KOLLING INSTITUTE

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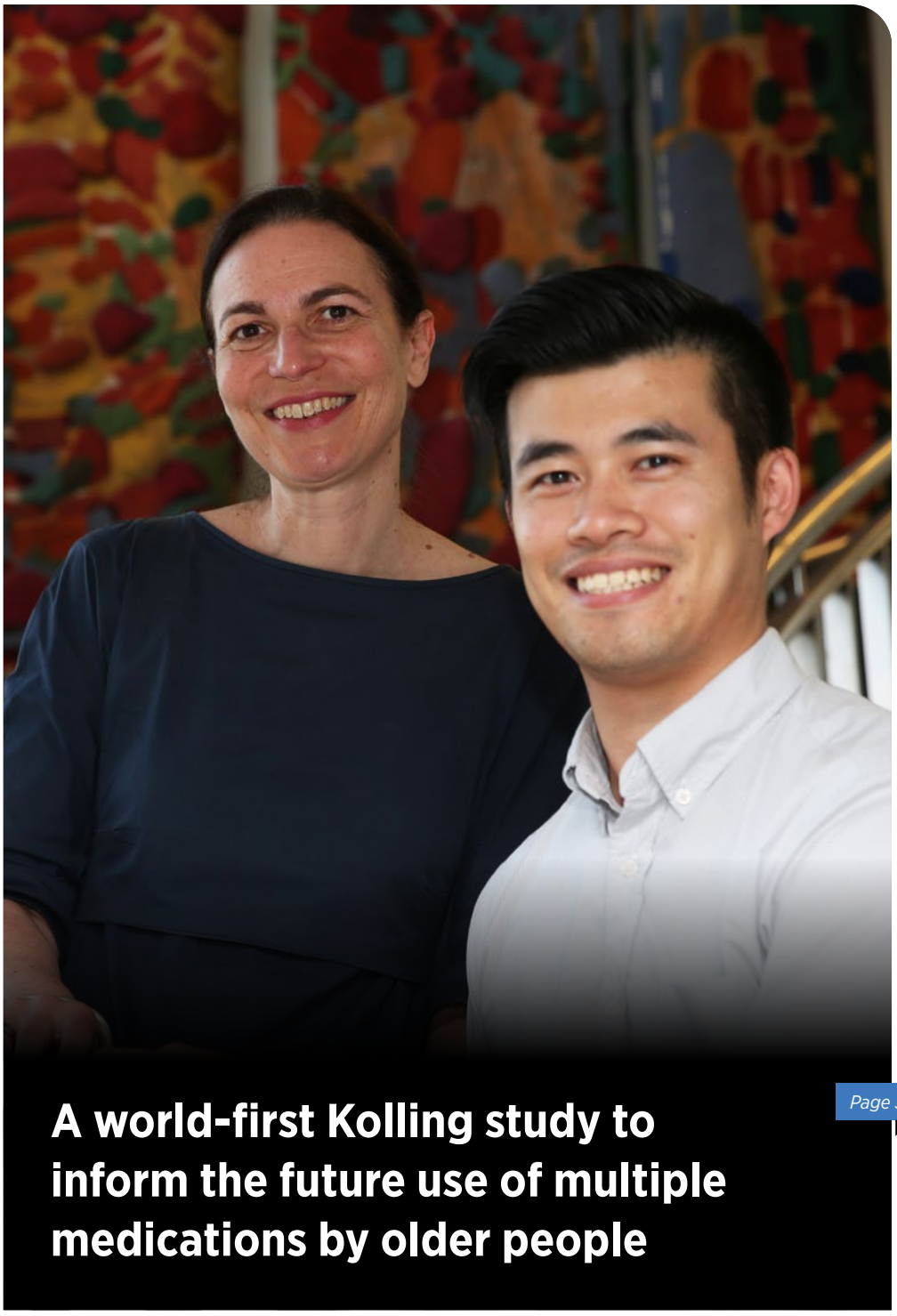
NEWS



A world-first Kolling study to inform the future use of multiple medications by older people

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The Kolling Institute turns 100

MESSAGE FROM THE EXECUTIVE DIRECTOR

2020 has started like no other year. The first days dominated by the tragic and destructive bushfires followed closely by the COVID-19 pandemic, a rapidly evolving and concerning health challenge. There are many wide ranging implications for our team and organisation.

I would like to thank everyone for their professionalism and patience in the current circumstances. I would encourage everyone to stay up to date with the latest information provided through the NSW Health website – www.health.nsw.gov.au

While the Kolling has been impacted by the COVID-19 pandemic, work has been progressing on the development of the institute's new research strategy. We have been meeting with our joint venture partners, many Kolling researchers and our stakeholders to design the new strategy. It is an important document which will shape the direction of the institute over the next five years. It will help to position the Kolling as a world leading institute, at the forefront of medical research locally and internationally.

In recent months our efforts have focused on:

- Mapping: Data has been collated on our research strengths and capacity
- Consultation: Discussions with joint venture partners and key stakeholders
- Engagement with researchers: Two workshops have been held inviting researchers and stakeholders to discuss research strengths
- Feedback: This step is ongoing and involves a wider range of participants; Kolling Institute researchers, North Foundation representatives, joint venture partners, community and interest groups.

We have been holding a series of one-on-one interviews with a large group of Kolling Institute researchers to further inform the research strategy. All research groups are being represented during this consultation.

We are planning virtual workshops within specific areas of interest to develop activities and initiatives to meet our strategic objectives. I would like to thank everyone involved for your contribution to the development of the new strategic framework.

This year is also an important year as it marks the 100 year anniversary of the institute – the oldest medical research organisation in New South Wales. A range of events had been planned to celebrate the significant milestone, and the many achievements over the past century. These events are currently being impacted by the COVID-19 situation.

Many people have helped to bring the Kolling to where it is today – a centre for well-respected research, with a large team of impressive clinician/researchers and scientists. We hope to recognise the overwhelming commitment to improving the health of our community.

I hope you enjoy this latest newsletter and gain a better insight into the extensive scope of work underway, including several long term projects which have just been published in leading international journals.

Professor Sarah Hilmer and Dr John Mach

Multiple medications cause frailty, but this can be reversed

A world-first study by a team from the Kolling Institute may inform the future use of multiple medications by older people, minimising adverse impacts including frailty.

The longitudinal research is the first preclinical study to demonstrate that multiple medications can impair function in old age, and that stopping some can reduce harm.

Research lead, Professor Sarah Hilmer said until now there's been uncertainty about whether it's the number of drugs, the type or the dose of drugs, and whether these effects are reversible once the medications are stopped.

Our research, conducted by Dr John Mach with a team of local, national and international scientists, applied rigorous methods in ageing biology and biostatistics to measure the impact of multiple medications in old age.

"For the first time, we found that multiple medications increased frailty and impaired function, and interestingly, it was not the number of drugs, but the type and dose of medications that caused the adverse outcomes, said Prof Hilmer, Head of the Department of Clinical Pharmacology at RNSH and Uni of Sydney Conjoint Professor of Geriatric Pharmacology.

"We also found that the adverse effects on frailty and function reduced after stopping the medications.

What the study means

"This research provides the critical evidence required to inform a medication review in our ageing population, not just in Australia, but also internationally.

"We now know which mix of medications cause frailty and reduce independence in old age, and that these effects are reversible once the medications are stopped.

"As a geriatrician, this gives me the evidence I need to optimise medications for my older patients. I can be confident about which drug exposures are exacerbating frailty, and weigh those risks against any potential benefits.

"It also means that I know their function and independence are likely to improve by withdrawing medications," Prof Hilmer said.

The three-year international study has been published in the Journals of Gerontology: Biological Sciences.

Professor Mark Molloy

New funding to help reduce Australia's bowel cancer rates

Professor Mark Molloy's ground-breaking bowel cancer research has received a boost, with the Cancer Council NSW awarding the Kolling Institute researcher a three-year $450,000 grant.

Professor Molloy has welcomed the funding, saying bowel cancer claims more lives each year than breast, prostate or skin cancer.

"It is now Australia's second biggest cancer killer, with more than 300 Australians diagnosed with the disease each week," he said.

"We hope our research will help improve treatments and outcomes for patients, and ultimately save lives.

"We know that bowel and rectal cancers develop from polyps, and our team is seeking to understand why and how polyps become cancerous.

"Our research will involve colonoscopy patients at RNSH, and we'll be using an innovative approach to examine polyps at a molecular level. This will give us a better understanding of how gene mutations, protein expression, immune cells and gut microbes govern the growth of bowel polyps.

"It will help us develop strategies to slow the growth of polyps or even prevent the growth all together," Prof Molloy said.

Colorectal surgeon and co-investigator Professor Alexander Engel said this research has the potential to inform recommendations around the frequency of colonoscopies for low and high-risk patients.

"We hope it will improve early detection and help prevent bowel polyps growing into cancers, significantly reducing the number of bowel cancer cases in Australia", he said.

CELEBRATING 100 YEARS 1920–2020 OF RESEARCH EXCELLENCE

Eva Kolling sets foundation stone for Kolling Building

2020 is an important year for the Kolling Institute as it marks the 100 year anniversary of the research organisation.

As the longest-running medical research institute in New South Wales, the Kolling has a very rich history. Originally named the Institute of Pathological Research of NSW, the organisation was established in a cottage within the grounds of Royal North Shore Hospital in 1920.

Biochemist. Doctor W. Wilson Ingram was appointed the institute's first director in 1928 and remained in that position for almost 50 years. He was instrumental in the opening of Australia's first clinic to treat diabetes and his work helped to develop a greater understanding of the condition.

The Kolling has had just five directors over the past 100 years, and current Executive Director Professor Carolyn Sue said we are all benefitting from the wonderful legacy of the many dedicated researchers over the past century.

"Many juggled clinical and research responsibilities, and led medical progress in their individual areas of expertise.

"The Kolling Institute is today regarded as a centre for world leading research and is well-respected across the government, industry and the community.

"I would like to acknowledge all those who've contributed to the institute over the past 100 years, including our current large team of researchers who are all driven to improve health services and patient outcomes," Prof Sue said.

RNS Hospital 1935

Original Kolling building

Dr Razia Zakarya, A/Prof Viive Howell and Dr Emily Colvin

International focus on our ovarian cancer research

In an exciting breakthrough, researchers from the Kolling Institute's Bill Walsh Lab have identified new genes involved in the spread of ovarian cancer.

Tragically, it is the deadliest female cancer, claiming more than 900 lives in Australia each year. Most women are diagnosed relatively late, when the cancer has spread, significantly reducing their chances of survival.

The ovarian cancer research team from the Bill Walsh Lab is focusing its efforts on the role of the tumour microenvironment.

Newest team member Dr Razia Zakarya said this microenvironment provides the support network that the tumour cells need to survive and spread throughout the body.

"With the tumour cells relying heavily on their local microenvironment, it is emerging as an important target.

Lead author Dr Emily Colvin said we have been investigating the role of a specific cell in the ovarian tumour microenvironment called a cancer-associated fibroblast.

"We have identified new genes that are switched on in these fibroblasts and influence ovarian tumour spread. Our results also suggest that these genes may even play a role in how ovarian tumours avoid destruction by the immune system," she said.

Research Director A/Prof Viive Howell said there is a real need for more research to improve outcomes for women diagnosed with ovarian cancer.

"We are very grateful for the generous support from patient donations for this research.

"These exciting results confirm the crucial role of the tumor microenvironment in the spread of ovarian cancer. We hope to continue this research to find new ways to target the tumor microenvironment and control ovarian cancer spread."

The research is receiving international attention following publication in the journal Cancer Science.

Dr Marie Christine Morel-Kopp and Professor Geoff Tofler

Common medication may lower risk of "heartbreak"

RNSH cardiologist Professor Geoffrey Tofler has led a major study which found that common medications can reduce the risk of heart attack in those grieving a loved one.

Professor Tofler said while most people gradually adjust to the loss of a loved one, there is an increase in heart attacks and death among bereaved people, particularly those grieving a spouse or child.

"This risk can last up to six months and is at its highest in the first days following bereavement.

"Our study, involving the Kolling Institute, Royal North Shore and the University of Sydney, was the first clinical trial to show it is possible to reduce several cardiac risk factors during bereavement."

85 spouses or parents were enrolled in the study within two weeks of losing a family member. Half the group received low daily doses of a beta blocker and aspirin for six weeks, while the other half were given placebos.

"The main finding was that the active medication successfully reduced blood pressure and heart rate, as well as demonstrating some positive change in blood clotting tendency," said Professor Tofler.

"We were also reassured that the medication had no adverse effect on the psychological responses, and indeed lessened symptoms of anxiety and depression," said Professor Tofler

"Encouragingly, and to our surprise, reduced levels of anxiety and blood pressure persisted even after stopping the six weeks of daily beta blocker and aspirin."

Co-investigator Associate Professor Tom Buckley said the study builds on the team's work in this area.

"While beta blockers and aspirin have been commonly used long term to reduce cardiovascular risk, they have not previously been used in this way as a short-term preventative therapy during bereavement.

"Future studies are needed to assess if these medications could be used for other short periods of severe emotional stress such as after natural disasters, where currently there are no guidelines to inform clinicians," he said.

Kolling Institute Tumour Bank team

Valuable biobanking resource improving health outcomes and strengthening research

For nearly three decades, the Kolling Institute Tumour Bank has been quietly and consistently building a large state resource.

It was established in 1992 with a small number of endocrine tumours. Today, it also has breast, colorectal and gynaecological tumour collections, as well as neurological and gastrointestinal samples.

The significance of the resource has been recognised in recent years, and it was the fifth biobank in NSW to achieve accreditation through the NSW Biobank Certification Program.

Senior tumour bank officer Ussha Pillai said more than 11,000 cancer patients have now contributed specimens to the bank, and research using these collections has been published in over 100 international peer-reviewed medical publications.

Professor Rob Baxter, who serves as a management team committee member, said the biobank has a long and proud history of contributing to improved health outcomes through changes to World Health Organisation guidelines, improved prognosis and cancer diagnostics.

The Kolling Institute Tumour Bank is also integral to the research training of clinicians and scientists on the RNSH campus, with 43 PhDs awarded since 1996 for research conducted using the specimens.

A/Professor Viive Howell, whose own PhD studies used specimens from the bank, said many of these PhD students who relied on banked specimens for their research, now hold leadership positions at the hospital, other leading research facilities and universities in NSW, as well as nationally and internationally.

The biobank includes blood from healthy volunteers, which is essential for comparison with collections from cancer patients. If you would like to contribute to this bank email: kolling.tumourbanks@sydney.edu.au or phone 9926 4771.

New ways to harness the talent within the Kolling

A large group of Kolling scientists took advantage of an intensive program to help maximise the impact of their research.

Led by CSIRO affiliated facilitators Jane Cockburn and Brian Dorricott, the Pathway to Impact workshop was held over three days to help researchers raise awareness of their expertise and individual area of research activity.

The program focused on building relationships with industry and other key stakeholders, creating a compelling proposition and securing funding. It also promoted an entrepreneurial culture and encouraged researchers to gauge the potential of their work.

Pathway to Impact workshop participants

Director of the Raymond Purves Bone and Joint Research team Professor Chris Little found the workshop stimulating.

"It encouraged me to think about what the impact of my different research programs are, and who is directly benefitting from them, whether it's other researchers, patients, carers or doctors," Prof Little said.

"The program also gave us some valuable advice on how to talk about the impact of our work in a simple and engaging way.

"As basic, discovery scientists, I suspect we often consider the end-user impact of our work as a distant prospect, but these workshops gave me the practical tools to frame my research's value proposition from their point of view," he said.

Cancer research and services

The excellent cancer care services, research and patient care across Northern Sydney were in the spotlight during the latest Northern Lights showcase.

The event was part of a new series highlighting the outstanding research and innovation across the health district, and the unique team based on the Royal North Shore Hospital campus.

Patient Tanya Beach generously shared her cancer experience, while the team from the Cancer Centre discussed issues ranging from clinical redesign, workplace culture and the use of artificial intelligence with the latest cancer treatment.

A large number of speakers addressed the showcase event, including the Director of Cancer Services Professor Alexander Engel, Cancer Centre Nurse Manager Rowena Broadbent, Drs Malinda Itchins and David Chan, and Professor Dale Bailey.

Innovative approach to meet increasing demand for physio

New research is testing a novel way to meet the rapidly growing demand for physiotherapy in our public hospitals.

A clinical trial at four hospitals, including Hornsby and Royal North Shore, is studying whether some patients can undertake physiotherapy exercises at home, and still experience the same benefit provided by attending a hospital clinic.

"Demand for physio is increasing rapidly because we have an ageing population and because clinicians and consumers have a growing appreciation of its benefits," said Professor Lisa Harvey from Northern Sydney Local Health District and the Kolling Institute.

"But its popularity has created a patient access and equity issue. There are simply not enough physiotherapists to meet the demand in the NSW health system, and in some districts the waiting list for face-to-face treatment is very long."

In a project funded through Sydney Health Partners, Prof Harvey, in collaboration with NSW Health physiotherapists and academics, is using a web-based application to provide trial participants with individually-customised sets of exercises to do at home.

"After a face-to-face assessment, a physiotherapist uses our web application to select and compile a set of exercises suitable for their condition. The patient is then given a unique website link to their individual exercise program.

Professor Lisa Harvey

"They also get messages of encouragement via text messages, and a physiotherapist telephones the patient after two weeks to give them advice, support and reassurance.

"In many cases we believe it's better for patients if they come to see their problem as something they can address if given appropriate support," said Prof Harvey.

Technology to support new approach to back pain

If you have low back pain, you could be the perfect candidate for a new study using text messages to support those with the condition.

Named TEXT4myBACK, the Kolling and University of Sydney study will compare two different formats of text message interventions to help people better manage their symptoms.

Professor Manuela Ferreira is expecting strong interest and participation in the study with large numbers of people across the community experiencing back pain.

"Research has shown us that low back pain is the number one cause of disability worldwide, greatly impacting social, family and work activities.

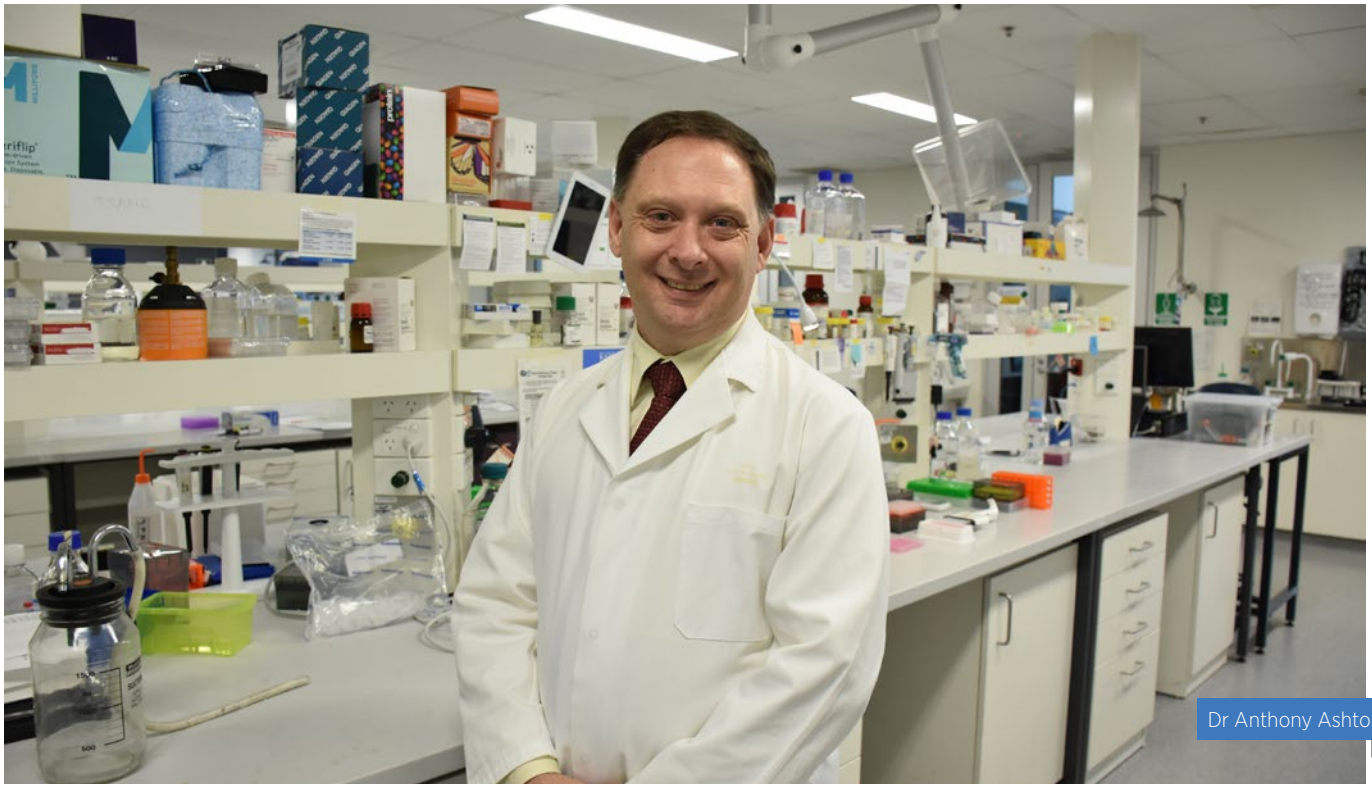
"We're keen to measure the effectiveness of a new approach using technology.

"Text messaging is an easy, accessible and affordable intervention that can empower people with low back pain to better manage their own symptoms.

"Our TEXT4myBACK study will assess whether text messages are able to improve patients' knowledge about their condition and decrease the costs associated with alleviating their pain," Prof Ferreira said.

Professor Manuela Ferreira

To find out more, watch the #TEXT4myBACK video at youtube.com/watch?v=zhtavBjLIyA or complete a pre-screening survey at bit.ly/TEXT4myBACK



Dr Anthony Ashton

Genetic breakthrough offers hope for women with rare, deadly condition

Pregnancy induced heart failure is a complication of pregnancy that threatens the lives of around 200 new Australian mothers each year, but a team from the Kolling Institute is leading exciting, new research to identify and treat women at risk of the condition.

Known as Peripartum Cardiomyopathy, the rare disease weakens the heart muscle during pregnancy.

Dr Anthony Ashton said it is a complex condition, with the three different types of pregnancy induced heart failure contributing to three very different outcomes.

"Around a third of women impacted will recover following the birth of their child, while a large share will manage with medication for the rest of their lives," Dr Ashton said.

"Some women however, will have a 20 per cent chance of dying within five years or require a life-saving heart transplant."

Researchers at the Kolling are offering renewed hope with the team identifying the gene signatures linked to the condition.

"This has been a breakthrough discovery and has paved the way towards improved diagnosis and ultimately treatment.

"With this new understanding of the genetic influences, we are now working to develop a test to help us identify women with the condition and treat it before it becomes deadly.

"A greater knowledge of the genetics will also allow us to develop specific therapeutic breakthroughs for the different types of pregnancy induced heart failure, improving survival and maternal health.

"The disease can have a devastating impact on women and their families, so we're encouraged by the recent advances and optimistic improved treatment will be offered in the years ahead," Dr Ashton said.

Latest News from the Kolling Institute

(02) 9926 4500
Kolling@sydney.edu.au
www.kollinginstitute.org.au
@KollingInstitute @KollingINST

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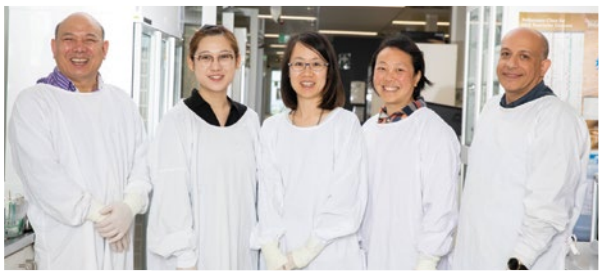

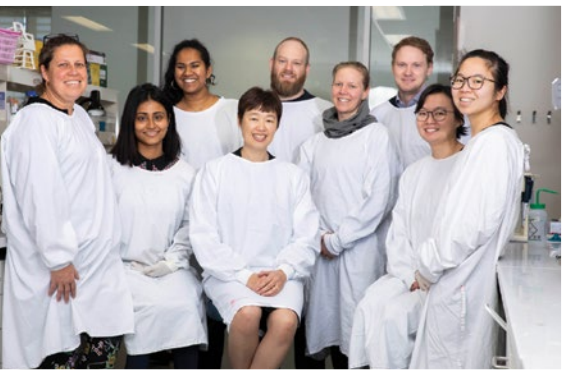

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