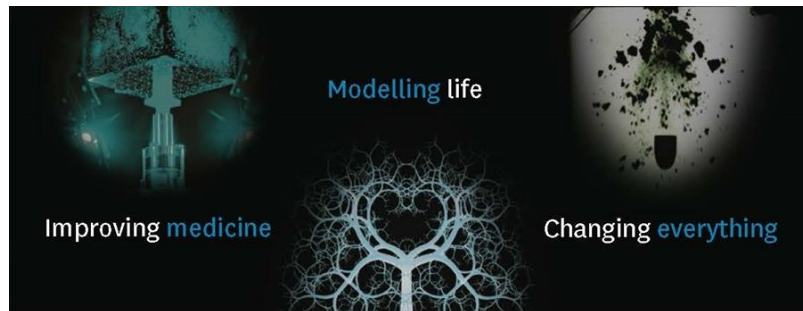


ABI news and research
highlights

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This eNewsletter from the Auckland Bioengineering Institute highlights some of the research made possible by Social Entrepreneurs and Philanthropic support.

Autumn graduates

Congratulations to all our ABI students who graduated on Monday 7th May 2018. For the first time ABI held a special celebration for our new graduands and their families with an early morning champagne breakfast. The six PhD Students and 2 Masters Students who graduated were also the lucky first recipients of our new ABI hoody. We asked them all what were their most memorable moments at ABI and what are their plans after graduation. See what they said here:

[Read more](#)

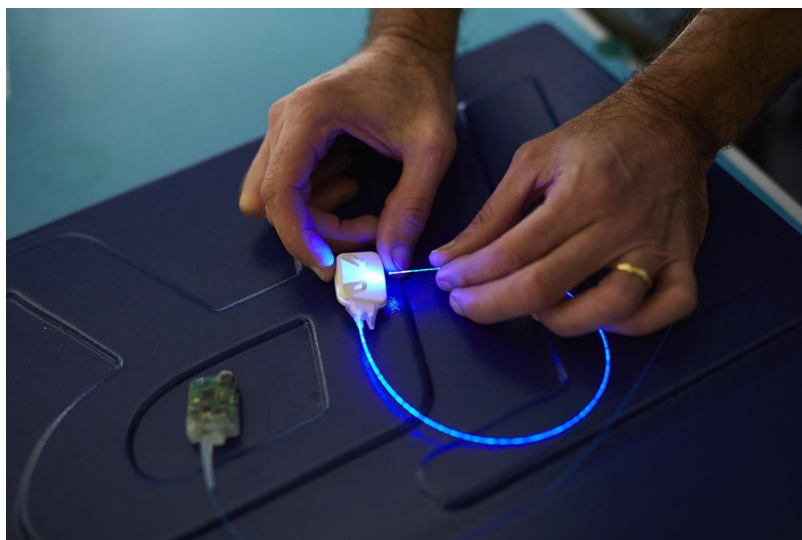


Pictured above: (l-r back row) A/Prof Andrew Taberner, A/Prof Justin Fernandez, Chang Pang-Hsu, Beverly Chen, Prof Peter Hunter, Mehrdad Sangi, Dr Jason Turuwhenua (l-r front row) Prof Martyn Nash, Marco Schneider, Helen Liley, Amir HajiRassouliha, Prof Poul Nielsen



Hugo Charitable Trust funds emerging researcher Dr Daniel McCormack

A generous gift of \$1 million over four years from the Hugo Charitable Trust has been given to ABI to establish an emerging researcher cluster within the Implantable Devices research group. Dr Daniel McCormick is the inaugural recipient and will carry out research into the new field of optogenetics, which uses light to manipulate neural activities in conditions where stimulation is required. It offers the prospect of treating life-time conditions such as Parkinson's disease with a wireless implantable device. Dr McCormick's team is assessing the viability of using custom-made wireless LED implantable devices to measure individual cellular response to light. This gift also funds 2 additional PhD students to work on this project over the next 4 years.



Maryanne Green, the eldest daughter of Irish philanthropist and businessman the late Hugh Green known in Ireland as Hugo, founded the Hugo Charitable Trust last year to continue Hugh's philanthropic legacy and to give back to the people of New Zealand. Maryanne worked closely at Hugh's side for over 25 years where she developed a deep understanding of Hugh's philanthropic priorities and wishes.

"Hugh loved both Ireland and New Zealand equally and he believed passionately that education was the key to a better New Zealand", she said. "The Hugo Charitable Trust is committed to honouring Hugh's life work and building on his legacy for the future benefit of New Zealand with new ideas, new ways and new directions for the future."

University of Auckland Vice-Chancellor, Professor Stuart McCutcheon, said that the University is dependent on the support of donors and philanthropists to enable it to continue with the world class research for which it is renowned.

"We need benefactors like the Hugo Charitable Trust. Without them we do not have the level of funding to keep the university world-class and delivering on our commitment not only to be New Zealand's pre-eminent research-led institution, but one that makes a sustained contribution to global issues.

"The significant impact we are already making in areas that can affect the whole world are only possible through philanthropic support of individuals and organisations that have that same commitment," he said.

The Vice-Chancellor says the research being funded by the donation is well-aligned with the aims of the University of Auckland Campaign For All Our Futures. This was established to support the University's drive to address some of the most complex issues facing the world.

The Hugo Charitable Trust has also committed a further \$1 million to the Liggins Institute to fund a similar research cluster comprising an emerging researcher, two PhD students, and research support over four years.

At the Liggins Institute, Associate Professor Katie Groom will lead a research cluster focussing on understanding the causes of preterm birth and fetal growth restriction. Associate Professor Groom – a world leader in the area of diagnosis and therapy for growth-restricted babies – will undertake research into approaches to decrease preterm birth and into the best management of women who are at risk of it. She is also undertaking research into potential new therapies to promote growth of babies, including the use of sildenafil citrate (also known as Viagra) to improve blood flow to the placenta.

ABI graduate gives back

Wilson Chiu, a PhD graduate from ABI, recently made a generous donation to support a summer research project at the Institute. While at ABI, he was part of the lung and respiratory research group and was supervised by Professor Merryn Tawhai. Following completion of his PhD in 2012, he returned to Taiwan where he commenced work at Wirop Industrial Ltd. "I really wanted to give something back to ABI and in particular Prof Tawhai's research group because I received such great support when I was at ABI," says Wilson.

The project funded by Wilson was taken up by Mairi Robertson, a third year engineering undergraduate student specialising in biomedical engineering. Her project with the lung and respiratory research group involved adding finite element mesh models of the lungs to a statistical shape model for the normal adult lung. In addition to having achieved the goals that were set for her project, Mairi has also made the process of

adding lung meshes to the statistical shape model more efficient by automating a portion of it.

Mairi says that the ABI Research Forum was one of the highlights of her time at ABI as it enabled her to discover the number of opportunities that exist in bioengineering research. "It was great to get insight about the research that goes on, and the people behind it," she said. She also enjoyed the challenge of hands-on work that the project offered, as well as the opportunity to figure out solutions for her research questions independently.

Mairi is currently continuing work on the project at ABI. She hopes to experience working in industry during her degree before deciding on a career pathway.

We are extremely grateful for Wilson's generous support to make this opportunity possible.



Above: Mairi Robertson, the engineering undergraduate student who took up the summer research project funded by ABI graduate Wilson Chiu

If you would like to support any area of research at ABI you can make a donation online

Make donation

Or you can contact our Development Manager

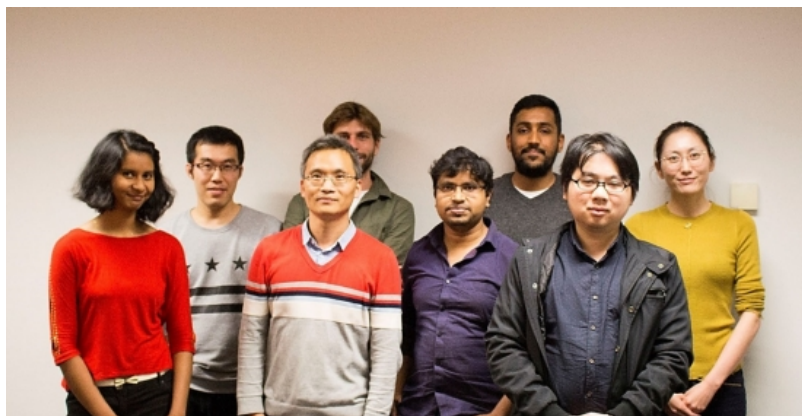
Dr Nicole Bassett

n.bassett@auckland.ac.nz

Atrial Fibrillation group receives prestigious NIH grant

The Atrial Fibrillation group led by Dr Jichao Zhao has been part of a recently awarded National Institute of Health (NIH) grant worth USD \$3 million. This enables the group and their collaborators from Ohio State University to study explanted human hearts to improve understanding of the mechanisms underlying the human sinoatrial node (SAN) function and dysfunction. The SAN is the natural pacemaker of the heart which generates the electrical impulses that cause the heart to beat and pump blood to the rest of the body. "It is like the heart's battery," says Dr Zhao. Read

Dr Zhao's group is also the recipient of a previously awarded NIH grant and a \$1.2 million Health Research Council grant to study atrial fibrillation, the most common heart rhythm disturbance affecting a quarter of New Zealanders above 40. The group found conclusive evidence for the mechanism underlying this condition and has published its findings in a leading international journal.



Above: A group photo of the Atrial Fibrillation team. Pictured are (from left to right) Ms Shaleka Agrawal, Dr Jieyun Bai, Dr Jichao Zhao, Mr Kevin Jamart, Mr Belvin Thomas, Mr Girish Ramlugun, Mr Ando Lo and Dr Shu Meng.

Prof Merryyn Tawhai and the Lung group win

VC's Research Excellence Award

The vital participation of ordinary New Zealanders in research, and how their research input helps shape the future of our communities in positive ways, was the theme of the University's 2018 Celebrating Research Excellence event, held at the Old Government House Pavilion on the 1st May. Shaping Future Communities was attended by Research, Science and Innovation Minister, the Hon. Megan Woods, and hosted by Vice-Chancellor Professor Stuart McCutcheon and the CEO of UniServices, Dr Andy Shenk. ABI's Lung and Respiratory System group won one of the four Research Excellence Medals that were awarded on the night.

Professor's pioneering lung work honoured with top international honour

10 April 2018



Professor Merryn Tawhai, Deputy Director of the Auckland Bioengineering Institute (ABI), has been honoured with one of the highest international accolades in her field.

Today Professor Tawhai was inducted into the American Institute for Medical and Biological Engineering (AIMBE) for her outstanding contributions to the development and use of computational models for the diagnosis and prognostic assessment of lung disease.

The AIMBE College of Fellows is comprised of the top two percent of medical and biological engineers in the world. College membership honours those who have made outstanding contributions to "the pioneering of new and developing fields of technology, making major advancements in traditional fields of medical and biological engineering, or developing/implementing innovative approaches to bioengineering education".

Professor Tawhai, who joined ABI as a Research Fellow in 2002, is renowned for her world-leading work on developing mathematical models of the lung to help in the understanding of both physiologically normal lungs and the pathological changes that can occur in disease.

Late last year Professor Tawhai was also named the Director of New Zealand's Medical Technologies Centre of Research Excellence (MedTech CoRE), hosted at the University of Auckland.

When she returns from the United States, she will tour New Zealand with the Royal Society on a lecture series titled "Bioengineering - a boon for New Zealand?". The tour will include New Zealand's cities and smaller centres ranging from Napier to Wanaka.

In June Professor Tawhai will be inducted into IAMBE – the International Academy of Medical and Biological Engineering in the United States. This is a hugely prestigious accolade.

The Director of ABI, Professor Peter Hunter says Merryn's recent election both to the American Institute (AIMBE) and to the International Academy (IAMBE) recognises her achievement in developing the world's most advanced model of the anatomy and physiology of the lungs.

"And it is an acknowledgement of the importance this work will have for the clinical understanding and treatment of lung disease," he says.

Prof Tawhai's Royal Society tour continues throughout New Zealand in so keep an eye out to see if she is speaking near you.

Royal Society Tour

Graduate sets sights on new way of vision screening

08 May 2018



Mehrdad Sangi: "It's amazing to see my PhD research developed like this."

The old eye chart of diminishing-sized letters used for vision screening might soon be a thing of the past, thanks to work by a University of Auckland student graduating this week.

Research into automatic eye testing informs the PhD in Bioengineering for 33-year-old Mehrdad Sangi, who hopes his new method will be more effective in picking up issues earlier – particularly in children.

Working on the basis that the sooner problems are detected the better the chances for treatment, Mehrdad has developed a new system that doesn't need the patient to make a decision about what they are seeing.

"The current letter-based eye charts used for vision screening requires the patient to be cooperative -

which we know children aren't always. And the old test is intrinsically subjective so again, it doesn't always work for children," says Mehrdad.

His new system is based on 'optokinetic nystagmus', an involuntary reflex of the eyes that occurs when an individual sees a moving object or pattern. Subjects are shown a moving pattern on a screen, with a camera recording eye movement. This allows patterns to be measured and algorithms used to screen for visual acuity.

Mehrdad came to New Zealand from Iran in 2013 to do his PhD at Auckland Bioengineering Institute. He already had a Masters in biomedical engineering and an undergraduate background in electrical engineering, and was interested in looking at better ways to measure visual function in young children.

As a result of his PhD research, Mehrdad founded a company called Objective Acuity (www.objectiveacuity.com) with his supervisors Dr Jason Turuwhenua and Associate Professor Ben Thompson. The product they are developing has already been in clinical trials with children in Australia, the United States and New Zealand.

"It's amazing to see my PhD research developed like this," says Mehrdad, "and wonderful that it might be useful in the world."

Upcoming events:

ABI MedTech Talk:

The Auckland Bioengineering Institute (ABI) is home to teams conducting research in a multitude of diverse areas. One of our shared visions is to support people to live better lives through our technology and research. We have invited some of our early career researchers to share with you how their research supports this vision. Are you ready to learn more about the exciting research that happens at ABI? Join us for an evening of informal interactive talks to hear our story.

Speakers: Tim Angeli, Soroush Safei and Prasad Babarenda Gamage

Location: Commodore Room, Royal New Zealand

Yacht Squadron, Auckland

Time: 14 June, 5-7pm

Registrations by 11 June

[Register here](#)



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