




**22-23**

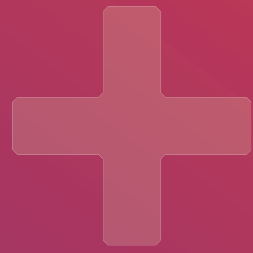
Research  
Report



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 COVER IMAGE:  
Emerging researcher,  
Dr Yow Keat Tham shares  
his research on page 20

The Alfred Research Alliance acknowledges the Traditional Owners of the land our precinct resides on, the Bunurong people of the Kulin nation. We pay our respects to their Elders past, present and emerging, and extend that respect to all Aboriginal and Torres Strait Islander peoples.



# Welcome

## to the Alfred Research Alliance's 2022-23 Annual Research Report.



Research is fundamental to modern healthcare: it drives innovation, generates evidence-based practice, and supports the future of education and training.

Ultimately this enhances patient and community health outcomes, and this is what that motivates our 8,000 plus staff and unites the Alliance's members here at The Alfred Precinct.

As the world emerged from the COVID pandemic, which had focussed the world's best research minds, we saw a rebalancing of the research interests at the Alliance across our eight research strengths.

Alliance partners were awarded \$184m in external research funding (\$54 million from NHMRC and \$41 million from MRFF grants) across a broad range of clinical and translational research areas.

One of the most significant achievements for the Alliance during the year was a new partnership forged between Alfred Health, Monash University and the Baker Heart and Diabetes Institute to create the Centre for Cardiovascular Research.

Through this centre we are already achieving more together, using big data and first in human clinical trials to ensure patients receive cutting edge care.

### **Leader in translational research**

The two biomedical organisations on our Precinct – Nucleus Network and 360Labs - saw substantial growth during the past year, moving to expanded premises to keep up with national and international demand.

## CHAIR'S REPORT

Their presence here means we can take breakthroughs from the lab into advance therapies to trials that are first in human and then first in disease, contributing to our position as a world leader in translational research.

It also attracts talented and motivated people who want to make a real difference working in the lab to solve the problems they see on the frontline in health services.

This report provides an insight into some of our emerging researchers/clinicians and how The Alliance develops and benefits the next stages in their careers. They are always inspiring.

### **Thanks and appreciation**

I would like to express my thanks and appreciation to Prof Tom Marwick who is stepping down from his role as Director of the Baker Institute to pursue his research. My thanks go to Prof Marwick, along with the other members of the Alliance Councils, who give their time, energy and substantial expertise. I also extend a warm welcome to Prof John Greenwood, who is the new Director of the Baker Institute.

Through collaboration so much can and is achieved. Over the past twelve months I have been impressed and encouraged in equal measure at the ability of our staff – nurses, doctors allied health professionals, researchers, scientists, to recover and reset after the pandemic and to work together to the benefit of patients and the community. My sincere thanks for the work they do every day.

**Prof Andrew Way**  
Chair, Alfred Research Alliance

# About the Alfred Research Alliance

For almost 100 years, research has been conducted on the Alfred's precinct.



Today, we are Australia's largest centralised research, hospital and clinical trial site with eight organisations, and 8000 staff, working together across 20 disease disciplines.

By continuing to research, innovate and teach, we can constantly improve care and develop healthcare leaders.

We think in new and innovative ways and work together to translate the latest advances in medical research into new and improved diagnoses, treatments and disease-prevention strategies, resulting in the best possible clinical care and health outcomes.

We are home to some of the world's leading experts in almost every field of biomedical, translational, clinical and public health research, and in education and healthcare.

The unique integration of these fields creates an exceptional environment where cutting-edge therapies are discovered, developed and implemented to address critical unmet clinical and public health needs – and where students gain the education and training they require to take their place as tomorrow's leading clinicians, scientists and health professionals.



=



# New thinking. Real impact.

**At the Alfred Research Alliance, our researchers take a clinical unmet need and apply their skills to find a solution for improving health outcomes.**

Our work covers everything from biomedical discovery in the laboratory to applied research, clinical research, and public health and health services research.

By enabling discoveries to progress from bench to bedside to the broader community, our research forms a complete translational research cycle on one geographically distinct and uniquely interconnected precinct.

The overarching aim of this research is to improve diagnosis, treatments, prevention and policy, creating better outcomes for the healthcare system and the wider community.



**1**  
Hospital



**2**  
Biomedical SMEs



**2**  
Medical Research Institutes



**3**  
Universities



**1,300+**  
Post graduate students



**1,500+**  
Researchers



**8,000+**  
Staff and students

# Precinct highlights

## 01

### Monash-Alfred-Baker join forces to improve heart health

A new cardiovascular research centre is bringing together Monash University, the Baker Heart and Diabetes Institute and Alfred Health to boost opportunities for academic clinician partnered research and offer new pathways for emerging research talent in the Alfred Research Alliance Precinct.

The Monash Alfred Baker Centre for Cardiovascular Research brings together the combined strengths of the three leading institutions in cardiovascular research and clinical care to deliver innovative solutions for cardiovascular diseases and improve outcomes for patients.

Through the Centre's clinical arm at Alfred Health, the Alfred Heart Centre, clinician-researchers will have access to a diverse range of patients within the health service's 700,000+ catchment area in Melbourne's south, leading to improved knowledge and clinical outcomes in both cardiovascular medicine and cardiothoracic surgery.

The Centre will focus on building the pipeline of clinician-research talent, contributing to Victoria's reputation as the home of Australia's cardiovascular research innovation. The collaborative approach will also improve competitiveness for grant funding opportunities, and strengthen the Precinct's leading position nationally and internationally.



+ Professor Christina Mitchell AO, Adjunct Professor David Kaye, Professor Tom Marwick and Professor Andrew Way AM



## 02

### Nucleus Network joins global fight against Motor Neurone Disease

Nucleus Network will conduct world-first human trials to potentially uncover life-changing new treatment for motor neurone disease.

While there is still a long way to go to confirm progress, early indications are that medical advances to either stall or reverse the impact of MND are on the horizon.

Together with US biotech company Spinogenix, which has developed an experimental drug that has shown positive results in tests on mice, Nucleus Network will recruit up to 112 patients for an international-first human trial.

The work, using an early development drug known as SPG302, will be carried out by a coalition of specialist centres, including Sydney's Brain and Mind Centre, the Royal Brisbane and Women's Hospital, and Adelaide's Flinders Medical Centre.

The limited trial is set to open to eligible Australians with what is known as amyotrophic lateral sclerosis, the most common type of MND, by the start of this year, with work for the first stage involving healthy volunteers already under way.



# Precinct highlights

## 03

### Dermatology research added to precinct

Alfred Health opened its first dermatology research department in 2023.

The team's first clinical trial opened in March 2-23 - the Amgen Rocket Horizon study for atopic dermatitis, a common and often severe skin disease.

Prof Johannes Kern is the Australian lead Investigator for this global trial.

There are currently 10 commercially sponsored and investigator-initiated trials in start-up, showcasing the treatment revolution that is coming for patients with skin diseases.

Our researchers are focussed on new treatments for common skin conditions and advancements in the treatment of more rare conditions, giving people much-needed relief to often debilitating skin conditions.



+ Prof Johannes Kern



+ Prof Douglas Gin

## Research Strengths



Diabetes and obesity



Mental health



Blood diseases and cancer



Cardiovascular disease



Epidemiology and public health



Infection and immunity



Nursing and allied health



Trauma, critical care and perioperative medicine



Respiratory health



Neuroscience

## A SNAPSHOT OF OUR YEAR

# Research performance

2022 external funding awarded for health and medical research

# \$184M

External research funding by funding source – 2022

## \$103.2M

Australian competitive grants

## \$22.1M

Other public sector research income

## \$30.3M

Other competitive research grants

## \$15.7M

Industry income

## \$12.5M

Other research income

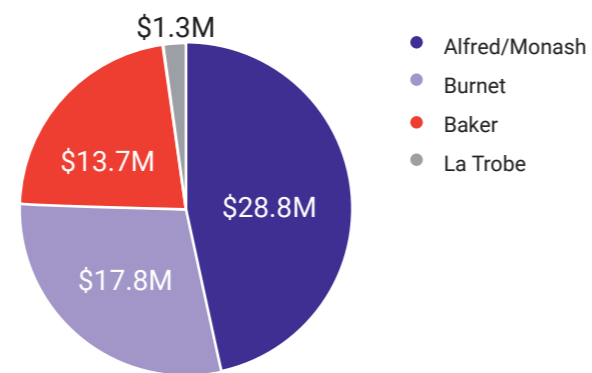
## \$184M

**Total**

NHMRC funding commitments secured by Alfred Research Alliance commencing in 2023

# \$61.7M

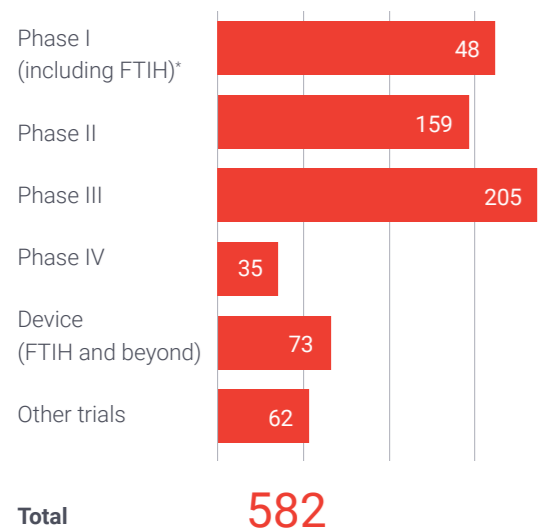
NHMRC funding commitments directly administered by Alliance members



### Philanthropy

In addition to the **\$184M in external funding** secured specifically for research, Alliance partners also received **more than \$42.7 million in philanthropy and fundraising revenue** in 2022.

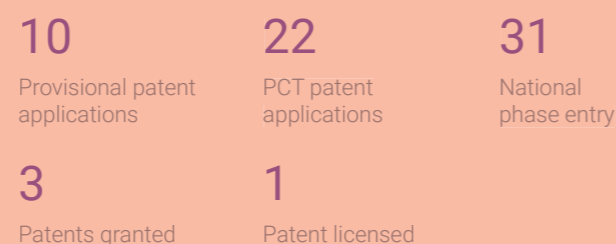
### Clinical trials in 2022



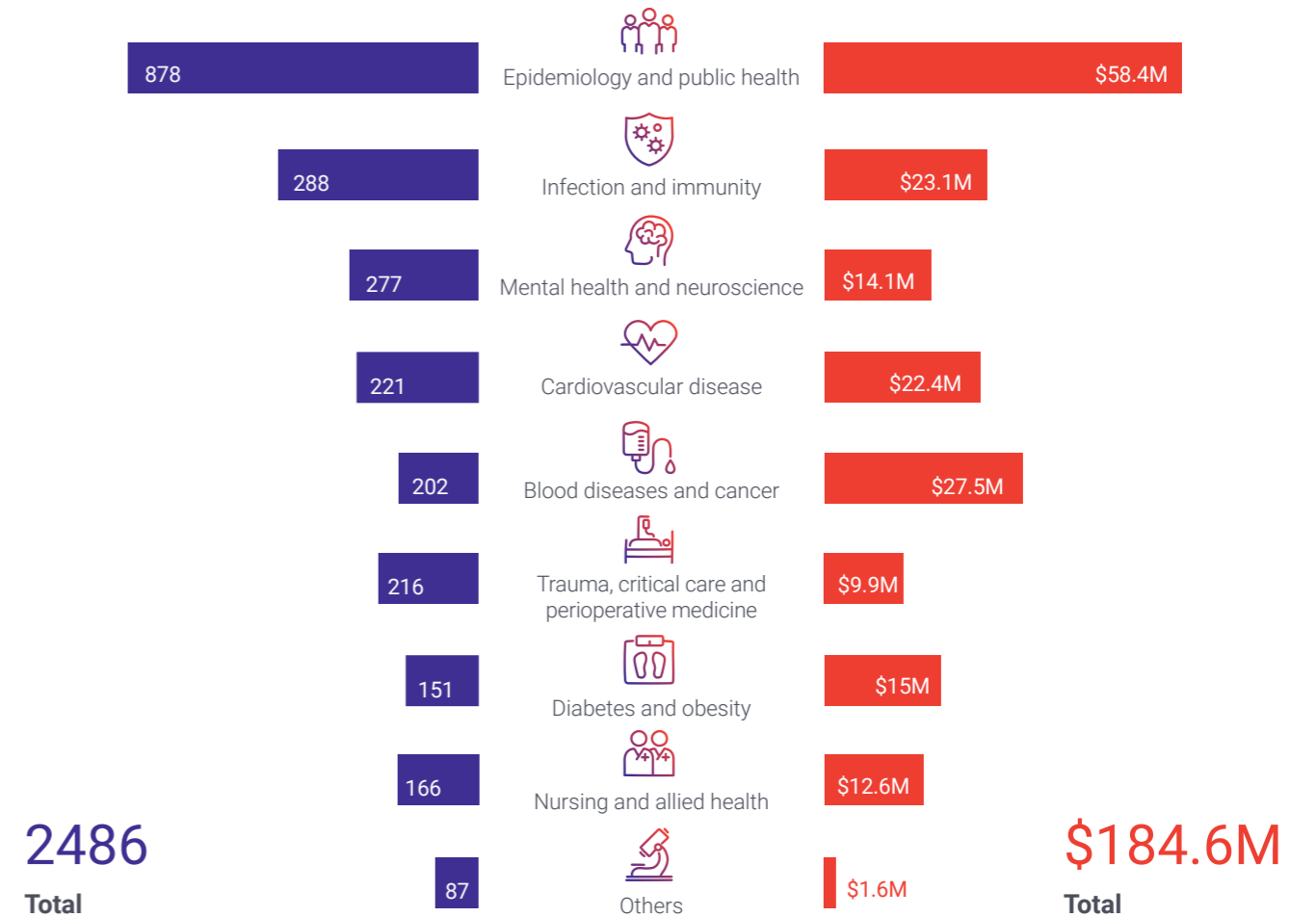
### Students 2022



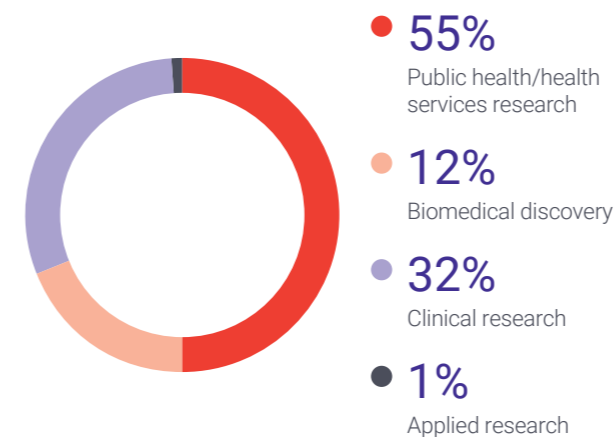
### Commercial impact



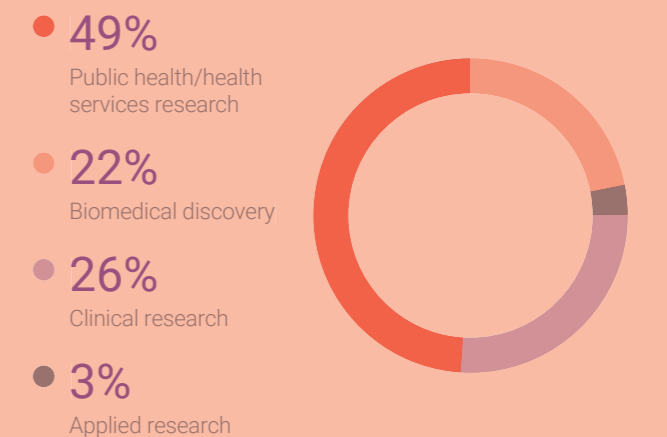
Original research articles by research area – 2022



Original research articles by research theme – 2022



External research funding by research theme – 2022



## OUR MEMBERS

The Alfred Research Alliance brings together eight independent and diverse organisations to create a community of excellence for research and education.



Alfred Health is a state-wide health service comprising The Alfred, Caulfield and Sandringham Hospitals, along with a large network of community programs and 14 services across Victoria.

The Alfred is one of Australia's busiest hospitals, providing the most comprehensive range of adult specialist medical and surgical services in Victoria. The hospital is also a major tertiary referral teaching hospital with a commitment to research excellence and training for medical, nursing and allied health staff.



Monash Medicine, Nursing and Health Sciences is a research-focused faculty within one of the world's top universities. It is a leading provider of education for doctors, nurses and allied health professionals in Australia.

Two of the university's largest schools are located at the Alfred precinct within the Sub-Faculty of Translational Medicine and Public Health. Monash Central Clinical School is a major centre for clinical and biomedical research and education, with a focus on translational research including preclinical studies and early phase clinical trials of new treatments for human diseases. Monash Public Health and Preventive Medicine is a world leader in public health, clinical and applied research and education, including large-scale late phase clinical trials, clinical registries, population studies and health services research.



The Baker Heart and Diabetes Institute is an independent, not-for profit medical research facility with a proud history of discovery dating back to 1926.

The Institute's research is focused on the prevention, diagnosis and treatment of cardiovascular disease, diabetes and other related health disorders. This includes addressing the profound health disadvantage experienced by Aboriginal Australians, with a research facility in Alice Springs.

The Baker Institute's work extends from the laboratory to widescale community studies and intervention programs. The Institute also runs a range of specialist clinics, including cardiovascular and diabetes clinics.



Burnet Institute is an independent, not-for-profit medical research and public health organisation that believes in equity through better health.

By linking discovery-oriented and implementation research with public health action, Burnet makes a tangible and sustainable impact on health in both developed and developing countries.

The Institute's major thematic programs – Maternal, Child and Adolescent Health, Disease Elimination, Behaviours and Health Risks, and Health Security – underpin innovative multidisciplinary responses to diseases of global significance and solving complex health issues. Burnet has particular expertise in HIV and AIDS, hepatitis viruses, malaria, tuberculosis, influenza and emerging infectious diseases including COVID-19.



Deakin University's School of Nursing and Midwifery and Alfred Health Nursing Services have a long-established research and education partnership.

Through that partnership, staff at the Deakin Centre for Quality and Patient Safety Research are able to conduct high-quality research programs in the areas of patient safety, health services evaluation and knowledge translation.

This allows us to make a substantive contribution to scientific knowledge, clinical nursing practice and the quality of patient care. As well as research training, Deakin undergraduate and postgraduate students also complete clinical placements here for their nursing, allied health and health science degrees.



The La Trobe University Clinical School at The Alfred integrates research, teaching and clinical practice in allied health and nursing.

The broad objectives of the school are to provide national and international research leadership, conduct clinical research that makes a difference to patient outcomes, and promote interdisciplinary and inter-institutional collaboration in healthcare delivery and research. We provide a centre of excellence for education in nursing and are leaders in implementation science – the uptake of research evidence into clinical practice.



Nucleus Network is Australia's largest Phase 1 clinical research organisation and the only Phase 1 specialist globally with facilities in the USA and Australia. Since our establishment in 2004, Nucleus Network has conducted well over 1000 Phase 1 clinical trials for biotechnology and pharmaceutical companies from across the globe, including China, Europe, Japan, South Korea, Taiwan and the USA.

Our Australian Phase 1 facilities are in Melbourne and Brisbane, and our USA Phase 1 facility is in Minneapolis, Minnesota. Combined, our clinics offer more than 200 beds. All 3 clinics are strategically co-located within leading medical, research and biotech precincts: The Alfred hospital in Melbourne, the Royal Brisbane and Women's Hospital in Brisbane, and Medical Alley in Minnesota.



360biolabs, a BioAgilytix company, is the leading and most comprehensive specialty laboratory in the Australia and New Zealand region focused on supporting pharmaceutical and biotech partners in all phases of drug development.

Recently joining the global BioAgilytix team and now with laboratory locations in North Carolina's Research Triangle Park; Cambridge, Massachusetts; San Diego, California; Hamburg, Germany; plus Melbourne and Brisbane, BioAgilytix provides large and small molecule PK, immunogenicity, biomarkers, flow cytometry, virology and cell-based assay services supporting the development and release testing of therapeutics across a number of industries and disease states.

360biolabs and the global BioAgilytix laboratories offer assay development, validation and sample analysis under ISO/IEC 17025, ISO 15189, GLP and GCP, GMP quality control testing (i.e. product release testing, stability testing, etc in USA labs) and diagnostic testing services at its CLIA-certified, CAP-accredited Boston laboratory.





# Meet some of our **emerging researchers**

As Australia's largest centralised hospital, clinical trial and research site, Alfred Research Alliance provides emerging researchers a unique environment to establish a research career.



## A/Professor Shandy Li

MONASH UNIVERSITY

### What is your research about?

My primary research area is environmental health, with a focus on air pollution and climate change. I investigate the health effects of air pollution from various sources (e.g., wildfire-related air pollution), temperature, green space, and extreme weather events (e.g., heatwaves, cold spells, flooding, and cyclones) on various health outcomes, including respiratory and cardiovascular diseases, maternal and child health, and mortality rates. My research team aims to understand how these environmental factors affect different populations and how they can be mitigated to improve public health.

### Why are you interested in this research area?

Climate change and air pollution are becoming increasingly serious, so understanding and mitigating environmental risks is essential to protecting public health.

Certain groups, such as children, the elderly, and lower-income communities, are more vulnerable to environmental hazards. So, understanding and addressing these health disparities can ensure everyone receives adequate protection.

Environmental health issues often cross international borders and are inherently interdisciplinary. This research area allows me to tackle complex problems from various perspectives.

### What are your career aspirations in research?

I hope to engage with communities directly affected by environmental health issues to understand their concerns, conduct research that addresses their needs, and empower them with information and resources. I often aspire to work with governments and non-governmental organizations to influence policies and contribute to the shape of regulations and guidelines to ensure environmental safety. By translating complex scientific research into accessible information, my ultimate aspiration is to help create a healthier and more sustainable environment for current and future generations.

### Why do you think this is a great place to establish a research career?

Here at Alfred Research Alliance, I enjoy a great environment for research excellence and collaboration to foster new ideas. Specifically, the alliance provides adequate support for early to middle career researchers by offering various funding options, training, workshops, and seminars that greatly enhance the skills and knowledge of researchers. All these supporting schemes make Alfred Research Alliance an attractive and excellent place for establishing my career.



## Dr Guncag Ozavci

DEAKIN UNIVERSITY

### What is your research about?

My research involves health communication, particularly, medication management and patient safety. My current research at The Alfred examines on how hospitalised patients and their families communicate with health professionals in using electronic medical records and patient portals. I am particularly examining the experience of patients with complex needs, including those of culturally and linguistically diverse backgrounds, or who have multiple chronic conditions, or who take many medicines/polypharmacy.

### Why are you interested in this research area?

Since I started my career, I have noticed that poor communication is the most common reason behind adverse events and medication incidents that occur in health care environments. So, it urged me to investigate the dynamics of health care interactions in the existence of the new technologies such as Electronic Medical Record (EMR) and portals and develop tailored strategies where patients and providers work together and communicate in a best possible way.

### What are your career aspirations in research?

I'd like to pursue my career as a well-known researcher in the field of patient safety and medication management. However, I am hoping to explore novice technological advancements in digital health and how these advancements can be used to improve patient autonomy, medication safety, shared engagement between patients and providers.

### Why do you think this is a great place to establish a research career?

Alfred Research Alliance is a collaborative community, which brings together experts in diverse fields including translational research, health service research and public health. As a research fellow working in the health service and nursing research, I feel quite grateful to be able to have an immediate access to the key stakeholders so that I can actually co-design quality improvement initiatives in collaboration with consumers.

## Dr Sharon Kramer

MONASH UNIVERSITY

### What is your research about?

My research is about how we can use exercise to help people recover from brain injury. I am specifically looking at aerobic exercise, such as endurance training, because we know it can improve fitness, but research has shown that it can also help with brain recovery after stroke.

### Why are you interested in this research area?

A large proportion of the general population have cardiovascular risk factors such as diabetes, high blood pressure, and obesity and, therefore, have a high risk of having a stroke. We know that exercise can improve these factors and now we also know that it can play a role in improving brain function after a brain injury. My research is focused on determining the best exercise to prevent strokes and treat people to recover from brain injury. It is exciting to work in this field as exercise has the potential to make a great difference in the lives of people living with stroke and brain injury.

### What are your career aspirations in research?

My career aspirations in research are to develop the right intervention for people with brain injury. My research program includes studies with national and international collaborators that are aimed to investigate different aspects of exercise such as dose and physiological mechanisms. This work is essential before we can translate our findings in to clinical practice.

### Why do you think this is a great place to establish a research career?

This precinct is a great environment for an early career clinical researcher like me. I am proud to be working at the Alfred Health precinct. It gives me access to world-leading preclinical scientists at Monash. It is exciting to be working with clinicians who are part of an excellent clinical program in stroke and acquired brain injury including the stroke unit at Alfred Health who were the first ever to get accredited in Australia and the world class ABI unit at Caulfield.

## EMERGING RESEARCHERS

# Diabetes and obesity

## Dr Yow Keat Tham

### What is your research about?

My research really focuses on lipids (fatty compounds that perform a variety of functions in your body) and how they change in the context of cardiovascular disease and whether we could utilise them in modulating their levels to try to find new ways to treat heart disease.

When I say lipids, a lot of people think about things like HDLs or LDLs, but many different lipids make up these molecules.

Lipids form the barrier between the inside and outside of your cell. And there are up to 100,000 different types of lipids that exist, and we are only really scratching the surface of what we can detect through the technologies that we have now. That is already a massive improvement.

### Why are you interested in lipids?

It was a very understudied area when I first came into it. There is an enormous potential to try to find out more as to how they can be utilised as therapeutics. Exercise is a real passion of mine, and I get really amazed at how the heart is so good at adapting to all the different stresses we throw at it, even though it has such a limited capacity to regenerate.

### Why do you think this is a great place to establish a research career?

I aspire to lead my own group. I do lead a little group of three PhD students, and I lead my own little research program within the construct of my laboratory, which is a nice start.



### Why is the Alfred Research Alliance a great place to establish a career?

Working within the Alfred Research Alliance is beneficial in establishing a research career. The best part is there is a melting pot of preclinical researchers like me, but also clinical researchers. That is crucial in trying to make sure that whatever we do has the best chance to be utilised in a patient cohort.



## EMERGING RESEARCHERS

# Cardiology

## Dr Louise Segan

### What is your research about?

My research focuses on, what I feel are, two important areas within atrial fibrillation.

Atrial fibrillation is the most common arrhythmia that we see worldwide.

But what people probably appreciate a bit less is that up to a third of patients with atrial fibrillation develops heart failure.

With my research, I'm looking at the subgroup of patients with atrial fibrillation who also have heart failure, where you get weakness of the heart muscle, fluid build-up and fatigue and breathlessness.

I'm looking at how we can improve outcomes for those patients.

A second focus of my research is in the space of prevention. While we have amazing technologies to treat atrial fibrillation, I think an area that we've focused less of our attention is how can we prevent people developing AF in the first place or progressing to the point where they need a procedure.

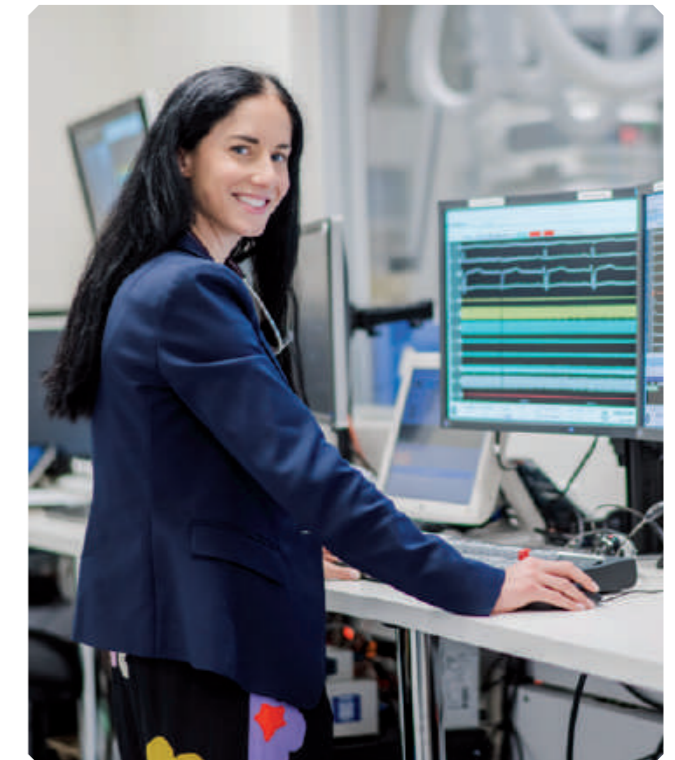
And that's where I think more proactive measures around lifestyle and risk factor modification become really important.

### Why are you interested in this research area?

Heart failure has long been an interest of mine. In fact, a lot of my earlier research focused around the heart failure population.

And then as I became a bit more interested in the electrical space, I realised that the management of atrial fibrillation and heart failure were often a little bit disconnected. So, I thought through my research, I can help to bridge the gap in the care of these patients rather than having two separate management pathways.

I'm hoping to continue to advance the field in terms of contributing to the scientific research around atrial fibrillation, particularly focusing on other subpopulations who may be underserved to an extent, and also continuing to focus our research towards better preventative efforts



### Why do you think this is a great place to establish a research career?

From the Alfred Research Alliance there's three key institutions that have been very integral to my own personal and professional journey. I'm very grateful to have had the opportunity to undertake my medical studies through Monash University.

And then along the way, I was starting to include my clinical exposure to the patient environment through Alfred Health and then embark on research through the Baker Heart and Diabetes Institute.

I think the Alfred Research Alliance represents a fantastic opportunity for clinician researchers.



Alfred Health Week is our annual event that showcases the research excellence of the Alfred Research Alliance. It's also an opportunity for us to come together and discuss an issue or topic.

For 2023, we focussed on Aboriginal and Torres Strait Islander research and how we can do better for this community.

While we know there is a long way to go, we started the conversation and enjoyed a lot of rich conversation through a range of events held from November 13 to 17.

**Research Week panel discussion provides Aboriginal insights**

"Harmful policies of the past still affect Indigenous people today when it comes to accessing healthcare and research. We need to rebuild their trust and acknowledge the harms of the past in healthcare. That is the first step."

These are the words of Dr Jessica O'Brien, Alfred Health cardiologist and Monash University PhD student, who joined Alfred Health Week's panel discussion about how we can improve our relationships with Aboriginal and Torres Strait Islander peoples, particularly when it comes to research and clinical trials.

Dr O'Brien, who is only one of two Indigenous cardiologists in the country, was joined by Professor Anthony Russell, Director Endocrinology and Diabetes, Alfred Health and Associate Professor Neale Cohen FRACP, Head Clinical Diabetes, Baker Heart and Diabetes Institute.

Jack Latimore, Indigenous Affairs Reporter from The Age and Birpai man, did a fantastic job of steering the conversation and was able to also provide his own similarities between journalism and healthcare.

Both Professor Russell and A/Prof Neale Cohen have both worked in regional and remote communities and shared how they have gone about engaging these communities in the past.



+ L to R: Jack Latimore, Dr Jess O'Brien, Prof Neale Cohen and Prof Anthony Russell



+ Dr Jessica O'Brien, Cardiologist and PhD Student, Alfred Health/Monash University

Alfred Health Week's 2023 keynote speaker Professor Karen Adams, from Monash University's Gukwonderuk Indigenous Health Unit, delivered a very powerful and honest address about the historic treatment of Indigenous peoples and the impacts that still has within public hospitals.

**She also spoke about the Victorian Aboriginal Research Accord, which aims to change the way research is currently conducted on and for Indigenous peoples, to, instead, have them self-determine what research is needed for them by them.**



+ Prof Karen Adams

## RESEARCH AWARD WINNERS

In 2023, 25 researchers – junior, mid and senior level - were awarded scientific and research prizes as part of Alfred Research Week. There were 181 researchers who submitted an entry, a record amount, which highlights the commitment across the Alliance to improving health outcomes and healthcare in Australia and across the world.



### Alfred Health Senior Medical Staff Association Prizes for Clinical/ Public Health Research

#### Thanomporn Wittayacharoenpong

Neurology, Monash University

Using stereo-EEG data to determine the optimal intracranial venous sinus location for an endovascular seizure detection device

#### Sandra Burkitt

AMAH Workforce Development and Education, Alfred Health

Community mental health nurse transition to speciality practice framework: the benefits and barriers in the framework implementation

#### Matthew Kang

Psychiatrist, Alfred Health

Improving healthcare team harmony through collaborative team reflection and mindfulness

#### Floyd Dias

Medical Registrar | General Medicine, Alfred Health

The association between patient characteristics and rehabilitation outcomes for adults enrolled in a metropolitan rehabilitation in the home program

#### Jarrold Rawson

Intensive Care/Radiology, Alfred Health

Time to perform computed tomography brain imaging in critically ill patients: comparison of fixed versus mobile scanning.

#### Brenda Button

Respiratory Physiotherapy Stream Leader, Alfred Health

The Alfred Wellness Score (Awescore®): measurements of quality of life before and after the introduction of Elexacaftor-Tezacaftor-Ivacaftor (ETI) in adults with cystic fibrosis

#### Sonia Azzopardi

Cardiac Liaison Nurse | Cardiology, Alfred Health

Multidisciplinary early access care model to optimise outcomes in atrial fibrillation management

### Alfred Health Senior Medical Staff Association Prizes for Basic/ Laboratory Research

#### Bing Wang

Lab Head, Baker Institute

A novel anti-inflammatory and anti-fibrotic agent, EBP979, treatment ameliorates angiotensin II-induced ventricular remodelling and vascular dysfunction

#### Giulia Iocono

PhD Student | Department of Immunology and Pathology, Monash University

Multi omics profiling of lung transplant recipients identifies predictive biomarkers of chronic lung allograft dysfunction

#### Sofia Carter

BMedSc (Hons) Student, Monash University

Causative organisms and antibiotic susceptibility and use for urinary tract infections in adult females attending the Melbourne sexual health centre

### Burnet Prize for Infectious Diseases Research

#### Sofia Carter

BMedSc (Hons) Student, Monash University

Causative organisms and antibiotic susceptibility and use for urinary tract infections in adult females attending the Melbourne sexual health centre

### MPCCC Prize for best Abstract in Cancer Research

#### Wee Loon Ong

Radiation Oncologist, Alfred Health

Testosterone recovery following androgen suppression and prostate radiotherapy (transport) – individual patient-data meta-analysis from the marcap (meta-analysis of randomized trials in cancer of the prostate)

### Monash Alfred Psychiatry Research Centre (MAPRC) Prize for Psychiatry Research

#### Eveline Mu

Research Fellow, Monash University

Memantine – a novel treatment for borderline personality disorder

### Dr Michael J Hall Memorial Prize for Respiratory Medicine Research

#### Hui-Ling Yeoh

Medical Registrar, Alfred Health

Malignancy risk and mortality after lung transplantation: a single institution experience over 31 years

### Professor Daniel Czorny Prize for Allergy, Asthma & Clinical Immunology

#### Amy Hsu

PhD student, Monash University

Innate immune cells drive chronic inflammatory lung disease through IL-17A signalling

### Noel & Imelda Foster Prize for Cardiovascular Research

#### Dr Anant Butala

Basic Physican Trainee, Alfred Health

Acute kidney injury following transcatheter aortic valve implantation – a contemporary perspective of incidence, predictors and outcomes

### Lucy Battistel Memorial Prize for Best Allied Health Researcher

#### Jacqueline Wheatcroft

Grade 4 Occupational Therapist Research/Quality, Alfred Health

Expert Consensus on a Cognitive Rehabilitation Training Program for Novice Occupational Therapists

### Baker Heart & Diabetes Institute Prize for Cardiovascular Research

#### Yuyang Song

PhD Candidate, Baker Institute

Beyond Boundaries: Combined Anti-Platelet/ Anti-Coagulant Strategies For Long Circulating Thromboprophylaxis And Cardiac Protection

### Baker Heart & Diabetes Institute Prize For Diabetes Research

#### A/Prof Chris Moran

A/Prof Health Services Research, School Public Health and Preventive Medicine, & Geriatrician, Alfred Health, Monash University

HbA1c variability and dementia risk in a diverse cohort of older adults with type 2 diabetes

### Henrietta Law Memorial Prize for Best Novice Allied Health Researcher

#### Sarah Melton

Senior Dietitian, Alfred Health

Lessons of Exclusive Enteral Nutrition in Healthy Adults

### Best Allied Health Research Into Practice Award

#### Louisa Greenham

Senior Speech Pathologist, Alfred Health

FEESability of Swallowing Assessments in ICU

## RESEARCH AWARD WINNERS



The Alfred Senior Medical Staff Nursing Research Award for best abstract

### Tania Brewis

Alfred Health ICU

THE FAMILY LIAISON NURSE ROLE: STRENGTHENING FAMILY COMMUNICATION IN INTENSIVE CARE DURING COVID-19

BREWIS T<sup>1</sup> Sinnott J<sup>1</sup>, Ross P<sup>1,2</sup>, Birthisel T<sup>1</sup>, Gowland E<sup>1</sup>, Tynan, P<sup>1</sup>, Collins K<sup>1</sup>, Digby R<sup>3</sup>, Bucknall T<sup>2,3</sup>, Udy A<sup>1,2</sup>, Pilcher D<sup>1,2</sup>

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Emerging Researcher Award

### Vicky Yuan

Deakin Centre for Quality and Patient Safety Research, Alfred Health

THE NURSE-LED INTERVENTION AIMED TO OPTIMISE CARE FOR PATIENTS IN ISOLATION AT AN ACUTE HOSPITAL- A PILOT FEASIBILITY STUDY

Vicky Yuan<sup>1,2</sup> Robin Digby<sup>1,2</sup>, Guncag Ozavci<sup>1,2</sup>, Sharon Kramer<sup>1,2</sup>, Tracey Bucknall<sup>1,2</sup>

<sup>1</sup>School of Nursing & Midwifery, Deakin University; <sup>2</sup>Centre for Quality and Patient Safety Research - Alfred Health Partnership,

Kathleen AB Smith Memorial Award for Best Publication

### Nat Kondos

Nurse Educator and PhD Student in the Deakin Centre for Quality and Patient Safety Research, Alfred Health

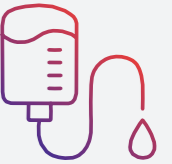
Kathleen AB Smith Memorial Award for Best Early Career Researcher Publication

### Nat Kondos

Nurse Educator and PhD Student in the Deakin Centre for Quality and Patient Safety Research, Alfred Health



# Blood diseases and cancer



## Breakthrough melanoma treatment saves grandfather's eyesight

Blind in his left eye after a stroke three years ago, 70-year-old Geoff was fully reliant on his right eye.

But when a tumour was found in his 'good' eye, he feared the worst.

"The doctors told me that the most common form of treatment for eye melanoma was to remove the eyeball, which would have left me completely blind," said Geoff, a grandfather of thirteen.

"My heart completely sunk, and I really didn't know what my future would be like. I just thought 'why is this happening to me?'"

His treating team at the Royal Victorian Eye and Ear Hospital referred him to The Alfred, where Director of Oncology Prof Mark Shackleton prescribed a combination tablet in an attempt to shrink the tumour, rather than having to remove it.



Alfred oncologist Prof Mark Shackleton, who saved Geoff's eyesight.



"When I heard Geoff's story, I just thought, 'if there's even the smallest chance we can save this man's eyesight, let's go for it,'" Prof Shackleton said.

The medication, which is currently being trialled in a larger study supported by The Alfred, works to shrink a tumour to the point a patient can then undergo standard radiation treatment.

"While we are seeing positive results as part of our research with patients undergoing this treatment whose complete eyesight is not at risk, Geoff is the first patient worldwide for which this treatment has been an absolute gamechanger," Prof Shackleton said.

"Geoff has a lot of life ahead of him to live, and to be melanoma free while maintaining vision in that right eye is an outcome we couldn't have been more pleased to have achieved with him."

For Geoff, the ability to continue enjoying 'the small things' is what he's most grateful for.

**"I just love going to watch the local footy and spending time with my grandkids," said Geoff. "To be able to keep doing that is a miracle."**

## Menopausal symptom relief for women with breast cancer

A trial led by Professor Susan Davis AO, Head of the Women's Health Research Program at Monash's Public Health and Preventive Medicine, has offered the first possibility of menopausal symptom relief for women with a certain type of breast cancer.

The multicentre Phase II randomised controlled trial involved 131 women and showed the novel drug Q-122 significantly reduced the number and severity of troublesome hot flushes and night sweats in women who have been diagnosed with breast cancer. It also improved their sleep and had no serious adverse effects.

The results, published in The Lancet, are important as they may hold the key to encouraging women with breast cancer to continue with long-term adjuvant endocrine therapy – including tamoxifen and aromatase inhibitors – that reduce the risk of relapse. Many of these women are prescribed this therapy for five to ten years post treatment.

Around 70 per cent of women taking these adjuvants experience troublesome menopausal side effects, and over one third of them discontinue them prematurely as a result. Until now, standard menopausal symptom relief has been hormonal in nature, which is contra-indicated for women taking tamoxifen and aromatase inhibitors.



+ Prof Susan Davis - Alfred Health and Monash University

**The results have broad applicability because more than 75 per cent of breast cancers are hormone sensitive.**

# Cardiovascular disease

**Illicit drug use involved in nearly one in three sudden cardiac deaths in young adults**

**Approximately one-third of young adults in Victoria who experienced sudden cardiac deaths outside of a hospital from 2019 to 2021 used illicit drugs prior to their fatal events, a study by researchers at the Baker Heart and Diabetes Institute has found.**

The study, published in the journal, *Heart Rhythm*, found “astonishingly high” levels of illicit drugs than is typical for that population, as well as a greater prevalence of multiple substance use with cannabis the most common illicit drug identified.

Whilst the exact mechanism of sudden cardiac death (SCD) in the context of illicit drug use is unclear, the researchers found that the over-representation of drug use in these young people in the absence of elevated rates of cardiac conditions suggests that it contributes to SCD independent of traditional cardiovascular risk factors.

Sudden cardiac death is a major global health issue that clinicians and researchers are grappling with. It represents 50% of all cardiovascular deaths and occurs unexpectedly in people without prior history of cardiac disease or a known predisposition for it.

Lead investigator, Dr Liz Paratz, said “As clinicians in Melbourne, we frequently see complications of illicit drug use in young people. We noticed a consistent trend of illicit drugs involved in our registry’s young SCD cohort and were very keen to tease this out further. We found the prevalence of illicit drug use in young SCD patients was astonishingly high at almost one in three cases and exceeds reported rates in the young population”.

The analysis of data on substance abuse was revealed through positive toxicology reports and patient histories and recorded in one of the world’s largest and most comprehensive sudden cardiac death registries, the unexplained cardiac death project led by the Baker Institute.





# Cardiovascular disease



## Exercise protects breast cancer patients' hearts against chemotherapy drugs

Cardiovascular disease is the leading cause of mortality in breast cancer survivors. A study led by the Baker Heart and Diabetes Institute has found that exercise training three to four times per week protects against heart damage and losses in cardiovascular fitness experienced by breast cancer patients undergoing chemotherapy.

During a three-month course of chemotherapy, the average breast cancer patient loses 10-to-15 per cent of their cardiovascular fitness, the same loss as would be expected with 10 years of normal ageing.



Breast cancer study. Eleana Sikiotis with her sons, Nico and Luca



## Ablation found to reverse common type of heart failure

In a world-first randomised study, catheter ablation has been shown to reverse heart failure with preserved ejection fraction (HFpEF) in patients with both HFpEF and atrial fibrillation (AF).

Baker Heart and Diabetes Institute researchers found catheter ablation substantially improved exercise capacity, lung pressure and quality of life in participants, and significantly, 50 per cent of participants randomised to the study group no longer met the criteria for a HFpEF diagnosis.

In the BREXIT study, published in *Circulation* and presented at the American Heart Association Scientific Sessions 2022 in Chicago, patients who participated in 12 months of exercise training over the course of their breast cancer treatment improved their cardiovascular health by on average eight per cent, or eight years' worth of fitness.

Lead researcher, Dr Steve Foulkes said: "What we've found is that the women who were in the supervised exercise group didn't experience the reductions in fitness and heart function that we saw in those who underwent cancer treatment according to current usual care standards. "Instead, by exercising during chemotherapy, and continuing to exercise in the months after chemotherapy, they ended up healthier than before even starting treatment. So, exercise didn't just prevent the losses associated with chemotherapy, it actually helped them recover to a better level of cardiovascular health than prior to starting breast cancer treatment."

In the study, published in *JACC: Heart Failure*, lead researcher Dr David Chieng said that catheter ablation should be considered as a treatment option for those with AF and HFpEF.

Dr Chieng said: "This is a significant finding given there are few current therapeutic options for HFpEF. Moving forward, clinicians should consider using catheter ablation to improve the lives of the many people living with comorbid AF and HFpEF."

## Digital cardiac rehab program more effective in reducing hospital readmission

Digital cardiac rehabilitation programs substantially reduce a person's chance of being readmitted to hospital with heart disease compared to traditional face-to-face programs, according to a study by researchers at the Baker Heart and Diabetes Institute.

The analysis of 18 global studies, including those conducted in Australia, shows that digital health programs involving mobile apps, SMS, remote monitoring or video or phone conferencing, are very effective in reducing hospital re-admissions or emergency department presentations for people with heart disease such as those who have had a heart attack.

What's more, unlike traditional face-to-face programs delivered in the community or in a hospital setting, programs that employ mobile health technology are able to reach more patients in a convenient manner by allowing them to complete their program at a time and place that suits their needs, according to the study in *JACC Advances* by Baker Institute PhD candidate, Justin Braver.

Senior author and Head of Preclinical Disease and Prevention, Associate Professor Melinda Carrington said this study shows Disease Management Programs, integrated with remote delivery methods such as telehealth, SMS and cardiac rehabilitation delivered via digital technology, provide patients with choice, access and control of their care.

**The study showed a 32% reduction in the relative risk of re-hospitalisation for any cause and a 45% relative risk reduction in cardiovascular-related re-hospitalisations in people who utilised a mobile health Disease Management Program compared to a traditional program.**

A/Prof Carrington says: "We need to look at more modern day, alternative delivery methods of cardiac rehabilitation to increase access and engagement to improve the quality of life for people with heart disease and to reduce preventable and costly re-admissions to hospital.

"Rather than replace the entire traditional model of care, which has a proven track record of success, for a digital solution, digitally integrated models may provide disease management strategies in a more engaging, accessible and scalable manner."

# Diabetes and obesity



## Study shows reactivation of beta-like cells in the pancreas to produce insulin

A proof-of-concept study demonstrated that ductal cells derived from the human pancreas can be influenced by pharmacological stimulation to regenerate beta-like cells that functionally release insulin, providing new hope for people living with diabetes.

The preclinical study, led by Safiya Naina Marikar and Professor Sam El Osta from the Baker Heart and Diabetes Institute and published in the journal *Clinical Epigenetics*, demonstrates how drugs can influence pancreatic progenitor cells to reactivate into beta-like producing insulin cells by inhibiting the EZH2 enzyme.

With type 1 diabetes, beta cell damage and destruction mean the

pancreas produces little or no insulin. This results in glucose build up in the bloodstream instead of going into the cells. This build-up of glucose in the blood is called hyperglycemia, with the body unable to use the glucose for energy.

Researchers have dedicated enormous time and energy looking at alternatives such as cell replacement therapy and pancreas transplantation — a potential option limited because of the stark reality of donor organ shortage. This approach examines the regenerative capacity of pancreatic cells by stimulating ductal stem cells with small molecule inhibitors as an alternative strategy to restore insulin production for people living with diabetes.



Students from the Human Epigenetics lab at the Baker Institute headed by Prof Sam El-Osta



## Australians with diabetes are increasingly dying from conditions not usually linked to diabetes

**A paper looking at the causes of death among Australians with type 1 and type 2 diabetes highlights dementia and falls are increasing, while deaths from heart disease are declining.**

The significant increase in the proportion of deaths among people with diabetes due to dementia in Australia (a rise of more than 5 percentage points from 2002 to 2019), was mirrored in the United Kingdom, which saw deaths from dementia jump 14 percentage points between 2001 and 2018.

What's more, these findings can only partly be explained by increased life expectancies of people with diabetes and the increased likelihood of developing and dying from age-related diseases. The study also showed a trend in increasing deaths due to dementia in younger ages under 65 years, implicating additional factors that are not age-related.

The study of more than 1.3 million Australians with diabetes by researchers at the Baker Heart and Diabetes Institute shows the causes of death are diversifying, signifying individuals with diabetes, healthcare practitioners and government need to be more mindful of dementia, falls and even Parkinson's disease, not just traditional complications like heart disease.



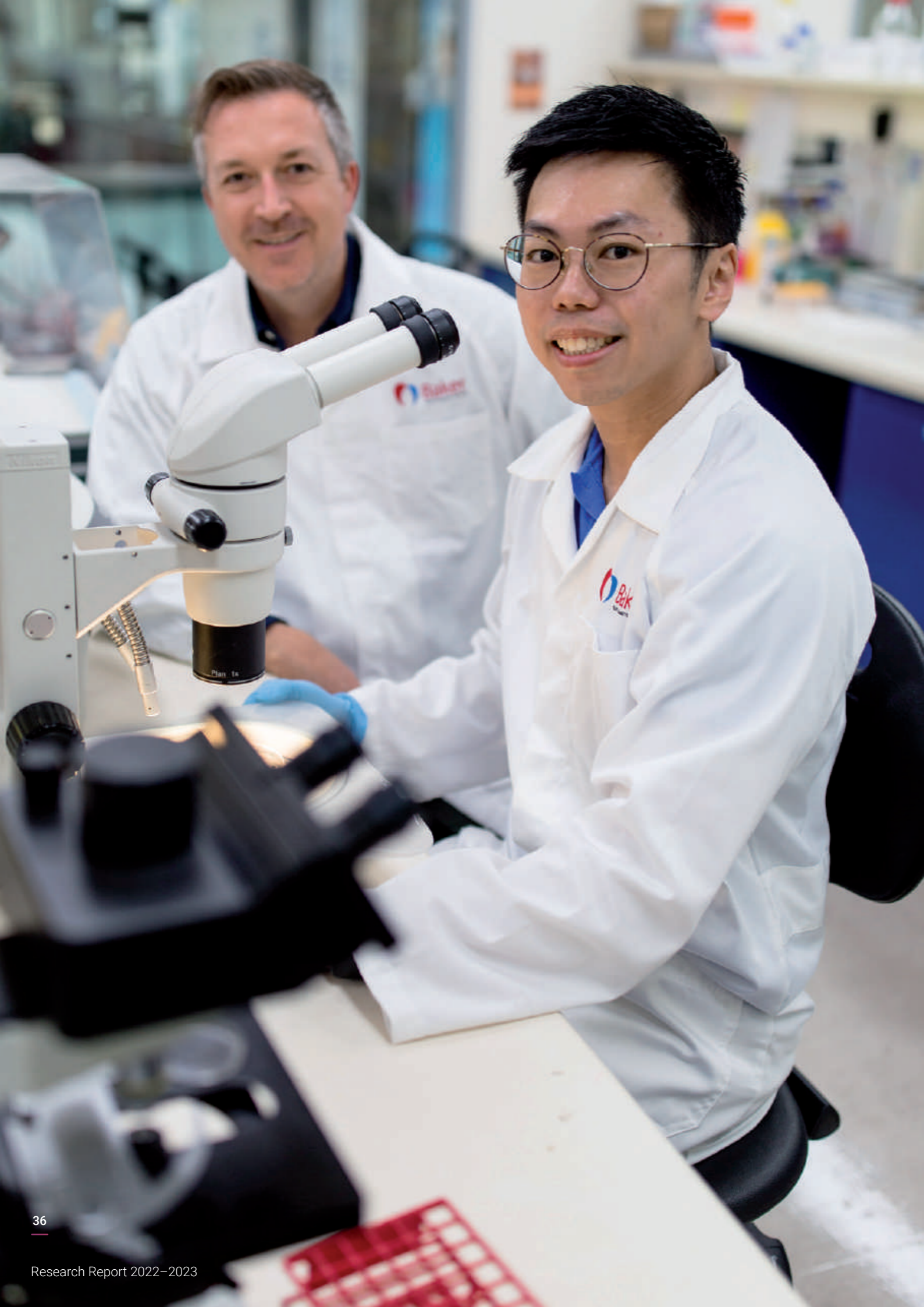
+ Professor Alicia Jenkins who heads our Diabetes and Vascular Medicine lab, and A/Prof Sara Baratchi, our latest Alice Baker and Eleanor Shaw Gender Equity Fellow.

The study, published in *Diabetic Medicine*, examined the records of individuals with type 1 or type 2 diabetes who were registered on the National Diabetes Services Scheme between 2002 and 2019.

Head of Clinical Diabetes and Epidemiology, Professor Jonathan Shaw says while the study likely reflects improvements in the management of cardiovascular disease, which is really positive news, it also highlights the increasing challenge of dementia, in line with other global studies.

"This suggests people may be surviving longer, allowing age-related diseases to develop but that dementia and falls need to be well and truly on the radar when it comes to screening and prevention of these conditions as part of diabetes management," Professor Shaw says.





### Surprise leading causes of excess hospitalisation for people with type 2 diabetes

Findings from a study led by Baker Heart and Diabetes Institute researchers have revealed that some unexpected conditions are leading to more hospitalisations in people living with type 2 diabetes compared to the general population.

The emergence of iron deficiency anaemia, mental health disorders and gastrointestinal disorders as leading reasons for excess hospitalisation among those with type 2 diabetes compared to the general population was met with some surprise by the Baker Institute's lead researcher, Professor Dianna Magliano.

**The study, published in *Diabetes Research and Clinical Practice*, found that people with type 2 diabetes are far more likely to be hospitalised with iron deficiency anaemia than those without diabetes.**

"We've never seen this result described before," said Professor Magliano, Head of the Diabetes and Population Health Lab. "The burden of anaemia in those with type 2 diabetes was one of the most surprising observations. While it's known that diabetes can contribute to anaemia through reduced iron absorption, gastrointestinal bleeding and through complications that cause anaemia, it was unexpected to see the association between diabetes and iron deficiency anaemia feature so significantly as a complication."

# Epidemiology and public health



## New insights into medicines for pre-eclampsia

Burnet Institute researchers have led the development of the first global strategic guidelines – called target product profiles (TPPs) – for medicines to prevent and treat pre-eclampsia, a hypertensive disorder in pregnancy that’s one of the leading causes of maternal deaths, stillbirth, and preterm birth globally.

Published in the journal PLOS Global Public Health, the TPPs will help to address a longstanding dearth of innovation, and research and development of new medicines for mothers, particularly for pregnancy-related conditions.

Developed through a process of consensus involving interviews, surveys, and feedback with global stakeholders, the new TPPs provide a detailed description of what new medicines for pre-eclampsia need to achieve to meet the needs of women and their healthcare professionals, particularly with a view to global implementation.

The TPPs would be used by pharmaceutical companies to inform the development of new drugs and products, and to assist funding agencies in their decision making.



## Certification paves the way for improved translational research

### The Burnet Diagnostics Initiative (BDI) reached a major milestone with the awarding of ISO 9001 certification.

It is a significant step forward for the BDI, Burnet’s commitment to develop the systems, resources and processes to support diagnostics product development and enhance translation of its point-of-care diagnostics research into practical health solutions.

International Organization for Standardization (ISO) 9001 certification is based on a number of quality management principles including a strong client focus, the motivation and implication of top management, the process approach, and a commitment to continual improvement.

BDI Director Jennifer Barnes said the external audit ensured the correct processes and frameworks were in place to monitor and track research and ensure it met quality standards.

“The research and prototypes that come out of the BDI will be aligned to industry acceptable standards, making the translation and technology transfer of our research more efficient, leading to a greater impact in the field.”



+ Jennifer Barnes

# Infection and immunity

## Burnet teams up with Monash and BioCurate to develop novel HIV antivirals

Burnet Institute, in collaboration with Monash Institute of Pharmaceutical Sciences (MIPS), received Proof of Concept funding from BioCurate to develop next-generation human immunodeficiency virus (HIV) antivirals.

The multi-disciplinary research team, led jointly by Burnet's Head of Life Sciences, Professor Gilda Tachedjian, and leading medicinal chemist Dr David Chalmers (MIPS), has identified a novel HIV target, or new way to attack HIV.

With the financial support and therapeutic development expertise of BioCurate, the team will validate the target and further progress the development of drug candidates.

HIV remains a global public health threat. There is a need to continually innovate and develop new drugs that block the drug-resistant virus and provide new options for individuals who are running out of treatment options. By targeting HIV resistance to existing drugs, these new therapeutics may provide a life-saving option and reduce human suffering worldwide.

The Tachedjian Laboratory combines 25 years of HIV virology and antivirals experience with an emphasis on translational science, synergising with Monash's unique fragment-based drug design methodology. Combined with BioCurate's industry experience, the team will work towards novel HIV therapeutics with the potential to safeguard HIV therapy for the next generation.



## Elimination of hepatitis C the focus of new funding grant

Burnet Institute research towards the elimination of hepatitis C in Australia benefited from AUD\$1.4 million in funding – part of a AUD\$14 million investment announced at Burnet by Federal Minister for Health and Aged Care, the Hon Mark Butler MP to help deliver better health care for Australians.

**Hepatitis C is one of the major causes of liver cirrhosis, liver cancer and liver failure. It can be eliminated by sustaining high rates of treatment, but Australia's rates have stalled over recent years.**

Research led by Professor Mark Stoové, head of public health at Burnet Institute, will identify how to best follow up notifications to improve hepatitis C treatment rates.

The Burnet-led project 'Optimising public health notification systems to achieve hepatitis C elimination in Australia' involves a collaboration with Hepatitis Australia, the Australasian Society for HIV, Viral Hepatitis and Sexual Health Medicine and the Paul Ramsay Foundation.



+ Burnet Institute Deputy Director Prof Margaret Hellard with Federal Minister for Health, The Hon. Mark Butler



# Neuroscience and mental health



## The BlueSky Foundation

In 2022, the Blue Sky Foundation awarded a philanthropic gift to the team at MAPrc / Department of Psychiatry – Central Clinical School. The significant gift has propelled the Therapeutic Brain Stimulation (TBS) team to the forefront of research into transcranial magnetic stimulation (TMS).

This TGA-approved therapy has been clinically proven to effectively treat depression and other neuropsychiatric disorders.

Some of their key projects have included pharmacological augmentation to improve TMS's antidepressant efficacy; applying TMS

to treat drug-resistant epilepsy, a trial of TMS in postnatal depression and a collaborative project with Harvard University in treatment of anorexia nervosa. Recent project highlights include optimised accelerated theta burst stimulation in depression, as well as launching a world-first proof-of-concept pilot study of TMS in Premenstrual Dysphoric Disorder.

Through their ongoing projects, the TMS Research Unit will provide hundreds of patients access to innovative treatments via clinical trials, unlocking TMS for vulnerable community members who are currently unable to afford this treatment.

## THRED - Transformative Hub for Research into Eating Disorders



+ Prof. Jayashri Kulkarni

Launched in June 2023, the Li Transformative Hub for Research into Eating Disorders (THRED) is a comprehensive, cutting-edge program of research and clinical trials in eating disorders. Led by Prof. Jayashri Kulkarni and her team at Monash University's HER

Centre Australia, THRED focuses on utilising the latest developments in neuroscience and brain research to generate an evidence base for new approaches to treating eating disorders.

With little change over the past 60 years in impactful treatment for eating disorders, THRED will take on a new approach to understanding why eating disorders occur and treat them from a biological perspective. Commencing in the second half of 2023, its clinical trials assess brain stimulation, hormonal manipulation and novel drug therapies. With this breakthrough research, THRED will be pioneering new biological treatments; paving new avenues of treatment and delivering novel and effective treatment options. Ultimately, these contributions could greatly improve health outcomes and outlooks for the estimated 1 million Australians suffering from eating disorders- and benefit all those surrounding them.

## Crosswords and chess may help more than socialising in avoiding dementia

Computer use, crosswords and chess are more strongly associated with older people avoiding dementia than knitting, painting or socialising, a study from Monash's School of Public Health and Preventive Medicine found.

Published in JAMA Network Open, the findings – some of the most robust on this topic to date and involving data from 10,318 Australians aged 70 and older – may help reduce dementia risk; in 2022, 55 million people globally lived with dementia.

The researchers, led by Associate Professor Joanne Ryan, found that participants who routinely engaged in adult literacy and mental acuity tasks such as education classes, keeping journals, and doing crosswords were nine to eleven per cent less likely to develop dementia than their peers.



+ Professor Joanne Ryan

Creative hobbies like crafting, knitting and painting, and passive activities like reading reduced the risk by seven per cent. In contrast, the size of someone's social network and the frequency of external outings to the cinema or restaurant were not associated with dementia risk reduction.

**“It seems that active manipulation of stored knowledge may play a greater role in dementia risk reduction than more passive recreational activities. It's not a magic pill, but if avoiding dementia was your goal, our research suggests these are the activities you would choose.”**

Associate Professor Ryan said the results did not rule out that those naturally drawn to more mentally engaging activities also had specific personality traits that were otherwise beneficial, or they may generally have had better health behaviours.

“Social connectivity is still also likely to be quite important to cognitive health and mental wellbeing, despite not showing a clear link with dementia in this study; our participants were likely to already be leading socially active lives, so those benefits may not have stood out so clearly.”

# Neuroscience and mental health

## Repeated concussions can thicken the skull, study finds

New research has found that repeated concussions can thicken the structure of skull bones. Previous studies have shown damage to the brain following concussion, but have not looked at the brain's protective covering.

**Monash University's Clinical Central School Department of Neuroscience found that repeated concussions resulted in thicker, denser bones in the skull.**

It is unclear whether this thickening of the skull is a good thing or a bad thing. In theory, a thicker skull is a stronger skull, suggesting that this may be the bone's attempt to protect the brain from subsequent impacts.

The team hopes that the microstructural skull alterations caused by concussion are now considered by researchers in the field to better understand how concussions affect the whole body.

Concussion is a form of mild traumatic brain injury, and repeated concussions have been linked to long-term neurological consequences.

Most studies focus on understanding how these head injuries affect the brain and its function – but they largely ignore the overlying skull bones that protect the brain.

Although bones are considered a mostly structural component of the human body, bones are in fact active living tissues that can respond to applied mechanical forces.

Future studies are planned, with collaborator and bone experts from other Australian universities.



## The Australian Headache Epidemiology Data (AHEAD) study

### WHAT IS IT?

The AHEAD pilot study aims to identify the most efficient way to collect robust migraine burden and prevalence data from the Australian general population. This will be essential for informing the design of a future national headache epidemiology study, which will close the largest knowledge gap in Australian headache medicine.

### WHO IS INVOLVED?

Our multidisciplinary, interstate team includes headache neurologists Dr Emma Foster (Monash Uni, study lead, pictured below), Professor Alessandro Zagami (senior lead, UNSW), and Dr Elspeth Hutton (Monash Uni); biostatistician Dr Ben Chen (Monash Uni); health economist Professor Zanfina Ademi (Monash Uni); consumer advocate Prof Claire Wakefield (UNSW); and research assistants Chris Cormack (Prince of Wales Hospital) and Ali Conquest (Monash Uni).

### HOW WAS IT DONE?

A study questionnaire was designed with expert input from world leaders in headache epidemiology. Questionnaires were mailed out to 20,000 randomly selected households across Victoria and New South Wales in late January 2023. The study is gratefully supported by the Brain Foundation, Lundbeck Australia, and Prince of Wales Hospital Foundation.

### WHAT IS THE CURRENT STATUS?

Researchers have received a fantastic response from the community, and are currently cleaning and analysing data. They expect to be able to share their findings through publications and conference presentations in the end of 2023.

# Nursing and allied health



## New Senior Appointment in 2023 - Associate Professor of Allied Health Julia Gilmartin-Thomas

Associate Professor Julia Gilmartin-Thomas joined Alfred Health as the Associate Professor of Allied Health, a joint position between Alfred Health and La Trobe University (School of Allied Health, Human Services & Sport).

Julia is one of six embedded Allied Health Academics (Professors/Associate Professors of Allied Health) who hold dual appointments with the School of Allied Health, Human Services & Sport (La Trobe University) and a Victorian health service.

Julia is a Science and Technology Australia (STA) STEM Ambassador

for the Federal Member for Chisolm (Dr Carina Garland) and an Australian Registered Pharmacist. Julia was previously a NHMRC-ARC Dementia Research Development Fellow at Monash University (School of Public Health and Preventive Medicine) and Victoria University (Institute for Health and Sport). Julia is an experienced leader of multidisciplinary and translational research in clinical, community and industry contexts.

Julia's focus will be on increasing the allied health research capacity at Alfred Health.

## La Trobe University's health service-embedded Allied Health network

Six embedded La Trobe Allied Health Academics (Professors/Associate Professors of Allied Health) now hold dual appointments with the School of Allied Health, Human Services & Sport (La Trobe University) and a Victorian health service (Alfred Health, Eastern Health, Healthscope,

Northern Health, Melbourne Health). These health services are partners of La Trobe University's Academic and Research Collaborative in Health. This embedded network facilitates sharing of research capacity and capability-building resources, opportunities and collaborations.



+ Left to right – A/Prof Adam Semciw, A/Prof Julia Gilmartin-Thomas, Prof Nicholas Taylor, A/Prof Casey Peiris, and Prof Katherine Harding.

## Recently launched research capacity and capability-building initiatives

The Director of Allied Health and A/Prof Julia Gilmartin-Thomas recently launched two new research capacity and capability-building initiatives for Alfred Health Allied Health clinicians, in collaboration with La Trobe University's School of Allied Health, Human Services & Sport. The 'Clinician Researcher Fellowships' aim to provide dedicated research time for Allied Health staff, encourage excellence in research, and improve research output. The 'Community of Research Practice' is a network of Allied Health staff who will meet regularly to discuss research, network, and celebrate research success.



+ A/Prof Julia Gilmartin-Thomas

## Case Study of an Alfred Health and La Trobe University research collaboration

The 'Stepping into Research' systematic review-writing program is an existing research capacity and capability-building initiative offered to Alfred Health Allied Health clinicians. Amanda Sergei is an Orthotist whose systematic review is exploring the question 'Do patients with proximal third humeral fractures, treated in a humeral fracture orthosis (Sarmiento brace), experience a higher complication rate than their counterparts with midshaft/distal third humeral fractures?' Amanda is currently reviewing the literature after employing her systematic search strategy. She is co-supervised by Tim Burke (Lecturer, Prosthetics and Orthotics, La Trobe University) and A/Prof Julia Gilmartin-Thomas.



# Nursing and allied health



## Improving the safety and quality of care for hospitalised patients in isolation

**Funding:** The Victorian Nurses and Midwives Trust

**Project Team:** Dr Robin Digby (PI), Dr Sharon Kramer, Prof Tracey Bucknall, Michelle Tuck, Pauline Bass, Prof Andrew Stewardson, Judy Reeves, Associate Professor Sandra Keppich-Arnold, Dr Toby Winton-Browne, Dr Guncag Ozavci, Vicky Yuan.

The number of hospitalised patients in isolation significantly increased during the COVID-19 pandemic and tested our service's approach to caring for these patients. This research investigated a new model of nursing care for isolated patients.

Researchers from Alfred Health, Deakin University and Monash Universities received funding from the Victorian Nurses and Midwives Trust to conduct a co-designed project with patients, families, nurses and infection control experts to identify and test the feasibility of a nurse-led intervention to improve care of patients in isolation.

Forty patients were enrolled in the study, 20 patients received additional assessment and care support from a research nurse. They received twice daily visits 7 days per week. Patients' nutrition, physical activity, mood and comfort needs were

assessed, attended to and referrals implemented.

We found that it was feasible to deliver a nurse-led intervention to improve the care of patients in isolation. Over 75% of the patient needs were addressed or action facilitated by the research nurse. Areas requiring support were mental and physical well-being, communication with families, medical and nursing staff, nursing care and comfort support. Adverse events related to isolation were evident in both groups including falls, clinical and mental status deterioration.

Longer hospital stays in isolation are associated with higher anxiety, loneliness, physical deconditioning and higher adverse events. It is important to meet the needs of these patients who are at high risk through additional care supports. Co-design with patients, families and health professionals can mitigate some the risk.



## Communicating across transitions of care between hospitalised patients, families and health professionals in effort to optimise use of Electronic Medical Records (EngageEMR)

**Funding:** Australian Research Council

**Project Team:** Alfred Deakin Professor Tracey Bucknall (Co-PI), Professor Elizabeth Manias (Co-PI), Dr Guncag Ozavci, Professor Kathleen Gray, Professor Nilmini Wickramasinghe, Associate Professor Reema Harrison, Mr Corey Adams

Poor communication is the most common cause of adverse events, or mistakes that occur in health care environments. Over the past decade, communication breakdowns have been responsible for more than 80% of cases resulting in significant harm to patients. Amid this landscape, there exists a notable gap in understanding how individuals effectively communicate, particularly when engaging with electronic medical records (EMRs). This gap is even more pronounced for those with complex care needs, including those of culturally and linguistically diverse backgrounds, or who have multiple chronic conditions, or extensive medication regimens.



The EngageEMR project aims to delve into the communication dynamics between hospitalised patients with complex care requirements, their families, and healthcare professionals when navigating EMRs during care transitions. The primary goal is to foster collaborative engagement between patients, families and geal care providers in using EMRs. To achieve this, a reflexive ethnographic design with experience-based co-design will be used. The project will be undertaken at The Alfred and Caulfield Hospitals and several health services in NSW.

# Nursing and allied health



## Prioritising Responses Of Nurses To deteriorating patient Observations (PRONTO)

**Funding:** NHMRC Partnership Project Grant

**Project Team:** Professors Tracey Bucknall (PI), Alison Hutchinson, Julie Considine, Gill Harvey, Imogen Mitchell, Jo Rycroft-Malone, Ian Graham, Jenny Watts, Associate Professor Mohammadreza Mohebbi..

Early recognition and response to clinical deterioration in hospitalised patients is an Australian health service standard aimed at preventing serious adverse events and unexpected harm. Most hospitals use abnormalities in patient observations and nurse concern to trigger an urgent medical review. However, research has shown that observations may frequently be missed, misinterpreted, or mismanaged. We investigated whether a clinical guideline, proactively implemented by nurse facilitators, when compared to standard implementation approaches, could improve nurses' vital sign measurement, interpretation, treatment, and escalation for patients demonstrating physical signs of deterioration.

Prioritising Responses Of Nurses To deteriorating patient Observations (PRONTO) was conducted across 36 inpatient wards at four major, metropolitan hospitals. Half the wards had guidelines disseminated by nurse managers and half had guidelines disseminated by the nurse manager with additional support from nurse facilitators, assisting staff to apply the guideline in practice.

Facilitators were engaged to work with staff, identifying how to use the guideline to improve patient safety and when to escalate care to medical teams. Patients in the intervention group had a significant shorter length of stay, by two days, than those wards who did not receive the intervention. However, the trial did not result in statistically significant improvements in nurses' escalation of clinical concerns, reduced patient admissions to intensive care or decreased unexpected deaths in hospital.

The focus of this trial was limited to nurses' role in detection and management of clinical deterioration. We found that nurses faced numerous challenges in the escalation of care to medical teams and seeking responses to their concerns. The impact of ward medical staff on the treatment of ward patients and escalation to external medical teams for clinical support remains unknown and warrants further research.

**Awards:** Voted by editors as the most impactful research article published by BMJ Quality and Safety in 2022 and was in the top five articles downloaded

## Communicating with older people about medication management across transition points of care

**Funding:** Australian Research Council

**Project Team:** Professors Elizabeth Manias (PI), Tracey Bucknall, Robyn Woodward-Kron, R., Carmel Hughes & Christine Jorm

Dr Guncag Ozavci BPharm, M.Sc., MBA (Marketing), PhD works as a research fellow at Alfred Health and the School of Nursing and Midwifery, Centre for Quality and Patient Safety Research, Institute of Health Transformation, Deakin University. She completed her PhD in December 2022, in the School of Nursing and Midwifery at Deakin University. Dr. Ozavci's research was funded by a prestigious PhD scholarship provided by the Australian Research Council (ARC) through the Discovery Project Grant scheme (DP170100308).

Dr Ozavci's research contributed to the literature on communication processes between older patients and health professionals about managing medication across transitions of care. Her comprehensive work involved the use of different qualitative methods, various multidisciplinary care groups, and comprised the examination of communication about medications across transitions of care through a discursive lens.

This research provided new knowledge about characteristics of medication communication between older patients and health professionals, the challenges affecting older patients' involvement in medication decisions, and the strategies enabling patient-centred medication communication in the context of care transitions. Findings from this research have valuable implications for clinical practice and policy. This research involved the elaboration of strategies that older patients can engage to take an active role in medication communication when they move across transitions of care, as well as organisational strategies for health professionals to create opportunities for older patients and their family members in medication decisions.



+ PhD Student Guncag Ozavci

# Nursing and allied health

## Two decades of unique training for nurses and midwives

The School of Nursing and Midwifery at La Trobe University established its first clinical school at Alfred Health in 2000, where it continues to deliver a high-quality student experience.

Academics from the School of Nursing and Midwifery collaborate with health service staff on a range of undergraduate and postgraduate teaching and research projects. Located at the Alfred Centre, final-year undergraduate teaching takes place onsite where expert clinicians work together with our academic staff to deliver the most contemporary evidence-based teaching content and practice skills.

Clinical placements are conducted within Alfred Health to support the transition from student to workforce. Academics are co-located in the clinical school providing purpose-built classroom environment delivery and student support in the Alfred Centre. Nursing laboratories and simulations spaces are available for experiential learning through the Alfred Simulation Centre. La Trobe nursing academics, Alfred Health simulation centre staff and the nursing education team work closely to provide students with best practice learning opportunities and access to clinical experts which enables quality learning experiences.

Expert La Trobe academics have implemented post-graduate offerings that aim to broaden the roles and capabilities of Alfred nursing staff to meet care delivery needs.

Offerings include the implementation of specialised courses such as the Perioperative Nurse Surgical Assistant (PNSA) course, pain management and other perioperative nursing courses.

The clinical school supports nurses to undertake higher degree research with onsite and specialised support. Research includes a focus on nursing workforce including nurse's implementation of evidence-based practice, team nursing models of care delivery, and the clinical placement appraisal process in nurse education. The role and perspective of specialised pain management nurses has been explored, identifying their roles in improving quality of patient care and an increasing scope of practice.

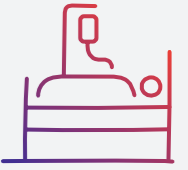
### **The impact of the COVID-19 pandemic has had a significant effect on the nursing workforce globally.**

A team of La Trobe nursing academics and Alfred Health educators are leading a funded research project addressing the factors that influence student nurses' selection of graduate programs in their first year as registered nurses and how the unique nursing clinical school model influences student decisions. The findings will assist health services inform how they recruit and retain a sustainable novice nursing workforce.



Left to right: Gayle McKenzie, Steve Nelson, Sharon Bourke, Cathy Dean, and Laurel Weaver. [Gayle, Steve, Cathy and Laurel are lecturers at La Trobe University. Sharon Bourke is a Sr. Lecturer]

# Trauma, critical care and perioperative medicine



## New study will change practice around mobilisation of intensive care patients

Prof Hodgson received her award from Alfred Health Week Keynote speaker, Prof Karen Adams.



### Critical care researcher Prof Carol Hodgson won the 2023 Alfred Research Alliance in Clinical Research for her efforts leading the TEAM Trial, which published its primary findings in NEJM late last year.

The study informs practice around early mobilisation of ICU patients - in essence, getting them up and moving sooner - to improve their overall recovery. It fills an evidence gap around when and how to get them moving.

The study was published in the New England Journal of Medicine and provides insights into optimum timing and intensity of patient mobilisation.

The study found that compared to standard care which includes some early rehabilitation and mobilisation, additional early mobilisation did not affect the number of days alive and out of hospital, but was associated with increased adverse events.

The concept of early mobilisation has recently been embraced by the medical community as a way to improve rehabilitation in ICU patients, but has been deployed with a lack of evidence around timing and dosage. This study fills that knowledge gap, and will change international practice.

Professor Hodgson is a physiotherapist-researcher who specialises in intensive care medicine. She says, "Many people are shocked to learn the severity and duration of the side-effects of spending time in an ICU. These patients often experience physical and mental health effects that impact their health and quality of life for months or years after discharge. We wanted to determine

how to safely use early mobilisation to improve recovery."

Approximately 13–20 million people receive treatment in intensive care units (ICUs) annually. ICU-acquired weakness occurs in approximately 40 per cent of patients and is associated with high mortality risk, prolonged hospitalisation, and impaired recovery.

The study team randomly assigned 750 adult ICU patients receiving invasive mechanical ventilation to an early mobilisation group, or usual care. The early mobilisation intervention aimed to get patients mobile to the highest activity level possible from the start.

The adverse events seen in the early mobilisation group included heart rhythm changes, altered blood pressure and decreased blood oxygen levels and others.

Professor Hodgson says, "The adverse events seen were short-term and certainly aren't deal-breakers for the concept of early mobilisation. However, they help us understand more precisely how early, and how vigorously we should be engaging patients, and the warning signs staff should be watching for when conducting early mobilisation."

The prestigious journal – ranked within the world's top five medical journals by most ranking systems – timed the release of the paper around the European Society of Intensive Care Medicine Conference in Paris, where Professor Hodgson was awarded Honorary Membership of the Society in recognition of her significant contributions to intensive care medicine.



## Intensive care practice confirmed

Two randomised controlled studies arising from Monash Public Health and Preventive Medicine have added to the evidence base of critical care medicine after being published in NEJM.

The TAME trial refuted weaker evidence from earlier observational studies that suggested that maintaining elevated carbon dioxide levels in out-of-hospital cardiac arrest patients might lead to improved neurological and functional recovery. In one of the largest trials conducted on cardiac arrest patients admitted to intensive care units, TAME looked at 1,700 patients in 17 countries, finding that while hypercapnia did no harm, no outcomes benefits were conferred.

Study leader Dr Glenn Eastwood said the result was still important to clinical practice, ensuring clinicians are informed by the highest quality evidence and weren't missing the opportunity for better outcomes from a change in practice.

The PATCH study, co-ordinated by the Australian and New Zealand Intensive Care Research Centre, examined an expanded role for tranexamic acid, commonly used to limit bleeding during surgery. Earlier studies had yielded contradictory results about whether it saves lives or causes dangerous blood clotting when used as a pre-emptive strike in emergencies involving life-threatening bleeding.

PATCH-Trauma involved delivery of tranexamic acid at the roadside, in an ambulance, or in a helicopter prior to reaching hospital. 1,310 severely injured patients in Australia, New Zealand and Germany took part over eight years. For every 100 patients allocated to receive tranexamic acid, there were approximately four extra survivors at six months, but all were severely disabled and highly dependent on carers.

# Platform technologies

Our important platform technologies offer researchers the opportunity to undertake critical biomedical and clinical research in the pursuit of new health interventions.

Often, platform technologies are housed in dedicated facilities and require skilled staff to operate and maintain them. The resource-intensive nature of establishing platform infrastructure paves the way for supporting a collaborative and open access ethos in the research community, and the Alfred Research Alliance is no exception.

At the Alliance, there are many platforms that offer access to world-leading facilities and services to advance innovation. A brief outline of the platform technologies is below.

**ARAFlowCore** facility is Monash's state-of-the-art cell sorting and analysis laboratory. It has PC2 capability for animal and human cell sorting, as well as a dedicated PC3 environment for infectious sample sorting.

**Monash Histology Platform at Alfred Precinct** is a node of the Monash Histology Platform offering a professional histology service, as well as equipment access for do-it-yourself histology.

**Monash Micro Imaging at the Alfred Precinct** manages core imaging resources including confocal, conventional fluorescence and deconvolution microscopy on site. Super resolution technologies are also available.

**Genomics Capability** through Monash University and Alfred Health offers state-of-the-art sequencing capability with a wide range of sequencing applications and instrumentation, including a NovaSeq 6000.

**Metabolomics Platform** at the Baker Heart and Diabetes Institute uses liquid chromatography-tandem mass spectrometry techniques to obtain metabolic profiles (primarily lipids and fats) from cell and animal models and clinically relevant human samples.

**Monash's ARA Preclinical Imaging Facility** is a purpose-built preclinical imaging facility in collaboration with the Baker Institute, housing a 9.4T MRI scanner with cryocoil technology, a NanoPET-CT system and a world-first magnetic particle imaging (MPI) scanner.

**Clinical Research Domain** at the Baker Institute offers a range of imaging and diagnostic tools including MRI, transthoracic and stress echocardiography, and body composition (DEXA) scanning. Other research and investigational services are also available.

**Antiviral Testing Facility** at Burnet Institute has the capacity to evaluate chemical agents for inhibitory activity against HIV and herpes simplex (HSV) type 1 and 2 viruses in cell culture, enabling development of better treatments or prophylactics.

**Preclinical Cardiology Microsurgery and Imaging Platform (PCMIP)** at the Baker Institute provides advice, design support and technical services to preclinical cardiology researchers through their purpose-built facilities, highly reproducible techniques and expertise.

**Burnet Diagnostics Initiative** was established in February 2021 to translate existing and new technologies to practical health solutions and products. Bringing research and diagnostics capability together provides a unique opportunity to help solve challenging health problems.

**Preclinical Metabolic Phenotyping/Bioenergetics Facility** at the Baker Institute enables high-quality metabolic and physiologic phenotyping to study models of obesity, diabetes, cardiovascular disease and other metabolic diseases.

**Optima** suite of tools at Burnet Institute helps decision-makers choose the best public health investments through mathematical models of disease transmission and progression integrated with an economic analysis framework and mathematical optimisation and mathematical optimisation.

**The Monash Outcomes Research and health Economics (MORE)** develops epidemiological and economic models to evaluate impacts of ill health and benefits of interventions, translating measures of efficacy into measures of effectiveness and cost effectiveness.



To find out more about any of the above platform technologies and who to contact, go to [alfredresearchalliance.org.au/resources/platform-technologies](https://alfredresearchalliance.org.au/resources/platform-technologies).

# Bioinformatics and biostatistics

Bioinformatics and biostatistics use computer technology to collect and analyse different types of biological datasets, from genetic codes to large population datasets. Both Monash University and the Baker Heart and Diabetes Institute provide important bioinformatics and biostatistical support for researchers at the Alfred Research Alliance.



For more on the Alliance's bioinformatics capabilities, visit [alfredresearchalliance.org.au/resources/bioinformatics-and-biostatistics/](https://alfredresearchalliance.org.au/resources/bioinformatics-and-biostatistics/)

**Monash Bioinformatics Platform at the Alfred Research Alliance** networks bioinformaticians working at Monash University and its affiliates. Offering bioinformatics tools and computing resources for data analysis, visualisation and exploration, the platform supports a diverse range of research projects.

**Bioinformatics Program at the Baker Institute** builds its capacity through internal and external collaboration, support and training. The program offers data analysis and cross-omic integration for a range of different technologies including genomics, epigenomics and more, using a diverse set of analytical techniques.

**Biostatistics Consulting Platform (BCP)** at the Monash School of Public Health and Preventive Medicine provides high-quality biostatistical support to Alfred precinct-based researchers from Monash and Alfred Health. BCP biostatisticians help with experimental design, statistical analysis, and advice on methods and software.

# Clinical registries and biobanks

The Alfred Research Alliance is home to the largest concentration of clinical registries in Australia. The precinct also houses biospecimens, samples and other datasets that provide important resources for researchers.



For more information on the Alliance's clinical registries and biobanks, head to [alfredresearchalliance.org.au/resources/clinical-registries/](https://alfredresearchalliance.org.au/resources/clinical-registries/).

**Monash clinical registries** at the School of Public Health and Preventive Medicine maintains 40+ clinical registries (databases that systematically collect health information on people who have been treated or diagnosed with a certain illness) to benchmark outcomes, report on quality of care and monitor safety of new drugs, devices and surgical procedures.

**AusDiab** is coordinated by the Baker Heart and Diabetes Institute and is the largest Australian longitudinal population-based study designed to examine the natural history of diabetes, heart disease and kidney disease in Australians over 25 years of age.

**The ASPREE Healthy Ageing Biobank** at Monash University houses biospecimens from Australian participants of the NIH/NHMRC-funded ASPirin in Reducing Events in the Elderly clinical trial. Together with clinical data from the participants, they are a unique resource for genetic and biomarker discoveries in older Australians.

**Victorian HIV Blood and Tissue Storage Bank** and clinical database is a state-wide Victorian HIV Service at The Alfred and Burnet Institute, storing serum samples from HIV viral load tests for patients managed at The Alfred. The biobank currently holds nearly 70,000 samples linked with clinical information from almost 5000 HIV patients.

# Ethics at the Alliance

The Alfred Research Alliance members are committed to maintaining the highest standards of ethics and compliance in all research endeavours.

We work closely together to ensure that current standards are applied consistently across the precinct and that the relevant legislation, regulations, guidelines and codes of practice for all ethical research conduct are actively met at every level.

Shared resources also help our member organisations to navigate ethics approval processes in an efficient and streamlined manner, which enables us to get research underway sooner.

## Human research ethics

The Alfred Hospital Ethics Committee is a NHMRC-registered and certified Human Research Ethics Committee, which undertakes ethical review of human research for all Alliance members and can also review applications for any site participating in the Victorian or national 'single ethical review' (or 'streamlined') scheme.

The Ethics Committee is supported by two sub-committees: the Research Review Committee, which undertakes a preliminary specialised scientific/medical and safety review of drug, device and risky interventions; and the General Ethical Issues Sub-Committee, which considers more general ethical issues, including but not restricted to human research, of relevance to Alfred Health and the wider community.

## Animal ethics

The Alfred Research Alliance Animal Ethics Committees (AECs) undertake the ethical review of proposals for the care and use of animals for scientific purposes for Alliance-based organisations.

There are two AECs in operation, each meeting on a monthly basis, resulting in the ethical review of proposals on a fortnightly basis. The AECs are supported by the Alfred Research Alliance Animal Ethics Office, which also coordinates post-approval monitoring of research projects and annual reporting to state government on behalf of Alliance members licensed for the care and use of animals for scientific purposes.

## Dealings with genetically modified organisms

The Monash University Biosafety Committee, via the Monash Research Office, administers compliance with regulations covering genetically modified organisms for Alfred Health, Baker Heart and Diabetes Institute and Burnet Institute, as well as Monash University.



Visit [alfredresearchalliance.org.au/research/research-ethics-and-compliance](https://alfredresearchalliance.org.au/research/research-ethics-and-compliance) to find out more about ethics across the precinct.

## Alfred Research Alliance

[alfredresearchalliance.org.au](https://alfredresearchalliance.org.au)

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