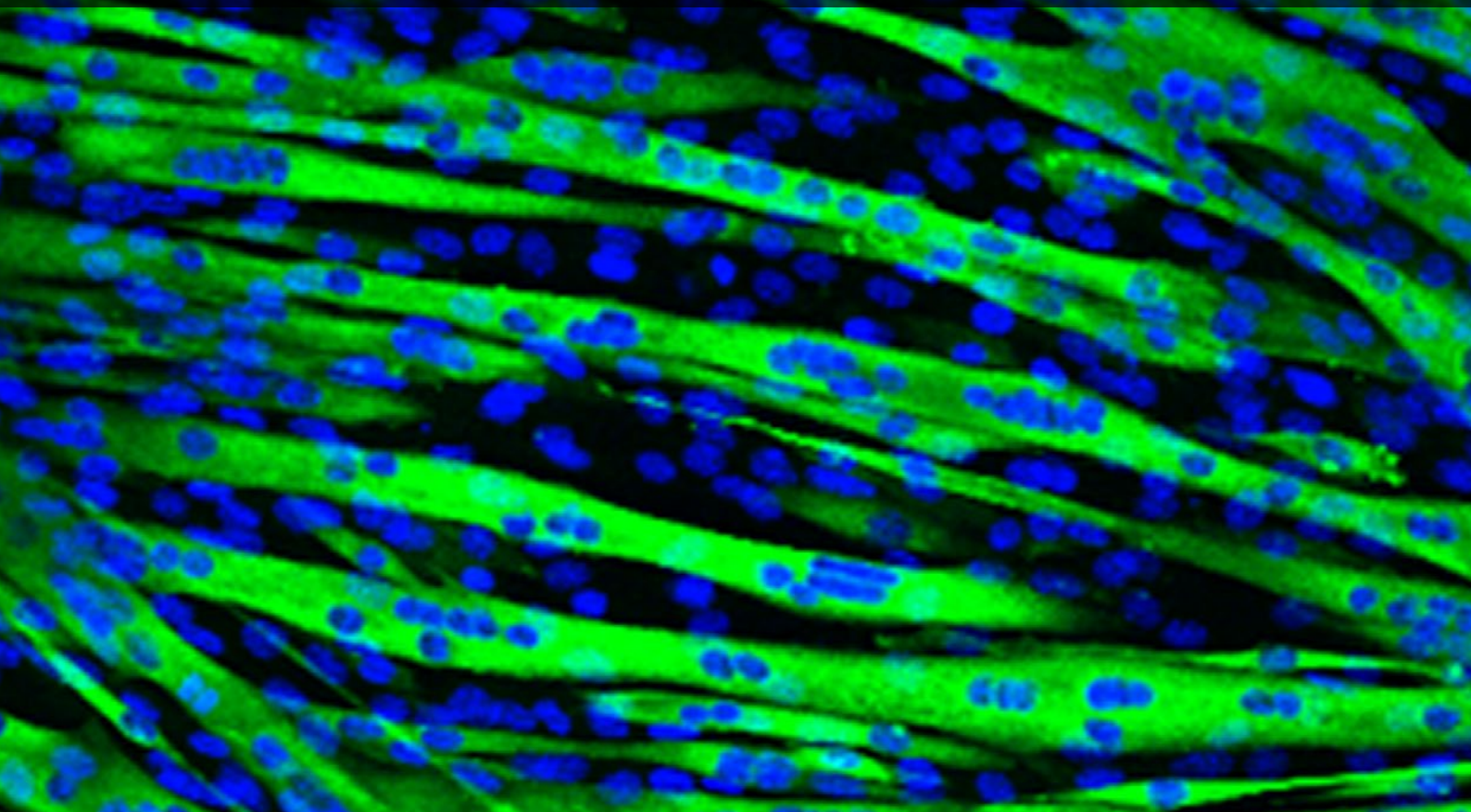




The Graeme Clark Oration
Biomedical Innovation Showcase
Monday, 30 October 2017
Melbourne Convention and Exhibition Centre
Main Foyer 2pm - 6pm



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The Australian Regenerative Medicine Institute

The Australian Regenerative Medicine Institute (ARMI) is dedicated to unlocking the regenerative capabilities of the human body. ARMI is a medical research centre based at the Clayton Campus of Monash University. Boasting 15 research groups studying a variety of regenerative approaches, ARMI is one of the largest regenerative medicine and stem cell research hubs in the world.

Earlier this year we presented a group of highly motivated students from John Monash Science School a challenge to improve the way we image zebrafish in real time as they develop. This was all thanks to a chance encounter during a Bio Eyes Outreach activity. The students came up with a design that they have been 3D printing, thanks to the generous support of Monash Universities Centre for Additive Manufacturing. The students are now working with Fish Core at ARMI to test their design in a real laboratory setting. Visitors to the stall will be able to discuss with the students first hand how they are improving research at ARMI. 3D printed models and zebrafish courtesy of Bio Eyes will be on display giving you an idea of the challenges the students had to overcome to build their apparatus. ARMI is privileged to be collaborating with Victoria's brightest young minds that are driving the change needed to build towards new regenerative medicines of the future.

Bio21 Institute

The Bio21 Molecular Science and Biotechnology Institute, University of Melbourne is a multidisciplinary research centre that seeks to improve human health and the environment through innovation in biotechnology and related areas, driven by collaborative research and dynamic interactions with industry.

Bio21 groups are taking different approaches to cancer:

Radiopharmaceutical research is focussed on using antibody technology coupled with low and high dose radioisotopes to detect and diagnose (using PET) and treat certain cancers.

Structural biology research is elucidating the proteins implicated in cancer cell signalling as potential drug targets.

Cell immunology is seeking to harness the body's own immune system to recognise and destroy cancer cells.

Bionics Institute

Come and see the ingenious method the Bionics Institute developed to test the robustness of the Australian bionic eye

The Bionics Institute is part of the team developing the Australian bionic eye. This has included testing materials to ensure they are safe and robust enough to be implanted in the delicate eye area. Some of the wires used in the device are as fine as a baby's hair, and must remain intact for years of use. A normal-sighted person has between 100,000-150,000 eye moments per day and the materials in bionic eye must be able to mimic and withstand this constant movement in a vision-impaired person. We'll show you how our engineers made sure they would.

Monash Biomedicine Discovery Institute (BDI)

The Monash BDI is committed to making the discoveries that will relieve the future burden of disease. Bringing together more than 120 internationally-renowned research teams, our researchers are supported by world-class technology and infrastructure and partner with industry, clinicians and researchers internationally to enhance lives through discovery.

Join us at the Monash Biomedicine Discovery Institute showcase to find out why we are passionate about tackling the most pressing global health issues. Meet some of our researchers and get involved in hands-on activities and interactive displays. If you are a secondary student thinking about your future career, our biomedical degree experts will be there to answer your questions.

Cochlear

Cochlear is the global leader in implantable hearing solutions. The company has a global workforce of more than 3,500 people and invests more than AUD\$120 million a year in research and development. Products include hearing systems for cochlear implants, bone conduction and acoustic implants, which are designed to treat a range of moderate to profound types of hearing loss. Over 450,000 people of all ages, across more than 100 countries, now hear because of Cochlear.

At Cochlear, we help people hear and be heard. We empower people to connect with others and live a full life. We help transform the way people understand and treat hearing loss, and we innovate and bring to market a range of implantable hearing solutions that deliver a lifetime of hearing outcomes.

Our showcase space will feature information about Cochlear and its history of innovation, as well as its products and services to provide more people with the gift of hearing.

Convergence Science Network

The Convergence Science Network has been engaging the public with advances in biomedical research since 2008, when we established the Graeme Clark Oration. We share some of the exciting developments taking place at the convergence of the life and physical sciences, engineering and computing that are revolutionising biomedical research and offering prospects for improved health.

At the showcase you will meet some of the network's communications interns who are Master of Science Students at the University of Melbourne and we will have free copies of Never Say Never: The Graeme Clark Story, a DVD which shares the personal journey of Graeme Clark in the development of the Cochlear implant.

CSIRO

CSIRO is Australia's national science agency and one of the largest and most diverse research agencies in the world.

We do the extraordinary every day. We innovate for tomorrow and help improve today – for our

customers, all Australians and the world.

CSIRO provides a wide range of scientific support to start-ups, small and large businesses involved in medical technologies and pharmaceuticals product development. Our new Biomedical Materials Translation Facility located in the M2 precinct at Clayton is scaling-up and commercialising these new products for industry.

M2's work complements work being done by the Australian Government's Medical Technologies and Pharmaceuticals Growth Centre (MTP Connect) to help establish Australia as an Asia Pacific hub for medical technology, biotechnology and pharmaceutical companies.

Murdoch Children's Research Institute

Murdoch Children's Research Institute and innovation company Curve Tomorrow use an evidence-based approach to understand problems in health and healthcare and develop digital solutions that improve the health, wellbeing and quality of life for all families.

MCRI and Curve Tomorrow will demonstrate the latest digital health solutions that address clinical needs in children with social disorders, paediatric concussion recognition and management and care giver support for children with food allergies.

Tech Schools Initiative

Tech Schools Initiative, Department of Education and Training. Tech Schools are state-of-the-art shared hubs that work with industry to deliver advanced science, technology, engineering and maths learning programs to students from partner schools. The Tech Schools Initiative is investing \$128 million to establish 10 Tech Schools across Victoria.

The exhibition will showcase what students can do – and have done – at Tech Schools:

- biomedical prototypes designed and built by secondary students who've participated in Tech School learning programs
- VR headsets showing what the Ballarat and Whittlesea Tech Schools will look like when they're built
- factsheets about the Tech School initiative and some specific to each Tech School
- examples of technology used at Tech Schools (ie. robotics).

Swinburne University

Swinburne University of Technology is a world-leading Melbourne University that excels in real-world research and solutions. Swinburne is renowned in the fields of biomedical science, psychology, nutrition, health promotion, public and environmental health and sport science.

There will be several exhibits on Swinburne's stand:

1. Prototypes for 'smart' sporting technologies, including process maps and visual information;
2. 'Humanoid' robots used in research, for psychology and health applications, and visual information about the research;
3. Biomedical devices.

Swinburne University cont.

These displays, which provide significant social and clinical benefits, showcase Swinburne's expertise and innovation.

Current PhD students and research staff will also present Swinburne courses, research and potential partnership opportunities.

Faculty of Medicine, Dentistry and Health Sciences

Australia's leading university at the heart of Australia's premier biomedical precinct. The University of Melbourne - Faculty of Medicine, Dentistry and Health Sciences is amidst world-leading research institutes and hospitals - the largest precinct of its kind in the southern hemisphere.

Offering over 160 courses covering the breadth of health and biomedicine, and ranked #7 in the world for employability*. We look forward to helping you discover what you are made of.

**QS Graduate Employability 2016*

Melbourne School of Engineering - BioDesign Innovation

Stelect was formed as a part of The University of Melbourne's BioDesign Innovation Course. We are a company of engineers and business professionals who have prototyped a product to aid interventional cardiologists in stent selection. We are currently beginning the pathway of commercialisation.

Percutaneous Coronary Intervention is a procedure used to mitigate Coronary Artery Disease whereby a stent is inserted into the artery to restore blood flow. 70% of the time an incorrectly sized stent is inserted, resulting in increased risks of restenosis and thrombosis. Cost consequences include payments for additional stents and increased procedure time. Stelect's device will accurately measure the length and diameter of the blockage, minimising the aforementioned risks and cost.

RespiRate consists of MBA and Master of Engineering in Electrical and Biomedical graduates formed through the BioDesign Innovation course at the University of Melbourne.

Respiratory rate is the best predictor of patient deterioration but it is the worst recorded vital sign. Early warning of deterioration enables intervention and prevents adverse events such as cardiac arrest, unplanned ICU admission and unexpected death. In addition to saving lives, early detection reduces costs to the healthcare system.

Currently, respiratory rate is counted over a 30-60 second period by clinicians, 4 times per day in non-intubated patients. It is the only vital sign without a device. Respiratory rate is "the neglected vital".

Peter MacCallum Cancer Centre

Peter Mac is one of the world's leading cancer research, education and treatment centres globally and is Australia's only public hospital solely dedicated to caring for people affected by cancer. We have over 2,500 staff, including more than 580 laboratory and clinical researchers, all focused on providing better treatments, better care and potential cures for cancer.

Our showcase will offer attendees the opportunity to meet with the best and brightest young cancer researchers, and to talk with them about the wide variety of research being conducted at Peter Mac including their own projects. We will also be showcasing some of our impressive visual biological data and also highlight some of our most exciting research projects on posters. There will be information on the research facilities at Peter Mac and education opportunities for prospective students.

RMIT University

RMIT is a global university of technology, design and enterprise.

One of Australia's original tertiary institutions, RMIT University enjoys an international reputation for excellence in professional and vocational education, applied research, and engagement with the needs of industry and the community. RMIT is dedicated to delivering potential products, services and policies that result from our research and which lead to economic, social and environmental impacts.

The Human Gas Capsule, or smart pill, journeys through and measures gas levels in the gastrointestinal tract. The high-tech gas sensing capsules send data from inside the gut direct to a mobile phone, opening new possibilities for diagnosis, treatment and health analysis. The new technology could have a significant impact on the medical industry and public health sectors, leading to new point-of-care diagnostics and diet- or drug-based therapies for gastrointestinal diseases such as colon cancer, irritable bowel syndrome and inflammatory bowel disease.

Elements is an interactive tabletop environment designed to support movement assessment and rehabilitation for individuals with an acquired brain injury. Brain injuries often result in impaired hand and reach function, which is profoundly disabling for those affected. The Elements system provides the patients with an intuitive workspace that affords basic gestural control. Elements integrates digital media software, tangible user interfaces, augmented feedback, and artistic expression to enhance patient's motor and cognitive skills. Clinical evaluations indicate that patients relearned movement skills, increased their level of engagement, motivation and self-esteem, and importantly day-to-day functioning also improved.

St Vincents Hospital

BioFab3D is the first hospital-based bioengineering lab in Australia. Using the latest in 3D printing technology, scientists, clinicians, and engineers are working to 'build body parts' from living cells. These include: cartilage, muscle, bone, nerves and, one day perhaps, organs.

We will display 3D printing technology which is designed for printing body parts using cells as a 'living ink.'

In particular, we will showcase the biopen: our handheld 3D printer designed to print stem cells during surgery. This device could help repair damaged knee cartilage, and prevent the onset of osteoarthritis.

Victorian Comprehensive Cancer Centre

Founded in the holistic principles of the internationally-recognised Comprehensive Cancer Centre model, the Victorian Comprehensive Cancer Centre is a powerful alliance of 10 leading research, clinical and academic institutions working together to advance and accelerate cancer research, treatments, prevention and care.

Over the past five years the VCCC has established a collaborative network committed to working together, a critical mass of expertise advancing the vision to save lives through the integration of cancer research, education and patient care. The VCCC exhibition booth will provide attendees with the opportunity to hear more about VCCC and showcase key pieces of work demonstrating the potential for new discoveries through collaboration which is enabled by the VCCC.

veski

veski's vision is to foster an innovation economy. veski delivers a dynamic program of fellowships, awards, program and activities and international networks, including our flagship veski innovation fellowships and skills, training and education opportunities tailored to support the Victorian and broader Australian community's needs.

veski will inform high-school students and teachers of available resources, showcasing veski's lessons and classroom videos that feature the research of veski innovation fellows. EMCR (including 2017 Victoria Fellows) will also be available to interact with students who approach the veski booth regarding career pathway opportunities and with the public regarding their current research. veski will promote veski fellowships and other awards administered by veski with the aim to inspire students and the public about Victorian STEM research.

Tertiary students will also have the opportunity to sign up for future activities, for example veski kickstart, a program that provides PhD and early-career STEM researchers with insights into alternative career pathways - part of the broader veski's skills, training and education program.



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The Graeme Clark Oration

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