2019

HEALTH+MEDICAL RESEARCH

Medical Device Commercialisation Training Program

NSW GOVERNMENT

Office for Health and Medical Research

100 Christie Street
St Leonards NSW 2065

(02) 9391 9228

MOH-OHMR@health.nsw.gov.au

www.medicalresearch.nsw.gov.au

Further copies of this document can be downloaded from the NSW Health website: www.medicalresearch.nsw.gov.au

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A message from the Minister

Patients are at the centre of everything we do in Health. Whether it is recruiting more frontline health professionals, building health infrastructure, or investing in groundbreaking medical research, we are striving to provide the people of NSW with the highest quality of life.

Our continued investments in research help us remain at the forefront of groundbreaking discoveries, leading to better care and treatments for patients. Yet, as amazing as our researchers and their discoveries are, we need to provide additional support to those innovating through medical devices, which can take many years to reach the market and the clinic.

The NSW Medical Device Commercialisation Training Program is an important part of our solution to this. It is a complementary program that helps fulfil a commitment to embed research into the health system, build medical device commercialisation capacity in NSW, and contribute to the discovery and application of new treatments and diagnostic

techniques. In short, it aims to accelerate the benefits of medical research to patients.

The Program also drives jobs and innovation, feeds the entrepreneurial spirit and attracts outside investment into health. The fact that it has been awarded 12 credit points towards MBA Programs at the University of New South Wales and University of Wollongong is a testament to this.

To date, the Program has produced 66 graduates, 14 companies, 17 industry placements and helped to raise over $49 million in grants and private investments, creating job opportunities in Australia and abroad. I am confident that this year's cohort will experience a similar trajectory, building on these outstanding results.

I would like to thank NSW Health's Office for Health and Medical Research and Cicada Innovations for their part in providing ongoing support and outstanding guidance to the Program.

To all of the 2019 graduates, I congratulate you for your innovation, your determination and your constant commitment. Your technologies will assist NSW to significantly improve the way we treat and care for patients, improving health and economic outcomes.

The Hon Brad Hazzard MP
Minister for Health and Medical Research

A message from Cicada Innovations

Bionics and cyborgs, artificial intelligence, whole genome sequencing, cell therapies, bio-printing and robots. We are experiencing unprecedented advances in medical technologies that promise to improve healthcare outcomes and the future of humanity. These emerging deep technologies, the products of passion and scientific endeavour, arrive on the eve of regulatory reform, new payer models, new market competitors and rapid scaling.

Healthcare systems are about to face a silver tsunami and with it excruciating demands on clinical outcomes, patient reported outcomes and efficiency. Asia will be home to 60% of the world's over 65s by 2030. A growing middle class is emerging across central and eastern Asian economies. The associated demands for improved health services and diseases of affluence, are placing jarring pressure on health infrastructure and costs. The world cannot train enough doctors to adequately service these growing populations.

Back at home, Australia's over 65 population is growing at a rapid 16% per year. 87% of our over 65s have at least 1 of 8 chronic diseases that are responsible for 7 of every 10 deaths. These same diseases only affect 35% of people under 44. The social, emotional and financial burden of chronic diseases in our ageing population needs to be addressed by

cicada INNOVATIONS

the next wave of medical innovators if we are to maintain the high standard of care we have become accustomed to.

According to the Australian Institute of Health and Welfare, Australia has more doctors per capita (circa 3.5 - 4.5 depending on region) than comparable countries and graduates thousands more every year, yet it will be unable to cope with future demand with the same quality it does today without significant change. Hyper-specialisation of our clinicians, new delivery models that provide patients with more care, geographic disparity between rural and metropolitan access to health services, and a service-based payment structure have created an almost insurmountable challenge for large scale reform, but a massive opportunity for entrepreneurs and innovators with novel technologies who able to read the market and respond rapidly.

Our future is bright, but only if we invest in it and the people that will own it. Australia's reinvigoration of STEM education is an encouraging step in the right direction but we also need to recognise that soft skills like the ability to communicate and have empathy for all healthcare stakeholders is key to our successful integration of new medical technologies. At Cicada Innovations, though our partnership with the NSW Health's Office for Health and Medical Research, we are investing in the next generation of translational researchers, clinical innovators and entrepreneurs, providing them both the hard and soft skills required to navigate their technologies from bench to bedside.

Ben Wright
Chief Innovation Officer
Cicada Innovations

About the NSW Medical Device Commercialisation Training Program

The Medical Device Commercialisation Training Program is a catalyst for change. An initiative of NSW Health, it is delivered by world leading deep technology incubator Cicada Innovations to accelerate the commercialisation of medical technologies in NSW to bring lifesaving healthcare innovations to market.

The program integrates 1-day workshops on clinical trials, regulatory strategy and intellectual property with 3-month business building courses designed to challenge bias, enlighten and upskill. This training is provided at no cost to NSW-based researchers, clinicians and entrepreneurs and should form part of every research project and PhD. The integrated program has trained 301 researchers, clinicians and entrepreneurs over the past 12 months.

The Medical Device Commercialisation Training Program is designed for healthcare entrepreneurs from diverse backgrounds of medicine, engineering, science and business, and provides a tailored curriculum that explores how to transform their visionary concepts into viable businesses.

In 2019, we proudly graduate 15 innovators following the 5th cohort of MDCTP CORE, the flagship course in the Program. CORE candidates learn to search for the right business model for their technologies and gain insights from over 25 mentors and domain experts on every facet of running a medical technology business from IP, Regulatory and Reimbursement to Corporate Governance, Finance and Capital Raising.

The first 66 graduates of CORE have launched 16 companies and raised over $49M to commercialise their ideas. A further 17 have access alternate career pathways following their PhDs and entered industry in commercialisation roles. Standing on the shoulders of these giants we are extremely excited for the future of medtech in NSW.

Program presenters and mentors

Teaching Team/Mentors

Phil Smith – Business

Peter Spencer – Business

Stuart Anderson – Business

Philip Boughton – Technical

Guest speakers

Dr Ali Fathi
Trimph

Anita Van Der Meer
Office for Health and Medical Research

Anne O'Neill
Office for Health and Medical Research

Arthur Brandwood
Brandwood Biomedical

Chris Smith
Brandon Capital

Christopher Krainer
IDE Group

Eugene Salole
Value Based Access

Gabriel Douville
One Ventures

Gavin Recchia
Davies Collison Cave

Greg Powell
IP Australia

Guy Ford
University of Sydney Business School

Iman Manavitehrani
SDIP Innovations

Jane Cockburn
Kairos Now

Lisa Emerson
Saluda Medical

Megan Keaney
Federal Department of Health

Michael Pota
Boost Designs

Michael Gendy
NSW Health Procurement

Peter Fisher
Act One

Phil Smith
Luminos Labs

Delivery partners

Clinical Trials
Southern Star Research

Industrial Design
IDE Group

Intellectual Property
Davies Collison Cave

Regulatory Affairs
Brandwood Biomedical

Medical Device Commercialisation Training Program Graduates 2019

Ben Lindsay and Rosa Miller

Solushin

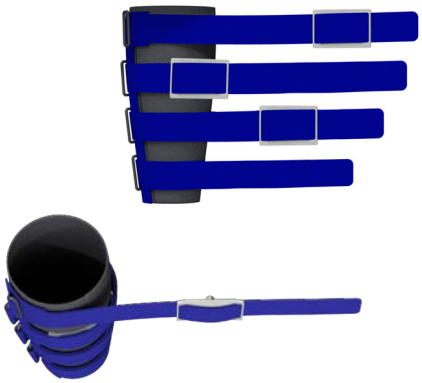
Solushin

Medial tibial stress syndrome, commonly known as ‘shin splints’ is an overuse injury that affects up to one third of athletes every single year. Despite this vast number of sufferers, the injury is poorly understood and treatment options are limited to extensive rest and physiotherapy. While physiotherapy works, it is expensive, extremely time-consuming and the high rate of recurrence of the injury is incredibly frustrating to both the physiotherapist and the athlete.

The Solushin is the world’s first medical device clinically validated to treat shin splints. By combining two effective principles of treatment: soft-tissue therapy and bone-remodelling, this patented product has effectively demonstrated in a clinical setting (double-blinded randomized controlled) its ability to get athletes back to pain free training within 5-weeks.

“We learnt that confirmation bias is dangerous. To avoid this, we were tasked with verifying whether or not our product solved a problem without anchoring. This required confidence and patience, however when the results shone through, we knew we had discovered something worthwhile. We also developed a deeper understanding of the market that empowered us to identify trends for further product development.”

In a market saturated with products distrusted by physiotherapists (calf compression sleeves), the Solushin is the first medical device with supporting clinical evidence. With the long-term goal of saving 134,000 hours of treatment time per year in NSW alone, the results from the trial are firstly being presented at the 2019 ASICS Sports Medicine Australia Conference in October. Our goal is to have our first batch registered and manufactured for sale by this date.



Dr Benjamin Stephens-Fripp

University of Wollongong

X-Limb

Current prosthetic sockets are still made by the very time consuming and inaccurate process of forming a plaster cast to create a mould for the socket manufacturing. In addition to being very time consuming and labour intense, it can also result in a poor fitting socket. This poor fit can cause skin irritation, uncomfortable or painful sensations and impact the balance or ability to walk correctly. The X-Limb approach undertakes a 3D-scan of the residual limb to create a digital image, allowing for a digital workflow. The prosthetist can then make quick electronic adjustments to the digital image to suit the patient specific needs and send the file for a prompt and accurate creation using 3D-printing technologies.

“My biggest takeaway from the Program is the importance of placing all stakeholders’ needs above the technology. Practical based research needs to start with the customers’ needs and determine the best technology to meet that need, rather than developing a technology and looking for somewhere that it can be applied. Therefore, the start of any research needs to be discussions and interviews with these stakeholders.”

During the next 12 months we will undertake software development and refinement to ensure it is built around prosthetist needs and to enable the best outcome for their patients. We will undertake comparative testing against traditional manufacturing techniques to demonstrate the improved workflow and increased accuracy, whilst ensuring a strong and comfortable prosthetic socket.

Christian Legerer

University of New South Wales

Vascular Pivot

Heart failure with preserved ejection fraction (HFpEF) accounts for as many as half of all hospital admissions with a diagnosis of heart failure. Aortic stiffness is a major risk factor for HFpEF. Studies have examined various classes of antihypertensive medications to treat HFpEF, yet there are still no well validated treatment strategies which have shown a significant mortality benefit.

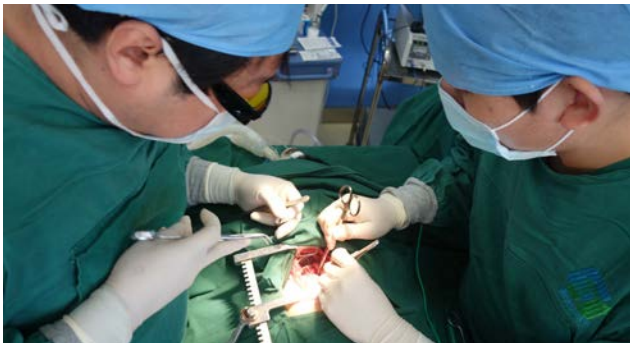
Vascular Pivot is developing a medical device to restore function of the largest artery in the human body, the aorta, to improve the quality of life for patients with HFpEF. Our device is improving the elasticity of an old and stiff blood vessel. This allows an aged and failing heart to maintain its effectiveness as a pumping unit. Our self-powered device is a chronic implant and treatment of hypertension.

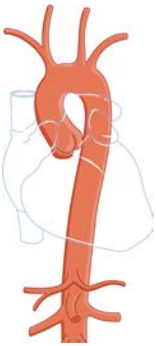
“The Medical Device Commercialisation Training Program was an empowering experience. It has left a trail of breadcrumbs I can follow along the path to commercialisation. My biggest take away from the Program was the realisation that an entrepreneur in medtech needs to obtain the most important 10% of every skill to build a successful business.”

A second market for Vascular Pivot’s technology is to improve aortic prosthetic graft compliance.

Benchmarking our device’s underlying principal with computer simulations and in-vitro benchtop testing, we can demonstrate significantly increased compliance. Over the next 12 months we will conduct an animal trial with a stiffened aorta to test the safety and efficacy of our device, preparing us for first-in-human trials.

We aim to reduce the health cost burden by targeting earlier therapeutic intervention in the heart failure cycle. A key to Vascular Pivot’s technology is long term prevention of hospitalisation which represents 60% of heart failure costs.





Dr Dan Yang

University of Wollongong

TP-Dental Coating

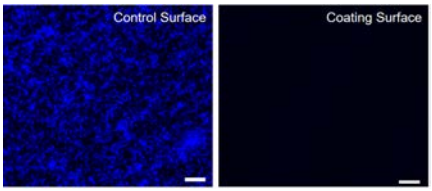
The occurrence of dental cavities and associated oral conditions is increasing worldwide. According to the World Health Organization (WHO), in 2012, 60-90% of children and nearly 100% of adults worldwide had dental cavities. Currently, the prevention to the most common dental diseases, such as dental cavities related to biofilm build up by oral bacteria (commonly referred to as plaque), highly relies on the individuals. A daily routine of oral hygiene, i.e. brushing and flossing of teeth, combined with a healthy diet and regular check-up is recommended, which is always compromised.

Our technology provides a fully covered protective coating on the tooth surface, which is robust enough to function in the complex oral environment and withstand the wear and tear experienced by

“I’ve learnt that you never know what your customers really want until you go and talk with them. The interviews I did during the Program really opened my mind and helped me to shape the technology.”

teeth. The safe, cost-effective and long-lasting coating for the tooth surface will effectively prevent the colonisation of bacteria and the formation of biofilm, leading to a significant reduction in dental problems and diseases.

In the next 12 months, the long-term efficacy of our teeth coating will be tested in a simulated oral condition. Meanwhile, we will engage with the key partners to further explore our business model canvas.



David Wallace

Cerebro Biosystems

FunguSeq

Microbial diagnostics that use PCR or culturing techniques, struggle to quantify infectious microbes when identifying them from a mixed sample.

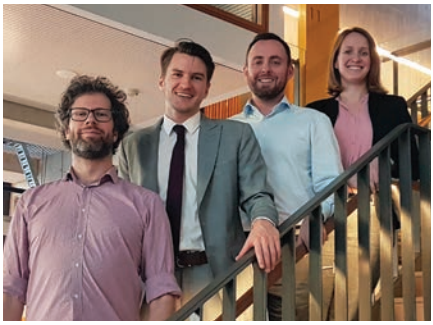
Being able to accurately determine the amount of a microbe in a mixed sample is important when the quantity of that microbe dictates whether it is a benign condition or a serious infection.

An example of this is lung infections by the fungus aspergillus. Fleeting colonisation of the lungs by aspergillus is common and benign, but invasive aspergillosis is a life-threatening fungal infection.

We are working on a nanopore based DNA sequencing test that can not only identify the microbe present in a sample but can also estimate the amount of the microbe present, relative to background benign microbes or patient cells.

“I learnt that a good solution to a tricky problem is only as good as the problem is real and the solution commercially viable. Otherwise you are literally making problems for yourself.”

Our test will hopefully allow for clinicians to accurately and quickly diagnose fungal lung infections like invasive aspergillosis. The benefit of which is that clinicians can stop resorting to prophylactic and empiric uses of antifungals, since antifungals are costly and toxic and their overuse results in increased antifungal resistance.



Jason Borrie

Frontier Genomics

GENEie

Medical conditions with a genetic cause account for nearly half of Australia's paediatric hospital admissions. Splicing variants are commonly suspected causes of these genetic conditions, though a definitive clinical diagnosis is rare. GENEie is a laboratory clinical decision support tool that can establish whether suspicious splicing variants are the actual cause of a genetic disease in more than 99% of cases.

Current technologies offer little meaningful assistance to laboratories in resolving this diagnostic conundrum. GENEie is a paradigm shift in variant analytics that is conspicuously differentiated by its clinical actionability, scientific validation and diagnostic accuracy with the hardest-to-resolve cases.

"I started the Program with a value proposition based around improving diagnoses to inform better patient care. However, in customer discovery, increasing diagnoses in shorter timeframes revealed the value of improved efficiencies for Genomic laboratories. We found out that cost-effectiveness for health service providers is a value proposition that can sustain an international business."

GENEie is a Software-as-a-Service commercial opportunity, with global genomic testing service providers our primary market. By the end of 2019, we will achieve clinical validation and customer evaluation milestones, in partnership with leading Australian genomic testing reference centres. Our goal is to achieve our first commercial sales in Australia in 2020.

GENE*ie*

Evidence based prediction of splicing variants

Dr Jerry Zhou

Western Sydney University

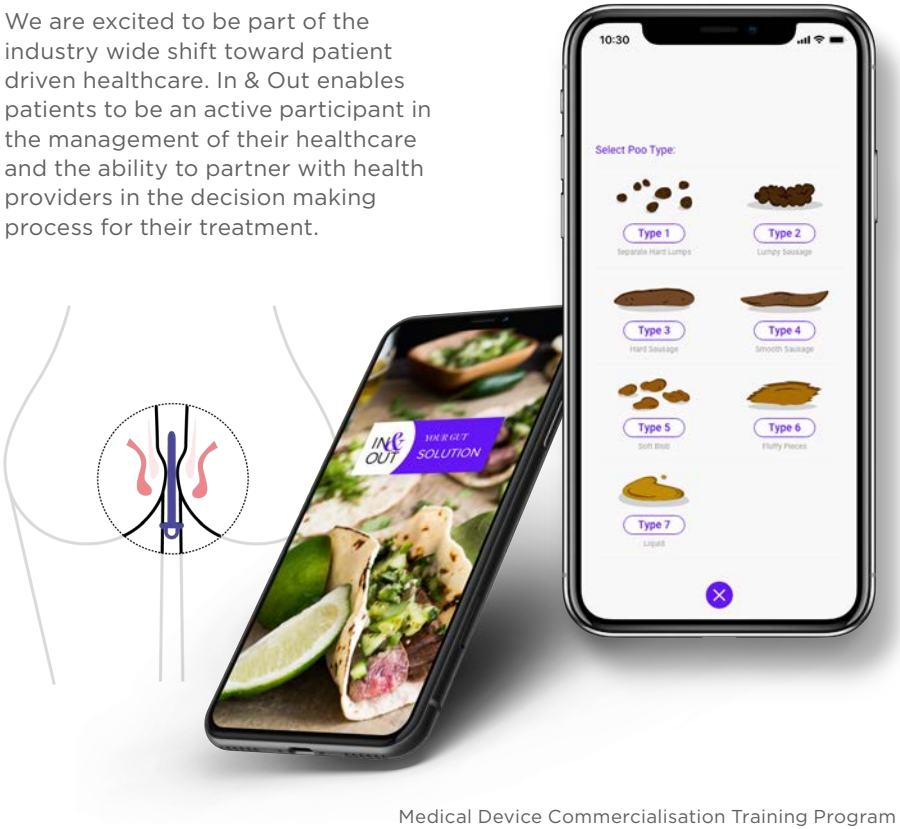
In & Out

One in ten people around the world have problems going to the toilet. The biggest barrier to recovery is patients not complying with their treatment plan. Patients are frustrated with not being able to see their progress at home and the need to revisit clinics for training.

The In & Out Trainer is an insertable device that guides users through muscle exercises in their back passage while providing real-time feedback on their smart phones. Users follow clinically proven exercises that are designed to be fun and engaging while treatment progress is tracked through a free mobile app. The value to our users is the ability to train every day at home instead of once a month at a clinic, this translates to measurable improvements within days.

“The Medical Device Commercialisation Training Program taught me the value of real-world feedback and introduced me to a network of key players in the commercialisation space. This course has led to product pivots and strategies to market, all in the effort to improve the bathroom experience of millions around the world.”

We are excited to be part of the industry wide shift toward patient driven healthcare. In & Out enables patients to be an active participant in the management of their healthcare and the ability to partner with health providers in the decision making process for their treatment.



Dr Jingjing You

iFix Medical Pty Ltd

iFix System

The cornea is the clear window at the front of the eye, and corneal disease is the third most common cause of blindness worldwide. Corneal ulceration is extremely painful and accounts for 55,000 presentations to hospital each year across Australia. Current medical treatments do not adequately address issues of pain relief, infection, or the development of scar tissue. Infection and scarring may necessitate lengthy hospital stays and further treatment.

The iFix system developed by iFix Medical is a handheld 3D printer that can deliver a 3D-printed structure directly onto the eye to treat defects. It comprises two components: iFixInk™ and its delivery device, the iFixPen®.

The system involves the printing of a transparent structure that seals the wound and prevents

“The Program really understands the differences between a researcher and an entrepreneur. I have learnt from classes and through practices on how to conduct interviews; how to analyse interview data, what type of languages end users and investors will understand, and key process on how to translate a lab product to market.”

pathogen infiltration. It relieves pain, accelerates healing and is biodegradable. The ink formulation can be tailored to clinical need and can contain antibiotics and or other active regenerative agents.

The iFix Medical team has conducted small animal studies demonstrating the system worked for two conditions: corneal ulceration and perforation. In the next 12 months, the team will conduct and complete a large animal study and prepare for a first in human pilot study.

Dr Joseph Dusseldorp

Syncricity Pty Ltd

Evoke Spinal Cord Stimulator

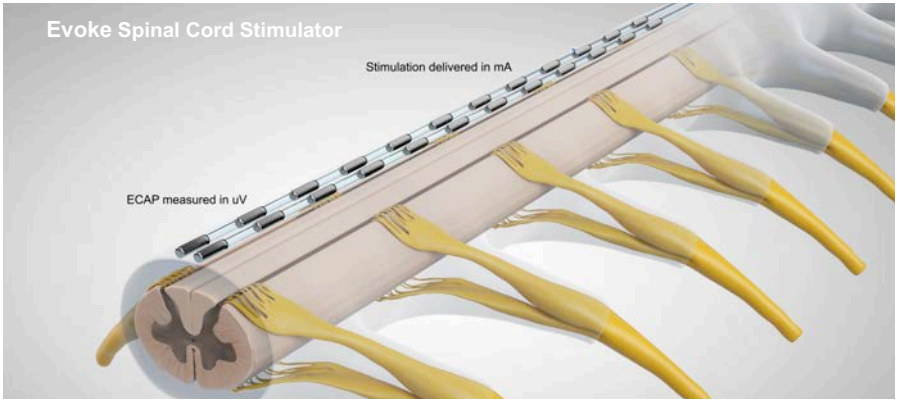
Spasticity is an overactivity of the spinal reflexes which leads to tight muscles and painful spasms. Our focus is on alleviating the disability associated with spasticity that results from cerebral palsy, the leading cause of childhood disability in the world. Our aim is to restore freedom of movement enabling children to live an active life without muscle tightness and pain.

It is our belief that implantable electronics, similar to cochlear implants or cardiac pacemakers, have the capability to control this unwanted electrical activity. Our technology is a closed loop spinal cord stimulator that delivers patient-specific electrical impulses exactly when and where they are needed. Other spinal cord stimulators on

"I've learnt that understanding the unmet needs and converting these into market pull is the most important primary challenge of any commercialisation effort."

the market have shown a limited benefit in spasticity, but only in tightly controlled research scenarios. No other commercial device has closed loop control which we believe will be critical to solving spasticity. Our goal is to commence a 30 patient clinical trial within the next 12 months.

Being fixated on a problem and a patient group where there is an extremely high demand for new disruptive treatments, and being flexible regarding the exact technology that solves this problem, can enable a rapid progression from concept to market.



Dr Nadi Sadr

University of Sydney

SleepCardio

SleepCardio is a cloud-based software using off shelf sensors for home-based sleep tests. Sleep apnoea is a serious health issue which involves a reduction or complete halt of airflow during sleep. The hospital sleep test for diagnosis of sleep apnoea requires attachment of 22 wires and sensors to patients during sleep and an overnight stay in the hospital. It is also expensive with long waiting time. Thus, 90% of the sufferers remain undiagnosed and if it remains undiagnosed it can lead to cardiovascular diseases and stroke. Current home-based sleep tests either interfere with sleep or are not accurate enough to eliminate the need of follow up hospital test. SleepCardio only use two sets of sensors a wrist band for measuring blood oxygen level and a chest band for measuring heart rate and respiration. Using modern machine learning techniques and

“Communication with customers plays the most significant role in improving and remodelling your product to have a product which helps the patients and fits well into the market. Also my new insight and knowledge changed my approach in research. I will start a project wisely by first interviewing the customers and thinking about the outcome and market.”

signal processing methods, more information is extracted from fewer numbers of signals and by combining the information provide an accurate diagnosis of sleep apnoea. Also this device can predict serious cardiac disorders and stroke.

Thus, the doctors can begin the treatment before noticing any cardiovascular clinical symptoms. It will reduce costs and saves many lives.

Dr Negar Talaei Zanjani

Western Sydney Local Health District

OxyOcean

Organ transplantation is a lifesaving procedure; however the major challenges are shortage of suitable organs and complex logistical coordination to minimise organ injury during the transportation, since organs are no longer receiving oxygen.

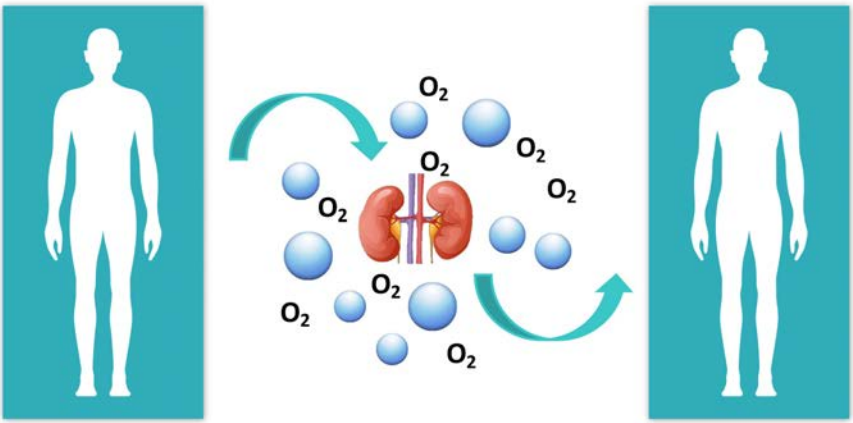
OxyLone is a protein capable of retaining oxygen to a much greater extent than current organ preservation solutions, providing a better environment for organ maintenance during transfer. Better-preserved organs result in better transplantation outcomes as well as expanding the pool of usable organs.

OxyLone transforms the way transplantations are performed by enabling better timing of the transplant operations to avoid night time procedures, increasing flexibility in transportation and

“This is truly an empowering program. It taught me that I don’t need to be affiliated with an institute to follow my dreams and can rely on my own capabilities, vision and instincts. I learnt that having discussions with relevant stakeholders is a powerful tool in broadening my understanding of the problem, which cannot be gained by reading different resources.”

preventing problems or delays in graft function. This protein is derived from an Australian aquatic organism and is capable of releasing oxygen similar to haemoglobin, but can bind 40 times more oxygen molecules than haemoglobin.

Over the next 12 months we will work with transplant surgeons and renal physicians at Westmead Hospital to perform proof of concept experiments on small animal models to prove the efficacy of this strategy.



A/Professor Rebekah Moles

University of Sydney

SetDose™

Medication errors cause serious harm and have been estimated to cost $1.2 billion annually in Australia. Many medication errors are dosing errors involving measurement of liquids. Liquid medication doses are commonly used for children and the elderly in an oral form, and for all patient types in injectable forms.

SetDose™ is a smart syringe system designed to eliminate liquid medication dose errors. SetDose™ utilises a combination of software and hardware to control medication dosing and record dose administration events. Our team of nine healthcare professionals and engineers have just filed a provisional patent for SetDoseTM and will be working on prototype refinement and software development over the next 12 months.

"The Medical Device Commercialisation Training Program was awesome! I have made great new contacts and was challenged to do more customer research on our idea. I learnt so much about the pathway to commercialisation and many of these principles will now be applied to all my future research."

Dr Shaheen Hasmat

University of Sydney

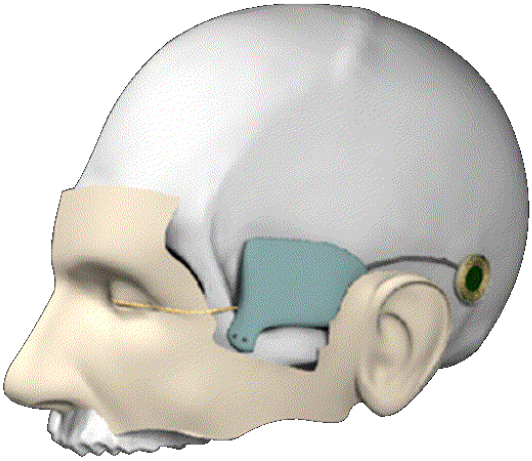
BLINC

Lack of blinking in facial palsy leads to corneal dryness and scaring and eventual blindness in the eye. Restoring blink remains the greatest challenge in facial reanimation surgery today. Patients are managed conservatively with indefinite use of lubricants and implanting weight into their top eyelid for assisted-closure.

When this fails, the eyelids are stitched together permanently. We propose the use of an implantable device to actively restore blink. The technology aims to recreate physiological blink using a wirelessly-powered, biocompatible actuator.

BLINC will be a paradigm shift in the field of facial reanimation for effective restoration of blink. The next milestone in the development of BLINC is live animal testing over the next year.

“My biggest takeaway from the Program is learning about the creation of value-based solutions in a resourced-limited world.”



Dr Tracy Dudding-Byth

Hunter New England Local Health District

FaceMatch: Searching for a diagnosis

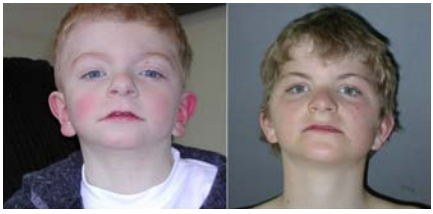
Intellectual disability (ID) affects 3% of children, and moderate ID is usually due to one of a large number of individually rare single gene disorders. Advanced genomic sequencing now allows testing of all the known 1500 ID genes. However, the interpretation of DNA data is extremely time consuming, and despite testing all known ID genes, 60-70% of children remain undiagnosed, with an estimated 2000 ID genes still to be discovered.

As 50% of people with intellectual disability have distinct facial features which provide a clue to diagnosis, we have worked with Imagus Technology to develop FaceMatch, a computer vision algorithm which outperforms senior clinical geneticists at syndrome diagnosis within our published pilot data.

“To make a long term impact on improving healthcare, the view of the customer is central to our understanding of the problem, the implementation of a solution, and the development of a viable and sustainable business model. We also covered the essential knowledge required to take our solution to market, including intellectual property, regulatory requirement, reimbursement and financial modelling. The MDCTP completely changed how I view translational research”

FaceMatch will have clinical utility to 1) screen children who are late meeting their milestones; 2) streamline interpretation of genomic data and 3) match the faces of undiagnosed patients. Historically, new genes have been discovered by matching the genome data of individuals who look similar.

The market advantage over our main competitor is sensitivity across a range of ages and severities. Over the next 12 months, we will continue research and development to ensure that FaceMatch reaches international quality and regulatory requirements for software as a medical device.



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About the Office for Health and Medical Research

Part of the NSW Ministry of Health, the Office of Health and Medical Research works with health and medical research communities, the higher education sector and business to promote growth and innovation in research to achieve better health, environmental and economic outcomes for the people of NSW.

As part of a ten-year strategic plan to build research capability in NSW, current projects include improving statewide capacity to deliver world class health and medical research through the provision of funding for research infrastructure; supporting investment in the development and commercialisation of medical devices and related technologies; fostering the generation of high quality research and evaluation by funding and administering grants programs and reforming research ethics and governance pre-approvals; and strengthening the research workforce through training programs for early-mid career researchers.

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(02) 9391 9228
MOH-OHMR@health.nsw.gov.au
www.medicalresearch.nsw.gov.au
@MedResearchNSW

About Cicada Innovations

Cicada Innovations is Australia's home of deep tech. Cicada partners with visionary technical founders to provide them with business support from ideation all the way through to scale up phase, supporting deep tech founders to achieve their business goals faster and smarter.

A program-driven Incubator, Cicada creates and accelerates deep tech ventures through a number of specialised commercialisation and accelerator programs. These programs feed into the incubator where further long-term support is provided in the form of subsidised physical space, specialised infrastructure, and access to Cicada's community of world class innovators, networks of investors and domain experts as well as talent and capabilities sourced from its shareholders Universities.

Cicada's team of highly experienced industry experts have worked with more than 300 businesses, and have seen its portfolio companies raise over $324 million in private equity and government grants, file over 500 patents and trademarks, and for 14, successfully exit.

Founded in 2000, Cicada Innovations is a globally recognised and awarded private business, owned by four of Australia's leading universities: the Australian National University, the University of New South Wales, the University of Sydney and the University of Technology Sydney.

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About the NSW Health-Austrade Landing Pads Fast Track Program

NSW Health have collaborated with the Australian Trade and Investment Commission (Austrade) to implement a Landing Pads Fast Track Program. Landing Pads help market-ready start-ups and scale-up to take their business global.

The collaboration provides graduates of NSW Health's Medical Device Commercialisation Training Program and Medical Devices Fund recipients with priority access to Landing Pads.

The Landing Pads Program provides market-ready start-ups and scale-ups with potential for rapid growth, a cost effective option to land and expand into major global innovation hubs around the world. Five Landing Pads have been established in San Francisco, Tel Aviv, Shanghai, Berlin and Singapore.

As an Australian Government agency, Austrade will draw upon the combined strength of 81 offices in 48 markets to eligible businesses go global. Landing Pad participants can tap into Austrade's business and investor networks to meet potential customers (including multinationals), investors and strategic partners.

To check eligibility and register your interest, visit: www.austrade.gov.au/landingpads/landing-pads

Where are they now?

Dr Sarah McDonald

Baymatob

Sarah is a mechatronic engineer, founder and CEO of Baymatob™. She started working in the obstetric technology space after the traumatic birth of her second child, Oliver. Determined to improve the technology available for obstetric monitoring, Sarah embarked on a PhD focused on understanding the normal progression of labour. It was during this PhD Sarah encountered and applied for NSW Health's Medical Device Commercialisation Training Program.

Since graduating from the Program as part of the 2017 cohort, Sarah has completed her PhD in medicine, established Baymatob™ as a company, obtained $1.75M in non-dilutive funds, and progressed development of the Oli™ technology. The learnings and experience provided by the Medical Device Commercialisation Training Program were instrumental in setting the foundations to this success. This has assisted the company to further develop the Oli™ technology, broaden research and clinical relationships, enabling the company to gain further supporting data from both animal and clinical sources.

Baymatob™ now employs five people within NSW and participates in internship programs with the University of Technology Sydney. The company has also set up a clinical advisory board and expanded its clinical reach and input from a single NSW hospital to a number of hospitals across six local health districts with in NSW, three global health organisations and is currently engaging in discussions with other international institutions.

Baymatob™ also continues to expand its intellectual property portfolio to best protect and support developments and value. The company has also been a successful recipient of NSW Health's Medical Devices Fund along with a range of awards including the IDE Group Design and Entrepreneurship Award, Davies Collison Cave IP Strategy Award, and the People's Choice Award at IDE Building Better Futures for Health Challenge.

Dr Maryam Parviz

JAZBI™

Over 3 million people in the USA alone undergo implant surgeries each year with implant hardware costing health systems over $122B USD globally. Whilst there is widespread use of 5permanent implants largely using metal, this can be problematic due to unwanted removal surgeries, unnatural healing environment, and associated complications. Up to now, the industry has fallen short on presenting implant materials with optimum degradation profile and bio-friendly degradation products. Existing bioresorbable implants break into pieces during degradation instead of being resorbed from bulk, and also break down into acidic compounds. These cause lack of integration with tissue regrowth, cyst formation, pain, inflammation, and delayed regeneration.

SDIP Innovations Pty Ltd aims to provide the first credible generation of safe bioresorbable implants, JAZBI™. This implant material dissolves from bulk and degrades harmlessly into water and carbon dioxide within the body. This platform reduces the need for repeat surgeries and improves post-surgery recovery without adverse cyst and inflammation. JAZBI™ properties can address a range of clinical products such as ligament construction fixators, and transvaginal, hernia, and pelvic meshes.

The technology was co-invented by Dr Iman Manavitehrani during his Ph.D. at the University of Sydney. Together with Dr Maryam Parviz, Iman founded SDIP in May 2018. Both founders successfully graduated from the Medical Device Commercialisation Training Program in recent years. Since then, they have established robust IP protection; secured private and public funds, completed several animal studies and are preparing for an upcoming pre-submission meeting with FDA.

Founders were awarded close to $1 million through the NSW-QB3 Rosenman Institute Scholarship which provides the team with stipends and space within the QB3 medtech incubator in San Francisco for two years (2019-2021). The team has been matched with mentors to provide support throughout the development, testing and commercialisation phases of the medical device. The team is learning about intellectual property assessments, regulatory issues and the fastest paths for getting a prototype operational, maximising opportunities to commercialise their devices, which is helping them access their primary market in the United States. QB3's is a hub for innovation and entrepreneurship in the life sciences in East Bay. QB3 bridges UC San Francisco, UC Berkeley, and UC Santa Cruz entrepreneurs with experts in life science market and clinicians in medical schools.

Where are they now?

A/Professor Celi Varol

CEO Medlogical Innovations

It has been two years since Medlogical Innovations completed the Medical Device Commercialisation Training Program. Since then, Medlogical Innovations received $1.25 million from NSW Health's Medical Devices Fund for their novel invention ProFocal-Rx, a medical device that is designed to treat prostate cancer with laser energy.

Medlogical Innovations has been working diligently over the past couple of years. They are achieving their target goals in their product design and approaching the pointy end of the final product realisation. Medlogical Innovations have grown their team of engineers, QMS specialist and regulatory consultants.

Medlogical Innovations now has headquarters in Lane Cove West where they do product testing and building of the hardware. Early on in their journey they engaged a product manufacturer and sterilisation company in Sydney who are located 50 metres from the headquarters. ProFocal-Rx is now in the process of being batch manufactured and packaged. Medlogical Innovations is anticipating their pilot trial to commence later this year, soon to be followed with a phase one trial.

For the team, seeing ProFocal-Rx gradually becoming a reality that will have a major health impact on men with prostate cancer in NSW is satisfying and worth all the hard work. Every team member in Medlogical Innovations can see the potential positive outcome of their journey that could not have been possible without the Medical Device Commercialisation Training Program or the Medical Devices Fund grant from NSW Health.

Dr Martin Engel

VitroQuest

Dr Martin Engel, founder of VitroQuest, completed the Medical Device Training Program in 2018 and was awarded the IDE Group Award for Innovation and Entrepreneurship.

VitroQuest is developing a drug validation service using the actual human disease biology to identify promising candidates within pharmaceutical product pipelines. The IDE award allowed Martin to act on a critical insight developed through the Medical Device Commercialisation Training Program customer discovery journey: the need for highly consistent scalability of the VitroQuest testing platform. Over the following six month, Martin and the project team at IDE conceptualised possible solutions and advanced to the testing of functional prototypes. In 2019, Martin is now pressing on with the technological development of VitroQuest through a collaboration with the 3D bioprinting company Inventia Life Science, a connection formed during the MDCTP Showcase event.