of stakeholders to contribute to the conversation around the delivery of world-class healthcare for NZ in the future. Then technology developers were put in front of potential investor partners in the Innovation & Investment Workshop.

An Entrepreneur’s Bootcamp to upskill NZ start-ups and entrepreneurs ended the week. CEOs from some of NZ’s best emerging medtech companies, ARANZ Medical and SimpliHealth shared their experiences at the Bootcamp, as an invaluable way for start-ups to learn from their peers. The Week attracted 520 participants from NZ and multinational businesses, healthcare providers, researchers, government and investment partners. Healthtech Week also saw the two inaugural prizes – the Best Translational Research Project and Best Start-up Opportunity Awards. Read about our winners in this issue and a big thank you to our sponsors Callaghan Innovation, ATEED, MTANZ, NZ Health IT and the CMDT partner organisations.

I hope you enjoy this issue which feature University of Canterbury as our guest editors. Do send us your feedback and comments as these are always appreciated for our improvement process.

Diana Siew and Peter Hunter, CMDT Co-Chairs
Canterbury Scientific Ltd is a privately owned, Christchurch based, company specialising in the development, production and export of quality Haemoglobin controls for haematology and clinical biochemistry tests. The tests are prized for being highly reliable and ethical with enhanced stability and shelf life.

When Dr Neil Pattinson joined the company as CEO in 2010, he forged strong research links with the University of Canterbury's Biomolecular Interaction Centre, resulting in a number of joint research projects. These included studies on the oxidative state of Angiotensinogen and its implications in relation to pre-eclampsia, and soluble FLT-1 as a potential cardiovascular biomarker.

In 2012, the collaboration received MBIE funding of almost $1 million to develop diagnostic markers for diabetic complications. This involved in the development of an assay for Advanced Glycation End (AGE) products, which would complement the HbA1c assay, which is used both in the management and diagnosis of diabetes. Diabetes affects more than 347 million people worldwide, with over 240,000 diagnosed cases in NZ and many more undiagnosed.

Canterbury Scientific Ltd sells their products to a number of large international medical equipment companies on an Original Equipment Manufacturer (OEM) basis. This term is used when one company makes part of a system that is utilised in another company’s end product. It identifies customers through trade shows and Clinical Biochemistry meetings, together with support from NZTE for opportunities within the emerging markets.

In 2012, the company won the NZ Innovators Award for Health and Science, and both the Global Operator and Supreme Awards in the Champion Canterbury Awards. It was also finalist in the 2013 NZ International Business Awards and again in 2015. It offers UC students the exceptional experience of working in a productive and successful biochemical company through continuing scholarship support.
Based at St George’s Medical Centre in Christchurch, the University of Canterbury Rose Centre for Stroke Recovery and Research was established in 2015 to develop new standards of best practice for stroke patients. The centre is headed by UC’s Associate Professor Maggie-Lee Huckabee who runs a stroke research programme through her Swallowing Rehabilitation Research Laboratory at UC.

Equipped with the latest biomedical and neural technologies for understanding and visualising swallowing processes, the centre houses rehabilitation clinics, which specialise in intensive rehabilitation programmes that maximise recovery of function in both sub-acute and chronic patients. Plans are underway to extend these clinics to broader multidisciplinary areas.

Strokes are the second most common cause of death worldwide and a common cause of disability in adults in developed countries. Currently, more than 32,000 New Zealanders are living with disabilities arising from a stroke, and the associated area of swallowing rehabilitation research is still in its infancy compared to other disciplines.

The research wing of the Rose Centre is set to make waves in the stroke research world through strong relationships with international and national hospitals that assist with data collection, and through collaborations with local clinicians from the Canterbury District Health Board and clinical researchers from Singapore General Hospital.

University of Canterbury researchers are creating the world’s first human colour x-ray scanner which could revolutionise medical imaging, make NZ a world leader in the field and enable health researchers to better understand health problems ranging from heart disease and cancer to joint implants.

The University of Otago, Christchurch and University of Auckland are collaborating on the project, which will allow medical researchers to see inside the body in colour, and to measure components of human tissues, as well as some drugs, to improve medical diagnosis and disease management.

Professor Anthony Butler, who led the human scanner project at both Otago and Canterbury, says the team has already worked with local industry to design small pre-clinical scanners, which have been sold to medical researchers around the world through the UC spin-off company, MARS-Bioimaging. The challenge now is to enhance the device so it can be used in clinical trials.

This enhanced device will be the world’s first full spectral CT colour x-ray scanner capable of measuring eight x-ray energies simultaneously to give compositional — molecular — information about tissues. The initial focus will be on heart disease, bone implants and on helping the work of cancer researchers and drug developers.

The human scanner will be hosted at the University of Otago within Christchurch’s Health Precinct. The team includes key researchers from the NZ MedTech CoRE including Prof Phil Butler (physicist, UC) and Associate Professor Nigel Anderson (radiologist UO).

The project has links with dozens of international universities, including Yale University, the Mayo Clinic and CERN, the European Organization for Nuclear Research. Last year it won the Canterbury Regional Deloitte Fast 50 Rising Star Award and was finalist in two categories in the 2014 NZ High Tech Awards.

Colour X-Ray imaging has huge potential!

The team at the UC Rose Centre for Stroke Recovery and Research. Pictured are: (back row, from left) Professor Richard Jones, Karen Ng, Kerstin Erfmann, Sarah Davies and Kristin Lamvik; (front row, from left) Dr Phoebe Macrae, Associate Professor Maggie-Lee Huckabee, Sara Moore and Esther Guiu Hernandez.

Professor Anthony Butler
Seamus Tredinnick from the University of Otago was awarded the inaugural Healthtech Award for Best Translational Research Project for the development of clinically successful 3D printed custom implants. During the course of his PhD at the University of Canterbury, Seamus worked with Ossis, a world-leading custom orthopaedic implant company, to develop a 3D printed titanium scaffold that promote bone growth into Ossis’ implants.

Initially, a CT scan of the patient provides the anatomical template of the area that needs to be repaired. Ossis then designs a custom implant that is 3D printed in titanium before being applied by an expert surgeon. The end result repairs the damaged anatomy and gives the patient back their mobility and quality of life. Seamus’ titanium scaffold encourages the surrounding bone to grow into the implant, which enables load sharing and ultimately improves how long the implant will last in the patient.

The developmental approach of Ossis includes a comprehensive understanding of the science behind why its products work and how they interact with the patient. This enables Ossis to develop the most effective products on the market. The technology is currently incorporated into custom hip implants offered by Ossis. As a next phase of research, they are looking at further improvements to the technology to extend the application to a greater range of orthopaedic implant products.

Seamus considers NZ to be among the best places in the world in promoting innovation and new technologies. “NZ is a wonderful testing ground for technologies...especially for evaluation how the market responds. We are small and isolated so we can look at different ways of marketing our products without affecting the global market. We can try out different ways to communicate with our clients to work out what the most effective strategies are.” Secondly, the regulatory environment in NZ is quite conducive to innovation – “We can talk [to end users] over coffee ...and actually have meaningful conversations with the people who use our products and the people who decide if their hospitals will use our products. It is very easy to develop new ideas because you talk to these people directly. And of course, as healthcare consumers, we like the idea of the latest and the greatest!”

In addition to Seamus’s day job as a Assistant Research Fellow at the University of Otago, his evenings and weekends are spent completing his PhD thesis and as the Co-founder and CEO of Ossability. Ossability uses a derivate of the titanium scaffold technology and produces orthopaedic implants for the veterinary market, primarily companion animals. Since launching their flagship product in February this year, Ossability has treated well over one hundred patients and currently treats one patient every day in NZ alone.

Seamus Tredinnick and his team are a great example of the exemplary innovation of biomedical engineers working across disciplines using the latest technologies and creativity to understand and advance healthcare.

-Jyoti Chugh
Melon Health—Care at the Patients’ Fingertips

Melon Health, winner of the inaugural award for Best Start-up Opportunity at the 2015 NZ Healthtech Week, is a Health IT company aiming to complement traditional healthcare services with an innovative mobile app. Their service platform focuses on patients with chronic diseases and integrates care applications with peer support and access to clinicians. Reflecting their integrative platform, Melon Health has adopted a collaborative approach in working with their customers that include healthcare providers, pharmaceutical companies, diagnostic companies, insurers and research institutes to extend their care to patients beyond the physical barriers.

NZ is home to founder & CEO, Siobhan Bulfin but her vision for Melon Health has been that of “a global company but based in NZ” from the beginning. She recognized that to be successful they need to be able to play in very highly competitive environments like the US. She has found NZ to be a fairly small market with comparatively lower receptivity to newer technologies. Her years of overseas experience and travels have been an asset in pursuing the international outlook. Siobhan feels “international experience is really important because you learn to relate to people from different cultures and you are less intimidated by people from a country. There’s no reason why a company in NZ can’t compete with a big company in US.”

NZ companies have to compete just like every other company; but Siobhan believes that timing is key to be successful on a global market. This, the business model, the team and the idea are the most important ingredients – but the “idea is the easy bit”, she adds. For Siobhan, personal characteristics are quite important in growing businesses - specifically resilience and perseverance. Not that you ever stop learning! As a CEO, you have to develop and continue to evolve.

Melon Health has a strong team with a passion for delivering the right care for improving health outcomes. They have created a self-sustaining platform by not limiting their market to one segment. In addition to the passion for providing healthcare, most of the team her team are also passionate about health and wellbeing. Siobhan loves running and has been teaching yoga for about 13 years. “[Yoga] helps keep you focussed. It gives you strength of mind, and balances mind and body...if you’ve got more energy, you can do more things.” Her conscientious attitude towards balance in life is extended to the team, and of course, patient care via Melon Health platform.

In this highly digital era, Melon Health addresses a very core need of making available a chronic disease prevention and management solution. She is conscious of not spreading her team of 12 too thinly and hence is entering the market in stages. Melon Health is targeting the US and Australasia at present and slowly moving into the UK and Singapore. We are very excited to follow Melon Health’s progress within these markets.

- Jyoti Chugh

Do you have a story for our Newsletter?

If you would like to contribute to the quarterly CMDT Newsletter or have a story you would like to share, please email the details to:

Jyoti.chugh@callaghaninnovation.govt.nz
Upcoming Events & Other News

**ANZORS 2015 Conference**

Registration is now open for the 21st Annual Scientific Meeting of the Australian and New Zealand Orthopaedic Research Society (ANZORS).

Date: Friday, 2nd October to Sunday, 4th October 2015

Location: Auckland, New Zealand

For more information, or to register click [here](#).

**Look out for the D4 Conference**


For more information, visit our [events page](#).

**MedTech hits runway at fashion week**

ConfiTEX incontinence products – beautiful, fashionable, NZ-designed incontinence underwear were showcased at Fashion Week 2015. Mark Davey and Frantisek Riha-Scott spent three years developing a new patented waterproof fabric in a garage in Birkenhead at Auckland’s North Shore.

ConfiTEX Absorbent Underwear use this fabric that is pad-less, fashionable, functional, fully textile based and washable. They are also eco-friendly because they are made of bamboo based material without plastics or harmful chemicals. For more information, visit their [website](#).

**Medica 2015: Delegation from NZ Inc.**

Callaghan Innovation and NZTE are leading a mission for NZ companies to attend Medica 2015. Any organisations intending to attend Medica are invited to join the group.

Callaghan Innovation is a partner of the Enterprise Europe Network that have organised a Healthcare Brokerage event at Medica. The NZ Inc. delegates will have the opportunity to participate in this event and schedule meetings with other participants to initiate new businesses, meet providers of innovative technologies and establish contacts with potential collaborators in research and business.

To express interest in attending Medica with the NZ Inc. delegation, please contact: Diana Siew at diana.siew@callaghaninnovation.govt.nz or Jyoti Chugh at jyoti.chugh@callaghaninnovation.govt.nz

**Concerned about Dental Hygiene?**

So was Dentist Ben Underwood from the UK when he developed the Brush DJ. It is a free toothbrush timer app that plays two minutes of music from the user’s playlist to encourage brushing for effective length of time. The app also allows users to set reminders to brush twice a day, floss, use a mouthrinse and when next to see their dentist or hygienist.

The Brush DJ app was the AXA PPP Health Tech & You Category winner for 2015. More details [here](#).

We would love to hear your ideas...

Bill Chien, a Bioscience Enterprise Intern at Callaghan Innovation is working on defining the future landscape of medical technologies and identifying potential opportunities for New Zealand.

If you would like to contribute to his research, please contact Bill at bill.chien@callaghaninnovation.govt.nz