A Note from the Co-Chairs

HealthTech Week, the medtech sector’s main conference and showcase is looming upon us and the CMDT is pleased to co-host it once again with the Medical Technology Association of NZ. There is a smorgasbord of events to choose from over 19-22nd June, catering to the needs of the various stakeholder communities – industry, researchers, clinicians and healthcare specialist, investors and government. It will be great to catch up with many of the CMDT affiliates and friends attending.

The CMDT is developing its strategy to take it from the formation phase over these last five years to its next stage of growth. The feedback that we have had thus far from those taking part in the interview sessions to help the development of our new strategy has been positive – many of our affiliates see the CMDT as the one-stop trusted platform for connections, advice and technical expertise. Our networking sessions such as the TIKI Tours are appreciated as it provides a neutral platform for industry, research and clinicians to come together around technology and innovation. It is timely to thank everyone for their support and the CMDT can only succeed if we share the same vision of “NZ medical technologies as a pillar for good healthcare for our citizens and providing economic growth for the future”. We will share our new strategy once that is available but one element it will include is connectivity to overseas markets.

Our research arm, the MedTech CoRE has also just been reviewed by the Tertiary Education Commission as part of an assessment of all the funded CoREs in NZ. The MedTech CoRE has been given a healthy report card and will continue to build upon its research, post-doctoral student training and community educational outreach. The CoRE would be interested in hearing from potential industry and clinical partners and collaborators. It is also continuing on with the MedTalk series initiated in 2016 to raise public awareness around advances in science and technology that will impact health care in the future. HealthTech Week includes a MedTalk hosted by the Auckland Bioengineering Institute around the use of science to personalize health care pertaining to heart, lung and gut function.

As a final note, the CMDT and MedTech CoRE are working with the MBIE International Science Partnerships team to develop research and business collaborations with Japan around “technologies for older people care”. We hosted a workshop for a Japanese delegation in March (see article) to initiate discussions and a return workshop in Tokyo is now being planned most likely for September in conjunction with a medical technology exhibition. If you are a company interested in the Japanese market and in the area of older people care and rehabilitation, please send contact Diana on diana.siew@auckland.ac.nz.

Other big ticket items on our horizon for the next half of the year are two more TIKI Tours in planning, and the Callaghan Innovation Wearables C-Prize competition. We are currently identifying the areas of interest of the host organization for the TIKI Tours and will be in contact after HealthTech Week. Have a good HealthTech Week if you are attending and please come say hello if you spot us first.

Peter Hunter and Diana Siew
MedTech TIKI Tour at the Auckland City Hospital

The TIKI (Technology Innovation and Knowledge Interchange) Tour visited Auckland City Hospital on 01 May 2017 with New Zealand’s latest medical technology innovation. Hosted by the Auckland District Health Board (ADHB) in conjunction with the CMDT and the MedTech CoRE, this Tour was led by Dr Andrew Old, Chief of Strategy, Participation and Improvement and Dr Margaret Wilsher, Chief Medical Officer from the Auckland District Health Board. TIKI Tours provide a convenient platform to facilitate networking and dialogue between healthcare professionals, researchers and the industry. With an attendance of over 100 ADHB staff including senior executives, clinicians, surgeons, physiotherapists, nurses, as well patient families, the event was received with very positive feedback.

Technologies featured were those that matched the ADHB’s areas of interest with participants coming from industry, the MedTech CoRE and ADHB research groups. Collaborative ventures between ADHB and the Auckland Bioengineering Institute and Auckland University of Technology (AUT) were also highlighted. The focus of the Tour and associated participants were:

- **Rehabilitation**: Rex Bionics, AbleX Healthcare
- **Education support**: kuraCloud, Healthpoint, The Clinician, Design for Health and Wellbeing Lab*
- **Self-management and self care technology**: Adherium, Melon Health
- **Automation, sensing and tracking**: BUPA
- **Health and safety**: Endotechnologies, Veriphi
- **Virtual reality in health**: ADHB
- **Pulmonary medicine**: ABI and ADHB
- **Tissue geometry and measurements**: ABI
- **Rehabilitation Innovation Centre**: AUT

“It was extremely enjoyable and a great opportunity to educate DHB staff on current New Zealand medical technology and research”

Tom Boyens, Product Development Engineer, Veriphi

“We should definitely do this again”

Dr Margaret Wilsher, Chief Medical Officer, ADHB

“Attending the ADHB Tiki Tour was a great way of meeting a wide range of potential customers and users of our e-learning product. CPD is a new potential growth area for us and a session like this gave us a very quick way to gain a lot of understanding in how it operates in the DHB context”

David Newstead, Head of Education Business Unit, ADInstruments

The TIKI Tour is stopping in Wellington next later this year.

* The Design for Health & Wellbeing Lab is a collaborative venture between AUT and the ADHB.**“Pulmonary medicine” is a collaborative research programme between Professor Mernyn Tawhai (ABI) and Dr Margaret Wilsher (ADHB)

- Kanmani Balasubramaniam (ABI)
Providing measurement solutions to MedTech

Measurement Standards Laboratory (MSL) can work directly with MedTech businesses to solve research and development problems that are related to measurement, and connect businesses to IANZ-accredited testing and calibration laboratories.

Measurement is a key enabler for the development of many technologies such as medical devices, instruments used for safety, and IT products/solutions for human health such as self-monitoring healthcare devices.

Making reliable measurements and understanding the derived uncertainties is critical for good decision-making when using devices for diagnosis, monitoring and treatment of medical conditions. Examples of applications are laser power in diagnostics and therapy; humidity levels in respiratory therapy; accuracy of thermometers; and dimensional accuracy of artificial implants.

MSL is responsible for ensuring international recognition of New Zealand’s National Measurement System, which is essential for ongoing international trade and regulatory compliance. Along with training and advice, MSL provides the most accurate calibration service in the country for a wide range of instruments and artefacts.

For more information: visit www.measurement.govt.nz

Medical Device Manufacture

When Richard Little and Robert Irving set about inventing a walking robot for people with mobility impairments they had no idea of the scale of the challenges that lay ahead. Whilst the initial engineering efforts to produce a functioning device seemed daunting, there was a whole new world of medical device regulations that needed to be successfully navigated in order to be able to sell the product commercially.

The success of the initial proof of concept devices clearly showed that Rex had an idea that would be of benefit to thousands of people around the world. However, it was not going to be possible to deliver this benefit without understanding and then complying with the various medical device regulatory standards necessary for market entry.

At Rex Bionics we have concentrated on the FDA’s GMP regulations (21 CFR Part 820) as well as ISO 13485. All of our production processes including component purchasing, inwards goods, work order picking, building, testing, dispatch and most importantly traceability are dictated by these systems.

The medical device quality systems are extremely beneficial to the manufacturing process. They highlight manufacturing problems and force issues to be addressed. This ultimately leads to a product that is quicker to make and more reliable for the end customer.

Having been through the process of achieving ISO 13485 accreditation, Rex Bionics has the ability to offer access to a fully certified production facility together with our expertise in medical device manufacture to early stage kiwi medical device companies. We can offer manufacturing consulting from a very early stage and have the capability to run production for companies unable to finance or without the time to develop an entire certified production line for initial product runs.

For further info, contact Mike Orange: mike.orange@rexbionics.com
The CMDT and MedTech CoRE hosted a Japanese delegation led by the Japanese Agency for Medical Research and Development (AMED) on 2nd - 3rd March, 2017. Sponsored by the MBIE, the two-day event brought together researchers, health providers, companies and government agencies from NZ and Japan. The event explored areas of R&D and business collaborations in elderly care, a pressing healthcare need for both countries.

A technology showcase/networking event opened the workshop to facilitate interaction in an informal setting. NZ and Japanese companies set up an informal showcase of their technologies and approaches to elderly care. The participating companies (shown in the graphic below) illustrated the breadth of technologies in elderly care, whilst identifying the areas for potential growth.

The full day workshop highlighted the available technologies, research strengths and the underlying cultural motivations from Japan and NZ, to identify areas for potential collaborations. The Japanese speakers focussed on the use of robotics in elderly care to address the needs of their increasingly aging population and limited workforce to provide care. NZ speakers discussed the technologies in rehabilitation, and shared their perspectives on technologies to support elderly with independent living.

The workshop was a platform for Japanese and NZ delegates to build networks, establish understanding of each country’s capabilities and supporting ecosystem for technology development. Potential areas to explore collaboration opportunities were identified.

The presentations at the workshop are available at: [www.cmdt.org.nz/usefulinfo](http://www.cmdt.org.nz/usefulinfo)
Microwave Breast Screening: An idea whose time has come

The team led by Professor Yifan Chen from the School of Engineering in the University of Waikato has developed a noninvasive medical imaging system that conveys low power of microwaves for women's breast screening. The system aims to scan women in all age groups and all high-risk groups at affordable costs with imaging performance comparable to that of X-ray mammogram, and thus has the potential to transform the existing breast screening programmes worldwide. For example, BreastScreen Aotearoa, New Zealand's free national breast screening programme, currently only offers mammograms to eligible women aged between 45 and 69. Since December 2016, Prof Chen and ET Medical, a leading medical instrument company headquartered in Shenzhen, China have started a large-scale clinical trial in China, which is the first of its kind in Asia-Pacific.

Compared to the existing X-ray mammogram, ultrasonography, and MRI, microwave breast imaging could be a more attractive screening tool because both ionizing radiation and breast compression are avoided, leading to safer and more comfortable exams. It also has the potential to be both sensitive and specific even for dense breasts, to detect small tumours, and to be much cheaper than other methods such as MRI. Prof Chen's team is one of the few research groups in the world that have carried out comprehensive clinical trials for microwave breast imaging and is the first one in Asia-Pacific. The imaging device incorporates sophisticatedly designed radar sensors with operating frequency and transmission power comparable to those of a mobile phone. A scan can be completed within 4 minutes.

In the first stage of the trial, the system has been deployed to examine 11 healthy women with 6 of them having mammary hyperplasia. These preliminary tests confirm the system's effectiveness and suggest that responses from mammary hyperplasia can be identified successfully. It is expected that hundreds of patients will be tested in the next few months.

"After many years of stagnancy, we will finally witness the first-ever fully-fledged clinical application and commercialization of microwave breast screening technology in the next 1 to 2 years", Prof Chen said, "This clinical trial will also be the first large-scale trial towards Asian women, who usually have denser breasts than European women thus bringing in more difficulties for tumour detection by using X-ray or ultrasound."

With the help of ET Medical, the clinical trial has proceeded in a fast track. Prof Chen is confident in the future impact of microwave breast screening on affordable healthcare, "With the right product design, development, and commercialization strategies, microwave breast scanners can be widely deployed in rural and underdeveloped areas in a cost-effective manner that means a lot to women living there!" Prof Chen is also keen to apply the technology in New Zealand's national breast screening programme, “Recent Ministry of Health reports show that Māori women are more likely to be diagnosed with breast cancer, less likely to be diagnosed early, more likely to die from breast cancer than non-Māori, and tend to get breast cancer at a younger age. Pasifika women also have higher rates of breast cancer than Pākehā/European women. These situations may be changed with the deployment of the microwave breast screening technology given its superior performance."

- Prof Yifan Chen (University of Waikato)
Upcoming Events

HealthTech Week 2017: Technology-Enabled Healthcare

HealthTech Week 2017 kicks off on Monday, 19th June with HealthTech Plenary day. Stakeholders groups in Medical Technologies will come together during the week to discuss issues of strategic concern and to identify new areas for innovation, investment and growth. The events will reflect a passion to deliver a future that is accessible, affordable, sustainable and strives for clinical excellence.

More information on events during the HealthTech Week is available at: www.healthtechweek.nz

Productising Biomaterials Workshop

Are you working in the biomaterials space? The MedTech CoRE and Callaghan Innovation are organising a workshop about “Productising Biomaterials” on Thursday, 22nd June. It offers you the chance to hear international and local experts in the area, and meet and network with people who may be able to help you with the aspects that you are struggling with in your own journey to turn your regenerative medicine idea or material into a product.

For more information, and to register visit: https://www.cmdt.org.nz/events

ABI MedTech Talk: Using Science to Personalise Healthcare

Imagine going to the doctor and seeing a personalised 3D model of your heart, lungs and gut flush up on a computer screen.

At 5pm on Thursday, 22nd June 2017 Dr Alys Clark, Dr Mark Trew and Dr Leo Cheng will demonstrate how they are using engineering, physics, mathematics, physiology, molecular biology and computer science to make computer models of the human body. More information is available at: https://www.cmdt.org.nz/events

Practical Measurement Training

In addition to calibration and consultancy services, the Measurement Standards laboratory offers a wide range of practical training courses. Scheduled courses, open to all, are conducted annually. They can also provide ‘in-house specials’ tailored to your needs and presented on site. More information on the courses is available at: https://www.measurement.govt.nz/training-and-resources/

Cybersecurity in Health 2017 Symposium

Learn about best practice in cybersecurity from expert speakers: Who is trying to hack you? What the future and new technologies will bring? You’ve been hacked! Recovery and remediation! What does an Incident Response Plan look like? Outsourcing your security and insurance. Topics include AI/machine learning, blockchain, cloud, mobile devices, IoT, the pros/cons of outsourcing and insurance, Government policies and tactics, developing an incident response plan, practical case studies. Plus lots of audience interaction - so you can ask questions and get expert answers.

When & Where: The Maritime Room, Princes Wharf, Auckland CBD, Tuesday 1 August 2017

The 2017 HiNZ Conference

New Zealand’s digital health event will run for three days from Wednesday 1 November to Friday 3 November, and it includes the one-day NZ Nursing Informatics Conference (NZNI-17) on Thursday 2 November. A number of optional workshops will be held prior to the conference.

For registration & more details, visit http://www.hinz.org.nz/?page=2017HINZConf