



**Alfred
Research
Alliance**

Research Report
2017-2018



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“ It has been exciting in this pivotal year to acknowledge the value of our relationships, recognise the progress we have made together and celebrate the people who are at the heart of all our achievements ”

Chair's Report



Chair, Alfred Research Alliance
Prof Andrew Way

Welcome to the first Annual Research Report from the Alfred Research Alliance.

Last year, the Alfred Medical Research and Education Precinct (AMREP) Council undertook a major strategic review of our purpose and activities. This year, I am pleased to report on the outcomes.

These include reaffirming the importance of the relationships between the members and acknowledging that improving the way we communicate will improve our outputs. We also recognise that, by bringing together our unique attributes, we are 'greater than the sum of our parts'.

In September 2018, we launched our new brand under the name Alfred Research Alliance. This name acknowledges that, while place is important, it is people who make it exceptional. Our people share a commitment to furthering knowledge and translating research into new and improved diagnoses, treatments and disease-prevention strategies that make a positive difference in the lives of people, every day. Together, we are agents of change, working to ensure new thinking has a real impact.

In September we recommitted to work together, recognising the wide ranging and complementary strengths of research, education and clinical excellence that make our Alliance quite unique.

Our new agreement cements our shared aims and intents. It reaffirms our commitment to open, productive and collaborative approaches, to shared

strategic investment in infrastructure, platforms and processes, and to intensified collaboration, particularly between researchers and Alfred Health's clinical services.

Together with the 2017-2020 Strategic Priorities, this gives us a clear framework for the future.

The strength of any Alliance is in the excellence of its members. In this we are truly fortunate. It has been exciting in this pivotal year to acknowledge the value of our relationships, recognise the progress we have made together and celebrate the people who are at the heart of all our achievements.

I am grateful for the leadership of the Alliance Council and would like to particularly acknowledge those members who retired at the November 2018 meeting. In addition, I wish to specifically recognise Prof John McNeil AM as he retires from his role as Head, Monash Public Health and Preventive Medicine. John's stellar career and leadership of SPHPM over the last 32 years and his contribution to knowledge in the sector has been exemplary. Whilst he will continue his research and major contribution to research ethics, his leadership will be missed.

I look forward to working with the new Council, the Alliance Secretariat and our Alfred Research Alliance member organisations in the year ahead as we seek to amplify the effect of our endeavours and make a bigger difference, sooner.

Alfred Research Alliance

The Alfred Research Alliance is a vibrant collaborative community dedicated to excellence in research and education.

We think in new and innovative ways and work together to translate the latest advances in medical research into outcomes which help address critical unmet clinical and public health needs locally, nationally and internationally.

With more than 8,000 health professionals, researchers, students and support staff, the Alliance brings together 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 new and improved diagnoses, treatments and disease prevention strategies are discovered, developed and implemented. Here, also, students gain the education and training they require to take their place as tomorrow's leading clinicians, scientists and health professionals.

We recognise that collaboration is at the centre of real-world health innovation. Our co-location with

The Alfred, one of Australia's busiest hospitals, is a key to linking our research directly to patient-centred research, keeping us people-focused and outcome-driven.

Individual Excellence, Collective Strength

The Alfred Research Alliance comprises Alfred Health, Monash University Central Clinical School (CCS) and Public Health and Preventive Medicine (SPHPM), Baker Heart and Diabetes Institute, Burnet Institute, Deakin University and La Trobe University.

Recognised leaders in their fields, these organisations are known for their excellence in research, patient engagement and education, and for their award-winning researchers and clinicians.

We actively foster collaboration, particularly between researchers and Alfred Health's clinical services, because we know that combining our skills, expertise, technology and perspectives allows us to 'solve the unsolvable' and bring new interventions to patients more quickly.



Executive Officer,
Alfred Research Alliance
Dr Renée Dutton

www.alfredresearchalliance.org.au

“
We think in new and innovative ways and work together to translate the latest advances in medical research into outcomes which help address critical unmet clinical and public health needs locally, nationally and internationally.
”



1

Hospital



3

Universities



2

Medical research institutes



8,000+

Staff & students



1,500+

Researchers



1,100+

Post-graduate students



Translating Research into Practice

At the Alfred Research Alliance, the latest advances in medical research are translated into the best possible clinical care and health outcomes. Our research strengths include:



Blood Diseases and Cancer



Cardiovascular Disease



Diabetes and Obesity



Epidemiology and Public Health



Infection and Immunity



Mental Health and Neuroscience



Nursing and Allied Health



Trauma, Critical Care and
Perioperative Medicine

Within these categories, our researchers excel in a wide range of areas from metabolomics, bioinformatics, cancer and immunotherapy, to ophthalmology, psychology, respiratory medicine, preventive medicine, rehabilitation and health services research.

Complemented by a comprehensive capacity in pre-clinical research and Phase I to IV clinical trials, co-located start-ups and SMEs, and the clinical environment of The Alfred, a complete translational research loop is created, giving the Alliance a real, tangible point of difference.

World-Class Research Platforms and Facilities

The Alfred Research Alliance is built on a foundation of shared resources. We maximise the value of investment by sharing state-of-the-art research platforms, clinical facilities and other key infrastructure including an [Education Centre](#), the [Ian Potter Library](#) and shared animal and human research ethics services.

This is supported by initiatives and resources which encourage connection, support collaboration and facilitate shared learning opportunities within and between member organisations.

Highlights 2017-2018

It has been a busy and rewarding year across the Alfred Research Alliance, with significant funding success, developments and achievements from our member organisations.

Strong research performance saw the Alliance attract some \$110M in external research funding during 2017, plus close to \$24M from philanthropic sources and fundraising.

Alfred Health and Monash University partnered to launch the Monash Alfred Injury Network in December 2017 and a new Department of Neuroscience in August 2018. A new clinical imaging facility, co-funded by Monash and Baker Institute, opened to provide enhanced resources for researchers across numerous areas.

The excellent reputation of Alliance members continues to attract world-class people and this year we welcomed key staff including:

Prof Terence O'Brien – Van Cleef Roet Chair of Medicine (Neurology) and Head, Monash Department of Neuroscience; Director of Neurology, Alfred Health

Prof Mark Shackleton – Director of Oncology, Alfred Health; Professor of Oncology, Monash Department of Medicine

Prof Meng Law – Head of Radiology, Alfred Health; Research Group Leader, Monash Department of Neuroscience

Prof Vaughan Macefield – Head, Human Autonomic Neurophysiology Laboratory, Baker Institute

Prof Mika Ala-Korpela – Head, Systems Epidemiology Laboratory, Baker Institute; Research Professor in Systems Epidemiology, Alfred Health and Monash SPHPM

Dr David Wright – Research Fellow, Department of Neuroscience, Monash CCS

Dr Alex Pinto – Head, Cardiac Cellular Systems Laboratory, Baker Institute; La Trobe University Centre for Cardiovascular Biology and Disease Research

Prof Caroline Homer AO – Co-Program Director, Maternal and Child Health, Burnet Institute.

The Alfred's **Prof Paul Myles**, Director Anaesthesia & Perioperative Medicine, became the first Australian recipient of the American Society of Anesthesiologists' Excellence in Research Award, while Intensive Care Specialist **Prof Jamie Cooper** and the TRANSFUSE trial team were named Finalists for the ACTA Trial of the Year Award.

Chief Pharmacy Information Officer **Erica Tong** received the National Prize for Excellence from the *Medical Journal of Australia* for her research on reducing medication errors in hospital discharge summaries and **A/Prof Kate Hoy**, Monash Alfred Psychiatry Research Centre, won the 2017 Telstra Victorian Public Sector and Academia Award for spearheading research that is breaking new frontiers into effective treatments for dementia.

At the annual NHMRC Research Excellence Awards **Dr Trisha Peel**, Senior Research Fellow Infectious Diseases, Monash CCS and Alfred Health, received an Award for her work on optimising patient outcomes following surgery.

Dr Joanne McKenzie, Senior Research Fellow Research Methodology, Monash SPHPM received a similar NHMRC award for her work in Population Health.

A/Prof Julian Elliot, Monash SPHPM, Alfred Health and Burnet Institute, won the \$50,000 Commonwealth Health Minister's Award for Excellence in Health & Medical Research.

A/Prof Andrew Murphy, Baker Institute, was awarded a \$1.25M five-year 2017 CSL Centenary Fellowship. He aims to advance understanding of why lifestyle issues drive the over-production of white blood cells, leading to arterial plaques and often heart attack or stroke.

Prof Jonathan Shaw received the Australian Diabetes Society's prestigious Kellion Award, made for outstanding contribution to diabetes research, clinical or service areas.

Dr Philipp du Cros, Infectious Disease Specialist at Burnet Institute, was recognised for excellence in tuberculosis research and clinical service with the Royal Australasian College of Physicians' International Medal for 2018.

Burnet Institute Director and CEO

Prof Brendan Crabb AC founded the 1st World Malaria Congress held in Melbourne in July 2018, which brought together more than 1,000 delegates from 70 countries to share in the fight against malaria.

At Deakin, **Prof Tracey Bucknall** was awarded the title of Alfred Deakin Professor, the University's highest honour for a professor, for her significant contribution to research internationally.

Several colleagues were recognised in this year's Queen's Birthday Honours including

Prof Kit Fairley AO, Melbourne Sexual Health Centre Director, Alfred Health and Monash CCS; **Prof John Wilson AO**, Monash Department of Allergy, Immunology & Respiratory Medicine and Head, Cystic Fibrosis, Alfred Health; **Prof Robyn Guymer AM**, Honorary Adjunct Professor Monash Epidemiology, **Prof Rinaldo Bellomo AO**, Monash SPHPM and **Noel Tressider AM**, Baker Institute.

Education & Training for Tomorrow's Leaders

The Alfred Research Alliance has always had a strong focus on learning and training and we are proud to provide an environment where tomorrow's leading clinicians, scientists and health professionals can successfully complete their studies and build a strong foundation for their future careers.

By studying at the Alfred Research Alliance, students learn how to work nimbly from biomedical discovery, through translational development and clinical research, to deliver improved patient and public health outcomes.

More than 1,100 postgraduate students are currently undertaking study at the Alfred precinct through Monash University, La Trobe University and Deakin University. This is complemented by a regular program of seminars and events held across the site, allowing students, staff and researchers across the Alliance to share and expand

their knowledge and benefit from vital continued professional development on-site.

With outstanding educational opportunities provided by our member universities on-site, complemented by close collaborative relationships between them and The Alfred, the Baker Institute and the Burnet Institute, the Alfred Research Alliance is the perfect place for students who want to positively contribute to preventing, treating or curing human disease, illness and injury.



Clinical Trials

Education Centre and Ian Potter Library

The [Education Centre](#) at the Alfred precinct is a unique conference, workshop and seminar venue with a range of meeting and seminar rooms, including a 200-seat Lecture Theatre featuring state-of-the-art technology. The Lecture Theatre and rooms are available to both Alfred Research Alliance members and external clients.



Go to alfredresearchalliance.org.au/resources/education-centre-facilities

The [Ian Potter Library](#) provides an integrated library and information service to staff and students across the Alliance. The Library organises its information resources to support patient care, educational training and research activities of the organisations across the precinct.

Go to alfredresearchalliance.org.au/resources/ian-potter-library

Clinical trials are fundamental to the development of new practices, medicines and devices to treat and prevent illness. Alfred Research Alliance members are leaders in clinical trials, allowing us to translate our discoveries into new interventions on-site.

The Alliance has significant clinical trial capabilities ranging from first-in-human trials right through to Phase IV clinical trials, including wide-ranging community based trials. More than 400 clinical trials were conducted by the Alliance during 2017, with 55% commercially sponsored and 45% investigator initiated.

Nucleus Network, one of Australia's leading Clinical Research Organisations, is also located at the Alfred precinct and specialises in the conduct of first-in-human and Phase I clinical trials and other complex clinical trials.

The Alliance members are committed to working with each other and with industry to provide world-leading clinical trials in areas including:

- Cardiology
- Cardiothoracic Surgery
- Gastroenterology
- Haematology
- Infectious diseases

- Medical Oncology
- Neurology
- Psychiatry
- Respiratory Medicine
- Endocrinology
- Physical Activity
- Nephrology
- Rehabilitation
- Imaging
- Aboriginal and Torres Strait Islander Health

World-class technology platforms support our on-site expertise while a shared ethics framework smooths the approvals process and provides consistent and coordinated oversight.

Perhaps most importantly, co-location with The Alfred allows Alliance partners and contract research organisations to foster strong relationships with hospital-based investigators and clinical researchers, so that we can progress the translation of our discoveries into new, evidence-based interventions.



World-Leading Neuroscience Department Opens

A long-anticipated joint venture between Monash University and The Alfred came to fruition on Thursday 30 August, 2018, with the launch of the new Department of Neuroscience at the Alfred Research Alliance.

The new \$40M facility, which falls under the auspices of the Monash Central Clinical School, is the only department of its kind in an Australian university. It was developed in response to a growing number of referrals driven by the ageing population and growing incidence of neurological diseases.

Based in new offices at the Alfred Centre in Commercial Road, Melbourne, the Department of Neuroscience is arguably the leading translational research centre in neuroscience in Australia and one of the best in the world.

Run by a multidisciplinary team, it houses purpose-built basic neuroscience laboratories and also the most advanced pre-clinical imaging facility in the Southern Hemisphere, equipped with the latest functional and structural imaging instrumentation, which was made possible by co-investment by Monash and Baker Institute.

An expanded six-bed Inpatient Epilepsy Monitoring unit and a new, dedicated Neurological Clinical Trials Facility provide advanced patient monitoring facilities for early phase clinical trials that will help develop treatments for diseases including epilepsy, dementia, Parkinson's, cluster headaches, strokes, traumatic brain injury and multiple sclerosis.



Prof Terry O'Brien, Head of the Department of Neuroscience, with a patient.



Prof John McNeil

Farewell to Prof John McNeil AM

As this Annual Research Report goes to press, we farewell one of our longest-serving and most distinguished colleagues, Prof John McNeil AM.

John has been Head of Monash Public Health and Preventive Medicine since 1986 and has been a stalwart of the Alfred Research Alliance.

Over the years, John has contributed widely to this precinct as a member of the executive of the Monash Faculty of Medicine, Nursing and Health Sciences, has served on the senior medical staff at The Alfred, and has been a member of both the Alfred Research Alliance Council and the Alfred Health Board.

With a background in epidemiology and clinical pharmacology, he has contributed to many key investigations over the years including, most recently, taking the lead in the ASPREE (**ASP**irin in **R**educing **E**vents in the **E**lderly) trial – a seven-year landmark observational study to determine whether daily, low-dose aspirin had a positive effect on the health and lifespan of otherwise healthy older people – with Prof Richard Grim at the Berman Center for Outcomes and Clinical Research in Minneapolis, USA.

John's contributions stretch far beyond the bounds of the Alfred precinct, however. He has held senior medical roles at the Austin Hospital and the Monash Medical Centre and is currently a member of the boards of Austin Health, the Colonial Foundation, Orygen Youth Health and the International Society of Cardiovascular Pharmacotherapy. Previously, he has served on the boards of the Metropolitan Ambulance Service, Water Quality Research Australia and the Victorian Public Health Research and Education Foundation. In 2008 he was awarded a Member of the Order of Australia for services to Public Health.

John has been a valued colleague, an outstanding contributor to the Alliance – in particular, Monash University and Alfred Health – and has contributed substantially to the global body of medical research and knowledge in his field. We wish him good health and great satisfaction in what we are sure will be a long, happy and active retirement.

Leading the world in research excellence

Research at the Alfred Research Alliance is a priority for all of the member organisations, covering everything from discovery of new knowledge through fundamental research in the laboratory, to applied research, clinical trials and clinical research, and public health and health services research.

The overarching aim of research performed by Alliance members is to improve diagnosis, prevention, practices and treatments, and also policy, in the healthcare system and the wider community.

The Alliance members demonstrate a broad range of research strengths spanning a wide range of areas, most of which fall under the categories illustrated below.

The research themes below illustrate the scope and progression of research across the precinct. This demonstrates the complete translational research loop which is located on this one, geographically distinct and uniquely interconnected precinct.

Research Strengths



Blood Diseases and Cancer



Cardiovascular Disease



Diabetes and Obesity



Epidemiology and Public Health



Infection and Immunity



Mental Health and Neuroscience

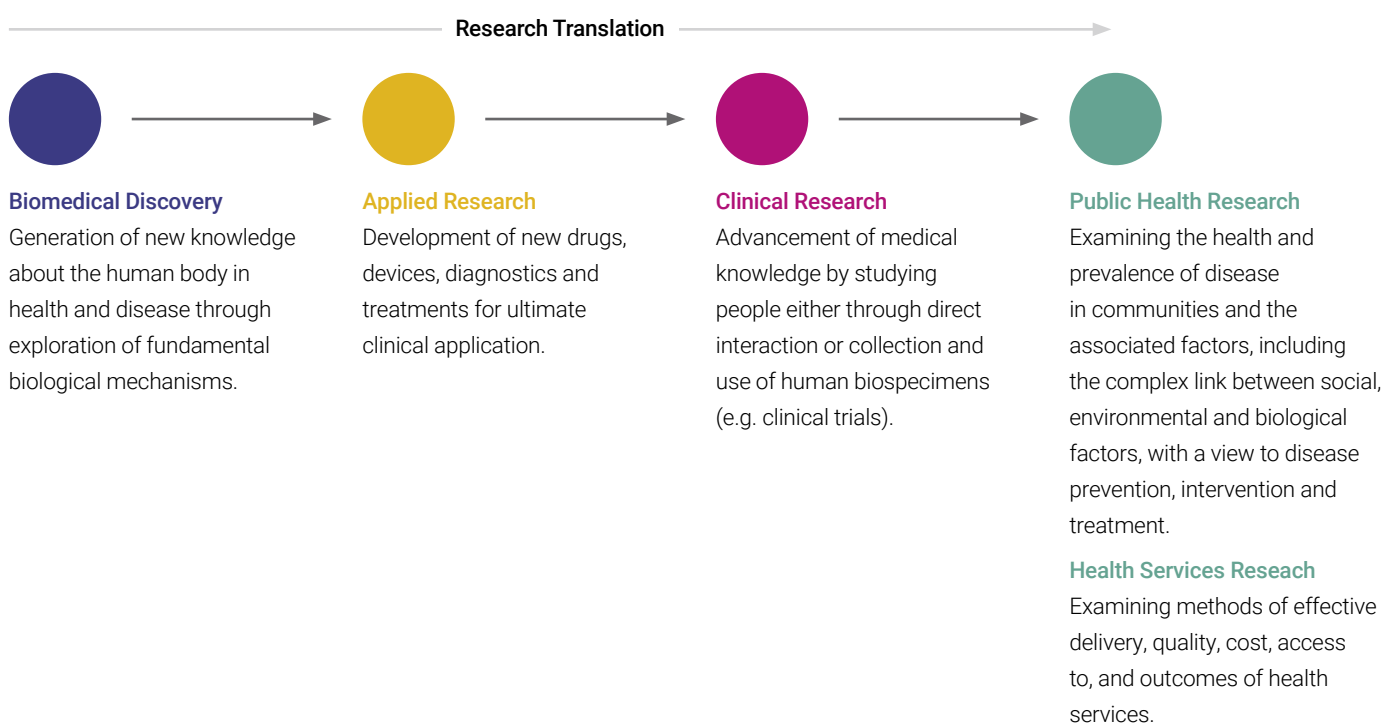


Nursing and Allied Health



Trauma, Critical Care and Perioperative Medicine

Research Themes



Research Performance

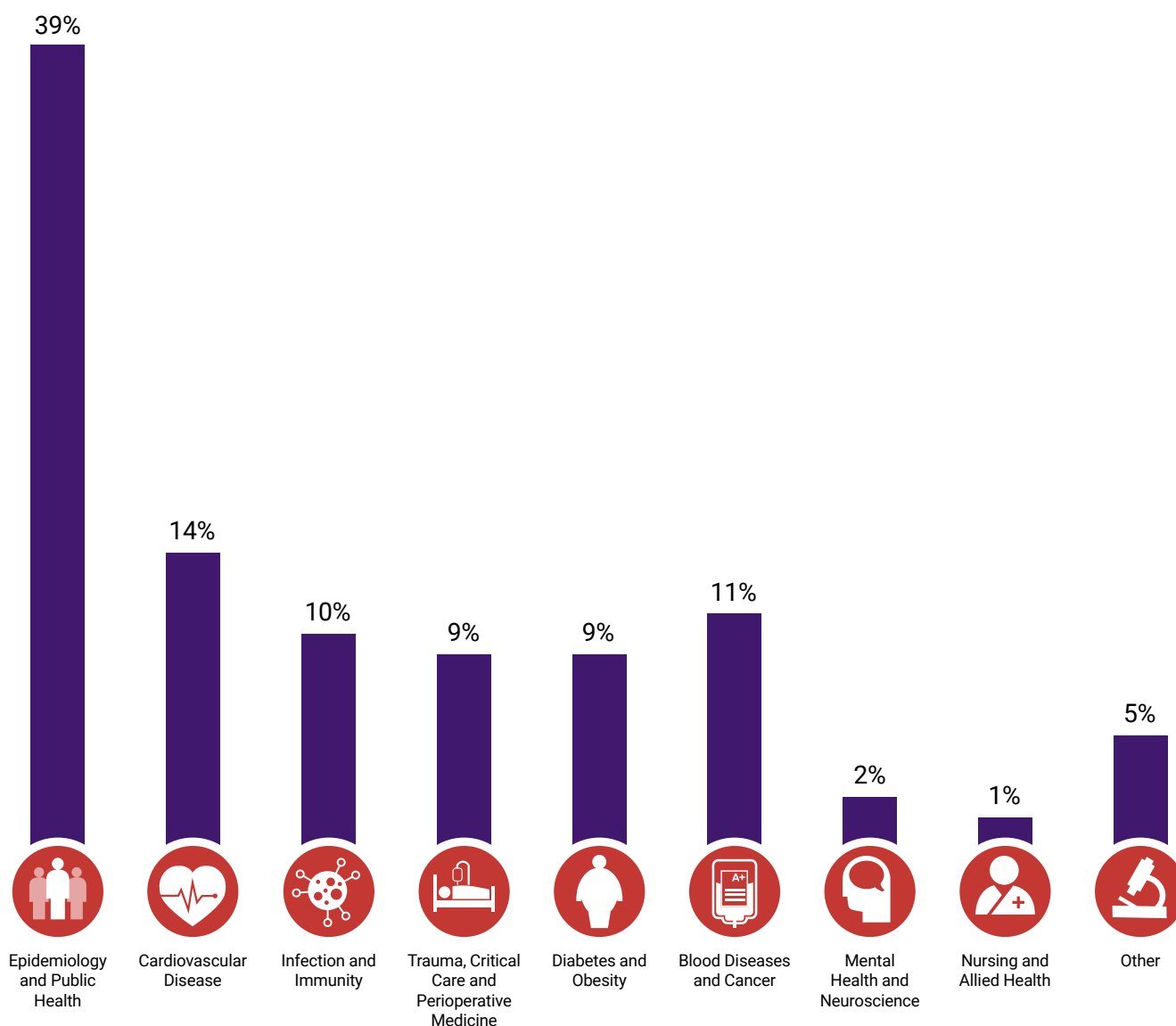


External Research Funding by Source: 2017

Australian competitive grants	\$65M
Other public sector research income	\$14M
Other competitive research grants	\$15M
Industry income	\$11M
Other research income	\$5M
Total	\$ 110M



External Research Funding by Research Area – 2017



2017 Funding Secured for Health and Medical Research



\$24M

in Philanthropy and Fundraising Revenue



\$110M

in External Research Funding

NHMRC funding commitments secured by Alfred Research Alliance commencing 2018


\$52M
total



51%

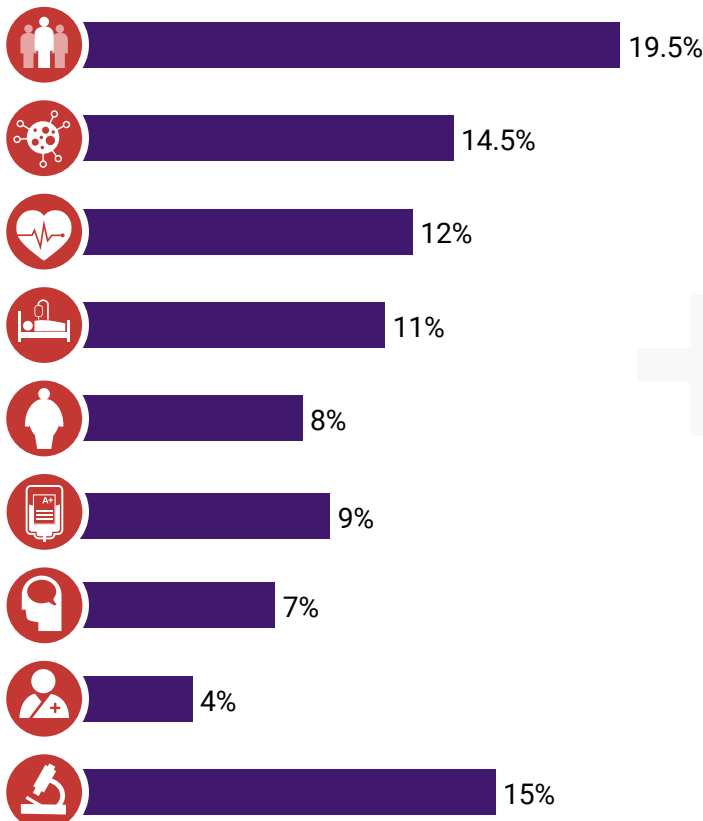
of NHMRC funding to Victoria for Cardiovascular Medicine & Haematology research went to the Alfred Research Alliance



35%

of NHMRC funding to Victoria for Public Health & Health Services Research went to the Alfred Research Alliance

Original Research Publications by Research Area – 2017



Students 2017



1,168

Postgraduate Degree Students

154

Masters Student Completions

57

PhD / Doctoral Student Completions

Commercial Impact



4

PCT Patent Applications

7

National Phase Entry

1

Patent Granted

1

Licenses, Options & Assignments of Inventions

Alfred Health: Departments and Affiliated Centres Conducting Research

Medical and Surgical Departments

Anaesthesia & Perioperative Medicine

Prof Paul Myles

Allergy Immunology & Respiratory Medicine

Prof Robyn O'Hehir

Burns (Victorian Adult Burns Service)

Miss Heather Cleland

Cardiothoracic Surgery

Prof David McGiffin

Cardiology

Prof David Kaye

Emergency & Trauma Centre

Dr De Villiers Smit

Endocrinology & Diabetes

Prof Duncan Topliss

Gastroenterology

Prof Peter Gibson

General Surgery

Prof Jonathan Serpell

Infectious Disease

Prof Anton Peleg

Intensive Care & Hyperbaric Medicine

Dr Steve McGloughlin

Medical Oncology

Prof Mark Shackleton

Melanoma (Victorian Melanoma Service)

A/Prof Victoria Mar

Melbourne Sexual Health Centre

Prof Christopher Fairley

Neurosurgery

Mr Martin Hunn

Orthopaedic Surgery

A/Prof Susan Liew

Radiation Oncology

Prof Jeremy Millar

**Rehabilitation, Aged Care and
Community Care**

A/Prof Peter Hunter

Renal Medicine

Prof Rowan Walker

Medical Services

Anatomical Pathology

Prof Catriona McLean

Diagnostic and Interventional Radiology

Head: A/Prof Dinesh Varma

Head (Research): Prof Meng Law

Nuclear Medicine

Dr Kenneth Yapp

Pathology Services

Prof Hans Schneider

Pharmacy

Prof Michael Dooley

Nursing

Nursing Services Executive Director:

Ms Janet Weir Phyland

Foundation Chair in Nursing:

Prof Tracey Bucknall

Allied Health

Director

Lisa Somerville

Nutrition and Dietetics

A/Prof Ibolya Nyulasi

Occupational Therapy

Lauren Maher and Jane Fuetrill

Orthotics and Prosthetics

Gavin Burchall

Psychology

Lynda Katona

Social Work

Bridget Wall

Speech Pathology

Janine Mahoney

Alfred Health



Chief Executive, Alfred Health
Prof Andrew Way

www.alfredhealth.org.au

Alfred Health is one of Australia's leading healthcare services. It has a dual role: caring for more than 700,000 locals who live in inner-southern Melbourne and providing health services for Victorians experiencing the most acute and complex conditions through our 14 state-wide services. It has three hospital campuses: Caulfield Hospital, Sandringham Hospital and The Alfred, which specialises in acute and critical care.

The Alfred is a major tertiary referral hospital which provides one of the most comprehensive ranges of specialist acute health services in Victoria. It houses multiple state-wide services like Victoria's only heart and lung transplant service, the Victorian Adult Burns Service and the Victorian Melanoma Service. It is also home to one of Australia's busiest Emergency & Trauma centres and a state-of-the-art Intensive Care Unit which is one of the largest and most advanced in the region.

Patients come to The Alfred for services such as comprehensive cancer care, respiratory medicine, cardiology and cardiovascular services, and in-patient and community psychiatry care.

The Alfred's research mission is to discover and deliver the next generation of healthcare through:

Research: Translating medical research into clinical practice

Education: Developing and fostering our staff as a teaching hospital committed to excellence with patients placed at the centre of all that we do

Replication: Striving for new and improved practices and remaining at the forefront of healthcare developments and medical research. Other hospitals in Australia and overseas have followed our lead and adopted our innovative approach.

Clinical Research Through Partnership

The Alfred sits at the physical heart of the Alfred Research Alliance and provides a clinical environment for medical, allied health and nursing education and an expedited pathway for 'bench-to-bedside' translational research.

Clinical research is integral to many Alfred departments, through long-established relationships – and many co-appointments – between The Alfred and Alfred Research Alliance members, which strengthen ties across the precinct.

Various Alfred departments also contribute to clinical registries managed by Monash Public Health and Preventive Medicine in order to improve evidence-based practice and identify factors that predict prognosis and outcomes of disease.

The Alfred



6600+
Employees



66,000+
Emergency Presentations
Per Year



9,000
Trauma admissions

“

The Alfred is one of Australia's busiest hospitals, with a comprehensive range of specialist acute services spanning almost every specialist medical and surgical discipline

”

Research Highlights 2017-2018



Trial solves age-old debate

A global study led by The Alfred has found giving patients more intravenous (IV) fluids during surgery can reduce the risk of kidney damage and wound infection post-surgery.

Anaesthetists have fiercely debated whether to give patients more or less IV fluids during and in the days following surgery. While small studies had previously indicated that limiting IV fluids was beneficial for patients undergoing abdominal surgery, the RELIEF trial (or Restrictive versus Liberal Fluid therapy in major abdominal surgery trial) proved otherwise.

Prof Paul Myles, lead researcher and Director of Anaesthesia and Perioperative Medicine at The Alfred and Monash University, says this study will change anaesthetic procedure across the world.

The study, which was conducted across 47 hospitals in seven countries, was funded by the National Health and Medical Research Council (NHMRC) and the Australia and New Zealand College of Anaesthetists.

Research Strength: Trauma, Critical Care and Perioperative Medicine

Research Theme: Clinical Research



Coffee not causing heart problems

Patients being treated for heart rhythm disorders are commonly advised to avoid caffeine; however, a new study suggests coffee and tea may be tolerated – and could even help manage an irregular heart rate.

Study lead, Prof Peter Kistler, Director of Electrophysiology at The Alfred and the Baker Institute, says the widely held belief that moderate intake can exacerbate arrhythmias is not supported by the medical literature.

Large-scale studies have suggested coffee and tea are safe, and some caffeinated beverages may even have long-term anti-arrhythmic properties – suppressing abnormal rhythms of the heart.

Prof Kistler's study, 'Caffeine and Arrhythmias: Time to grind the data' was published in the *Journal of the American College of Cardiology*.

Research Strength: Cardiovascular Disease

Research Theme: Public Health/Health Services Research



PrEPX Tasmania

Alfred Health's highly successful PrEPX, a study for those at risk of HIV infection, expanded into Tasmania, thanks to funding from the Tasmanian Government.

Pre-Exposure Prophylaxis (PrEP) is a medication containing two anti-retrovirals and the study's aim is to reduce the risk of new HIV infections.

PrEPX continued to expand through Victoria and South Australia to meet increasing demand, opening new sites in metropolitan Melbourne and rural and regional Victoria. More than 5,000 participants have been enrolled in the study across the three states.

PrEP became available on the PBS in April 2018 and the study team has begun work to educate GPs about PrEP, and to transition all of the people enrolled in the PrEPX study to PBS access with their GPs.

Research Strength: Infection and Immunity

Research Theme: Clinical Research



Prof Peter Kistler



“ The Alfred is committed to excellence, with patients placed at the center of all we do. ”



Monash Central Clinical School

Department of Anaesthesia and Perioperative Medicine

Prof Paul Myles

Department of Medicine

Prof Terence O'Brien

National Trauma Research Institute (NTRI)

Prof Mark Fitzgerald

Department of Surgery

Prof Wendy Brown

Department of Neuroscience

Prof Terence O'Brien

Department of Allergy, Immunology & Respiratory Medicine

Prof Robyn O'Hehir AO

Department of Diabetes

Prof Mark Cooper AO

Department of Infectious Diseases

Prof Anton Peleg

Department of Gastroenterology

Prof Peter Gibson

Department of Immunology & Pathology

Prof David Tarlinton

Department of Medical Oncology

Prof Mark Shackleton

Melbourne Sexual Health Centre

Prof Christopher Fairley AO

Monash Alfred Psychiatry Research Centre

Prof Jayashri Kulkarni

Department of Clinical Haematology

Australian Centre for Blood Diseases (ACBD)

Prof Harshal Nandurkar

Department of Medical Education

A/Prof Anne Powell

Department of Non-Medical Education

Prof Robyn Slattery



Monash Central Clinical School



Head
Prof Stephen Jane

www.monash.edu/medicine/ccs

Monash University's Central Clinical School (CCS) is a key Melbourne centre for clinical and biomedical research and education, offering undergraduate and postgraduate study programs. Together with its sister school at the Alfred precinct, Monash Public Health and Preventive Medicine (SPHPM), CCS has been affiliated with Alfred Health as a provider of medical teaching for more than 50 years. Its reputation and well-equipped research laboratories and facilities attract elite students, researchers and educators to the precinct.

Research Strengths

CCS is a core hub for translational research and medicine, covering a breadth of disciplines throughout its departments and specialist centres. Multidisciplinary research is encouraged, leading to a highly collaborative research environment with networks spanning across the Alfred Research Alliance, as well as nationally and internationally. A key strength for CCS is the close alignment between university and hospital where heads of academic departments are in most circumstances the head of the associated clinical service. This allows research to be translated into practice and for clinicians to feedback observations to facilitate new research activity, enabling us to move rapidly towards health outcomes and improved patient care.

Medical Education and Undergraduate Science

CCS coordinates the teaching of Monash University's medical students at the Monash-affiliated teaching hospitals of Alfred Health, Cabrini Health Australia and Peninsula Health. An extensive lecture and tutorial program is presented by senior clinicians, and students have access to the latest research and development advances in medicine. Our undergraduate teaching program in immunology and human pathology facilitates recruitment of students into a substantial Honours cohort and a growing graduate research cohort.

A Year of Success

CCS received record NHMRC funding in 2017, and CCS researchers published papers in high impact factor journals including *The New England Journal of Medicine* and *The Lancet* by heads of department Professors Paul Myles and Christopher Fairley. Talented early career researchers have also won major grants and awards.

Future Directions

CCS launched its Department of Neuroscience in 2018 to meet the growing disease burdens in this area. The first academic university department for this speciality in Australia, its 140 staff and graduate research students have strong crossovers with the clinical neuroscience department at The Alfred. The Alfred and Monash have also made a major investment in developing research infrastructure on-site to support basic and clinical research. The Alfred and CCS partnership for supporting on-site clinical trials was launched in 2017, with 100 trials currently underway.

Graduate Research

Two recently launched initiatives, the accelerated milestone PhD for medical education students and the Translational Research themed PhD run through Monash clinical schools, are both attracting enrolments. The Translational Research themed PhD delivers the skills needed to bring research from bench-to-bedside. Students enjoy access to experts that are part of Monash University's rich network of industry, clinical and research partnerships, as well as quality data sources and research platforms.



The Monash Central Clinical School is a highly collaborative research environment with networks spanning across the Alfred Research Alliance, as well as nationally and internationally.



300+

Academic & Professional Staff



410+

Adjunct Staff



3200+

Undergraduate Students



175+

Postgraduate Students

Research Highlights 2017-2018



Progress in Blood Cancer Research Funded

Researchers from Monash CCS and The Alfred were awarded more than \$5.5M this year under the federal government Medical Research Future Fund's (MRFF) Rare Cancers, Rare Diseases and Unmet Needs Clinical Trials Program.

Tackling Myelofibrosis with Genetic Profiling

Myelofibrosis is a rare, incurable blood cancer with a median survival of less than three years and a severe impact on patient quality of life. With the disease driven by mutations either to the JAK2 gene or to the signalling pathways that activate that gene, there is real potential for more effective, personalised treatment options based on genetic profiling.

With an MRFF grant of \$1.73M, Prof Andrew Perkins and his team will build a registry-linked national platform trial to improve precision-based outcomes, based on low cost genomic profiling, for patients with myelofibrosis who are using novel therapies.

New FRAIL-M Study into Multiple Myeloma

Multiple myeloma is a debilitating, incurable cancer with a poor survival rate. It affects mainly older people, who fare far worse than younger patients, yet most of the clinical trials into treatments have been undertaken with younger, fitter patients.

With a \$1.68M MRFF grant, Prof Andrew Spencer will investigate the effectiveness of existing drug treatments in elderly multiple myeloma patients, contributing to a large dataset which will give us a far clearer picture of how to effectively treat these patients.

Rare Disease Drug Trial Boosted

Bone marrow transplants can be life-saving for people with leukaemia but, after surgery, 40% of patients develop a debilitating and life-threatening complication called 'graft versus host disease', or GVHD.

A/Prof David Curtis this year received a \$1.5M MRFF grant for a randomised clinical trial to be run across ten transplant centres in Australia and New Zealand. It will compare the effectiveness of an inexpensive new drug with the standard strategies used to prevent GVHD. This has the potential change the way transplants are performed and managed around the world.

World-First Leukaemia Platform Trial

A national clinical trial program led by Adjunct A/Prof Andrew Wei from the Australian Centre for Blood Diseases, is set to test drugs that may help fight the aggressive Acute Myeloid Leukaemia (AML), funded by a \$1.5M MRFF grant.

The platform design of the trial means several drugs will be trialled in parallel to see which are most effective in 'erasing' residual disease left over after chemotherapy, validating new drugs into patient care more rapidly than ever before.

Research Strength: Blood Diseases & Cancer

Research Theme: Clinical Research



Preventing Infection After Surgery

Surgical wounds are the leading cause of infections associated with healthcare, and they are the most costly. Bacteria found on the patient's skin are thought to be the main source of infection, and antibiotics are the usual treatment – but with a global rise in antimicrobial resistance, this presents a huge health challenge.

Tackling this issue is Dr Trisha Peel, whose work centres on better understanding the role of the skin's bacteria in infection development, how to prevent it, and how to effectively implement evidence-based measures nationwide.

This year, Dr Peel was one of four Monash researchers who received awards from the National Health and Medical Research Council (NHMRC) for Research Excellence. She was named Top Ranked Career Development Fellow (CDF) 1 in the Clinical field, for her research on optimising patient outcomes following surgery.

Research Strength: Trauma, Critical Care and Perioperative Medicine

Research Theme: Biomedical Discovery



Talented early career researchers at CCS won major grants and awards this year, among them A/Prof Eric Chow and Dr Karen Alt.

Dr Alt is a Senior Research Fellow at the Australian Centre for Blood Diseases where she is working with colleagues to develop a new technology platform for cancer which merges novel imaging and therapy probes into onco-theranostic nanoparticles. This research combining diagnostics and therapy in a single drug is supported by NHMRC Project Grants.

A/Prof Chow is a Senior Research Fellow at the Melbourne Sexual Health Centre. Only four years post-PhD, he is building an exceptional career in epidemiology and the prevention and control of sexually transmitted diseases. He specialises in gonorrhoea and human papillomavirus and is currently leading an NHMRC-funded multi-centre clinical trial on the use of mouthwash to prevent oropharyngeal gonorrhoea.



Monash Public Health & Preventive Medicine

Health Services

Head: Prof Peter Cameron

Registry Science and Research

A/Prof Susannah Ahern

Transfusion Research

A/Prof Erica Wood

Prostate Cancer Registry

A/Prof Sue Evans

Bariatric Surgery Registry

Prof Wendy Brown

Australian Breast Device Registry

Dr Ingrid Hopper

Insurance Work and Health Group

Prof Alex Colлие

Clinical Epidemiology

Head: Prof Danny Liew

CCRE Therapeutics

Prof Chris Reid and Prof Danny Liew

Musculoskeletal Epidemiology

Prof Flavia Cicuttini

Infectious Disease Epidemiology

Prof Karin Leder and Prof Allen Cheng

Women's Health Research Program

Prof Susan Davis

Cabrini Epidemiology

Prof Rachele Buchbinder

Metabolism Ageing Genomics

Head: Prof Sophia Zoungas

STAREE

Prof Sophia Zoungas

Diabetes & Vascular Medicine

Prof Sophia Zoungas

Monash Ageing Research Centre

Prof Barbara Workman

Public Health Genomics

Dr Paul Laccaze

Social Sciences

Head: Prof Jane Fisher

Jean Hailes Research

Prof Jane Fisher

Michael Kirby Centre

A/Prof Bebe Loff

Andrology Australia

Prof Rob Mclachlan

Research Methodology

Head: Prof Andrew Forbes

Biostatistics

Prof Andrew Forbes

Epidemiological Modelling

Dr James Trauer

Cochrane Australia

Prof Sally Green & Mr Steve McDonald

Research Governance

Prof Sophia Zoungas

Teaching and Learning

Head: A/Prof Dragan Ilic

Postgraduate Courses

Prof Danny Liew

Undergraduate Courses

A/Prof Basia Diug

Medical Education Research and Quality

A/Prof Dragan Ilic

Gambling and Social Determinants

Dr Charles Livingstone

Critical Care Research

Head: Prof Jamie Cooper

Intensive Care

Prof Jamie Cooper

ANZCA Research

Prof Paul Myles

Pre-hospital, Emergency & Trauma

Prof Belinda Gabbe

ASPREE Research

Head: Prof John McNeil

ASPREE

A/Prof Robyn Woods

ASPREE Sub-studies

A/Prof Robyn Woods

Biorepository

A/Prof Robyn Woods

Biological Neuropsychiatry and Dementia

Dr Joanne Ryan

Occupational & Environmental Health Sciences

Head: Prof Malcolm Sim

Monash Centre for Occupational and Environmental Health

Prof Malcolm Sim

Australian Centre for Human Health Risk Assessment (ACHHRA)

Prof Brian Priestly

Aviation Medicine

A/Prof David Newman

Hazelwood Health Study

Prof Michael Abramson

Cancer Research

Head: Prof John Zalcborg

Cancer Research

Prof John Zalcborg



Monash Public Health and Preventive Medicine



Head
Prof John McNeil AM

www.monash.edu/medicine/sphpm

Monash Public Health and Preventive Medicine (SPHPM) is both a leader in public health-oriented education and a research intensive school.

A national leader in managing clinical registries, the School also houses significant clinical research expertise and ran the world's largest primary prevention aspirin study ever undertaken in healthy older people, ASPREE.

The first institute in Victoria to offer a Master of Public Health degree, SPHPM continues that proud tradition to this day, along with a suite of specialist public health courses.

The School is the ideal choice for those wishing to learn from or collaborate with key opinion leaders in the Australian public health sector, and attracts students and researchers from around the globe.

Research Strengths

SPHPM academics have broad expertise in applied clinical and public health research, and many staff have clinical co-appointments with The Alfred. Core strengths in epidemiology, biostatistics and data management support extensive research programs aimed at reducing suffering, preventing illness and improving quality of life.

The School is Australia's largest manager of clinical registries, with around 30 under its auspices. These are a significant source of benchmarking information for clinical care nationally and provide a wealth of data for the School's researchers.

In 2017, Monash SPHPM secured \$38M of funding to support a diverse research program. 2018 saw the first of three publications arising from ASPREE (**ASP**irin in **R**educing **E**vents in the **E**lderly). The data collected during this flagship trial will inform healthcare in the face of an ageing population for years to come.

Evidence-based medicine is a priority in the School and it is increasingly developing its capacity in the use of Patient Reported Outcome Measures tools to complement its quantitative investigations into healthcare. The School also houses Cochrane Australia, whose goal is to make research evidence accessible to all.

Education

SPHPM offers undergraduate degrees in public health and health sciences, and teaches units into courses offered via other Schools within the Monash Faculty of Medicine, Nursing and Health Sciences. The School also runs Honours programs for health science and medical students.

Postgraduate study is offered at Graduate Diploma, Graduate Certificate and Masters level. Alongside the flagship Master of Public Health degree, SPHPM offers specialist postgraduate courses in health services management, clinical research, biostatistics, occupational and environmental health and forensic medicine. It also maintains a cohort of around 180 PhD students.

The School offers a comprehensive professional education program for public health professionals wishing to enhance their skills or knowledge in public health research, aviation medicine, travel medicine, statistics and ethics.

Research Highlights 2017-2018



ASPREE - A Landmark Aspirin Trial

ASPREE (**ASP**irin in **R**educing Events in the **E**lderly) is the largest primary prevention aspirin study undertaken in healthy older people. It investigated whether daily, low-dose aspirin prolonged good health in the elderly and if the benefits outweighed the risks.

The first three papers were released in *New England Journal of Medicine* in September 2018. More than 19,000 healthy Australians aged ≥70 years and Americans aged ≥65 years were recruited over a four-year period and randomised into double-blinded intervention and control groups. Participants underwent regular physical and cognitive function assessments for a median 4.7 years, and >12,000 participants provided blood and/or urine samples for future analysis.

The results showed definitively that low-dose daily aspirin initiated in otherwise healthy people from age 70 onwards, has no benefit in prolonging life free of disability, nor does it substantially reduce the risk of having a first heart attack or stroke. It did however, increase the risk of bleeding, a known side effect of aspirin. The findings were covered by major global news outlets, including New York Times, CNN, Washington Post, BBC, Sky, Fairfax, ABC, News Corp and all Australian TV networks.

Research Strength: *Epidemiology and Public Health*

Research Theme: *Clinical Research*



TRANSFUSE Changes Way Blood is Stored and Used

The TRANSFUSE Trial was an international, multi-centre, randomised, double-blinded trial which investigated whether the age of red blood cells used for transfusion affected outcomes in critically ill adults.

The trial was coordinated by Prof Jamie Cooper, with The Alfred as a participating site.

The primary paper, published in *New England Journal of Medicine*, dispelled the assumption that 'fresh is best' when it comes to blood used in transfusions. It demonstrated that patient outcomes after transfusions using blood stored for up to the standard maximum of 42 days were equal to, if not better than, outcomes when 'fresher' blood stored for shorter periods was used.

The TRANSFUSE trial could result in improvements in the availability of blood by reducing wastage. TRANSFUSE was a finalist in the Australian Clinical Trials Alliance Trial of the Year Award.

Research Strength: *Trauma, Critical Care and Perioperative Medicine*

Research Theme: *Clinical Research*

“ **Monash Public Health & Preventive Medicine attracts students and researchers from around the globe, and is the ideal choice for those wishing to learn from, or collaborate with, key opinion leaders in the Australian public health scene.** ”



Director and Chief Executive

Prof Tom Marwick

Deputy Directors

Basic & Translational

Prof Karlheinz Peter

Clinical and Population Health

Prof Jonathan Shaw

Baker Heart and Diabetes Institute

Programs

Hypertension and Cardiac Disease

Prof David Kaye

Physical Activity

A/Prof Andre La Gerche

Obesity and Diabetes

Prof Peter Meikle

Atherothrombosis

Prof Karlheinz Peter

Diabetic Complications

Prof Jonathan Shaw

Immunometabolism

A/Prof Andrew Murphy

Bioinformatics

A/Prof Mike Inouye,
Dr Annal Calkin and Dr Brian Drew

Domains

Basic

Head: A/Prof Julie McMullen

Cardiac Hypertrophy

A/Prof Julie McMullen

**Lipid Metabolism and
Cardiometabolic Disease**

Dr Anna Calkin

Molecular Metabolism and Ageing

Dr Brian Drew

Experimental Cardiology

A/Prof Xiao-Jun Du

System Genomics

A/Prof Mike Inouye

Haematopoiesis and Leukocyte Biology

A/Prof Andrew Murphy

Heart Failure Pharmacology

Prof Rebecca Ritchie

Oxidative Stress

A/Prof Judy de Haan

Cardiac Cellular Systems

Dr Alex Pinto

Translational

Head: Prof Bronwyn Kingwell

Heart Failure Research

Prof David Kaye

Vascular Biology and Atherothrombosis

Prof Alex Bobik

Human Neurotransmitters

Prof Murray Esler

Human Autonomic Neurophysiology

Prof Vaughan Macefield

Neuropharmacology

Prof Geoff Head

Metabolic and Vascular Physiology

Prof Bronwyn Kingwell

Metabolomics

Prof Peter Meikle

Atherothrombosis and Vascular Biology

Prof Karlheinz Peter

Lipoproteins and Atherosclerosis

Prof Dmitri Sviridov

Clinical

Head: A/Prof Andre La Gerche

Imaging Research

Prof Tom Marwick

Sports Cardiology

A/Prof Andre La Gerche

Clinical Electrophysiology

Prof Peter Kistler

Healthy Hearts

Acting Head: Prof Tom Marwick

Medical Services

A/Prof Neale Cohen

Allied Health Services

Sonia Middleton

Population Health

Head: Prof Jonathan Shaw

Clinical Diabetes

Prof Jonathan Shaw

Pre-clinical Disease and Prevention

A/Prof Melinda Carrington

Physical Activity

Prof David Dunstan

Diabetes and Population Health

Prof Dianna Magliano

Behavioural Epidemiology

Prof Neville Owen

Systems Epidemiology

Prof Mika Ala-Korpela

Aboriginal Health

Head: Dr Lloyd Einsiedel

Infection and Chronic Disease

Dr Lloyd Einsiedel

Aboriginal Health

Dr Lloyd Einsiedel

Baker Heart and Diabetes Institute



Director and Chief Executive
Prof Tom Marwick

www.baker.edu.au

Baker Heart and Diabetes Institute is an independent medical research institute that has been pioneering advances in cardiovascular and diabetes research for more than 92 years.

With a strong strategic focus on collaboration and translation, the Institute works with investors, industry and government to drive better health. It is one of the few institutes in the world engaged in the full spectrum of basic, clinical and public health research aimed at tackling cardiometabolic disease.

The Baker Institute's scientific laboratories and specialist clinics at the Alfred precinct are complemented by a research facility in Alice Springs, part of a national program dedicated to addressing the significant health disadvantage in Aboriginal communities.

Cardiometabolic disease is characterised by common symptoms and disease manifestations, but is caused by a variety of disease mechanisms. Targeting these mechanisms will be key to developing more effective treatments. The Baker Institute has a 'multi-omics' focus and is actively embracing technological advances in areas such as computational biology, lipidomics and bioinformatics to more precisely diagnose disease and target prevention and treatment. This is supported by a planned investment of \$75M over the next five years in developing personalised medicine.

Independent, flexible and agile, the Baker Institute is committed to research excellence, to building partnerships, to recruiting world-class research leaders, to investing in technology platforms and to translation of its work through commercialisation.

Research Strengths

The organisation is structured around five research domains: Basic, Translational, Clinical, Population Health and Aboriginal Health.

Its research programs in key areas of strategic importance and research strength facilitate collaboration across these domains.

Programs

Physical Activity: Explores the impact of exercise on cardiovascular disease management from prevention to treatment.

Diabetic Complications: Aims to identify novel predictors of a broad range of advanced complications of diabetes.

Obesity and Diabetes: Investigates strategies to find, understand and combat the metabolic underpinnings of chronic disease.

Atherothrombosis: Examines how to identify and treat plaques, which are blockages in the vascular system that can lead to heart attack and stroke.

Hypertension and Cardiac Disease: Investigates how to reverse chronic heart disease and prevent structural damage to the heart from hypertension, heart disease and associated rhythm disturbances.

Immunometabolism: Aims to better understand the link between inflammatory processes and metabolic disease.

Bioinformatics: Analyses complex data sets in areas including disease and population genomics, epigenomics, transcriptomics, proteomics, metabolomics, microbiome and integrative omics; capabilities also include statistics analysis, machine learning, biomolecular network analysis, data visualisation, computational algorithm design and bioinformatics software design.

Research Highlights

2017-2018

2017-2018 Highlights

In January, the Baker Institute sold its clinical trial facility, Nucleus Network to leading Australian private equity firm, Crescent Capital Partners. This enables the Institute to redirect investment to its core research activities. Nucleus Network, originally an initiative of Alfred Research Alliance partners, continues to work closely with Alliance members.

More than \$2.4M in NHMRC funding was secured for fellowships commencing in 2019, including 5-year Research Fellowships for Professors Bronwyn Kingwell and Mika Ala-Korpela, a 4-year Career Development Fellowship (funded by the MRFF Next Generation Clinical Researcher Program) for A/Prof Andre La Gerche, and a 4-year Early Career Fellowship for Dr James McFadyen.

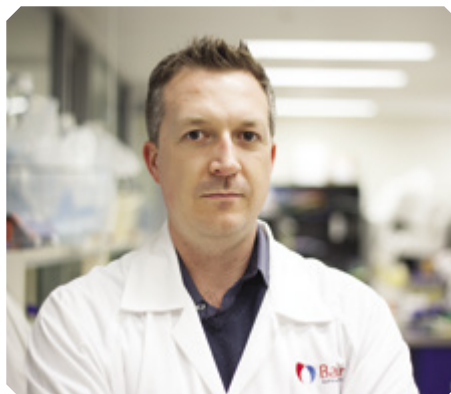
The Institute this year announced its Cambridge Baker Strategic Partnership for Systems Genomics. A partnership with La Trobe University was established to study the progression of complications of type 2 diabetes. Jointly-badged degrees with Torrens University were also introduced. Exciting collaborations with Israeli researchers are continuing, including the signing of a Memorandum of Understanding with Hadassah Medical Center in Jerusalem, to accelerate research and translate it into better health outcomes.



Targeting Platelet Production to Prevent Heart Disease in People with Diabetes

A team of Australian and US researchers led by A/Prof Andrew Murphy from the Baker Institute and Dr Prabhakara Nagareddy from the University of Alabama uncovered a novel mechanism behind excessive platelet production present in people with diabetes, placing them at increased risk of cardiovascular complications.

A/Prof Murphy says platelets play an integral role in cardiovascular disease, not only in the formation of the blood clots responsible for heart attacks and stroke, but in the progressive development of the disease. Patients with diabetes have increased numbers and reactivity of platelets, which contribute to their increased risk of cardiovascular complications.



Current anti-platelet therapies prescribed to patients at high risk of cardiovascular disease, such as aspirin, have been shown to be less effective in patients with diabetes.

This research, which could lead to a novel anti-platelet therapy for the treatment of cardiovascular disease, was published in May 2017 in *The Journal of Clinical Investigation*.

Research Strength: Diabetes & Obesity, Cardiovascular Disease

Research Theme: Biomedical Discovery



Infrared light to detect high-risk atherosclerotic plaques

The quest to develop a method to reliably identify high-risk plaques is seen by many as the 'holy grail' of contemporary cardiovascular medicine. Whilst current imaging technology such as coronary angiogram can identify obstructive plaques, it doesn't specifically identify the unstable and vulnerable plaques that may lead to plaque rupture and consequently, to heart attacks and stroke.

Researchers from Prof Karlheinz Peter's group demonstrated how near-infrared fluorescence light could be used to reliably identify high-risk atherosclerotic plaques that typically lead to cardiovascular events.

Through preclinical studies, the team at the Baker Institute, in collaboration with scientists at Monash University and the Victor Chang Cardiac Research Institute, developed a model based on the identification of intraplaque haemorrhage as a sign of plaque instability, thereby identifying the plaques at high-risk. This work focused on the carotid and coronary arteries, where the consequences of unstable plaques are most deadly, either by causing strokes or heart attacks, respectively.

The novel findings were outlined in *Nature Communications* in July 2017.

With funding permitting, the next step is to test this approach in large randomised and controlled clinical studies and ultimately, to use laser near-infrared light via an intracoronary catheter.

Research Strength: Cardiovascular Disease

Research Theme: Applied Research



Head of the Baker Institute's Lipid Metabolism and Cardiometabolic Disease laboratory, Dr Anna Calkin, also heads the Institute's Gender Equity and Diversity Committee.

Burnet Institute

PROGRAMS

Maternal & Child Health

Dr Elissa Kennedy and
Prof Caroline Homer AO

Disease Elimination

Prof Heidi Drummer

Behaviours & Health Risks

Prof Paul Dietze

Health Security

Dr Ben Coghlan

Healthy Ageing

Dr Anna Hearps

WORKING GROUPS

Blood-Borne Viruses in Global Health Group

Chad Hughes

Crowe Group - International Clinical

Research

Prof Suzanne Crowe AM

Global Health Diagnostics Development

A/Prof David Anderson and

Ms Mary Garcia

Gugasyan Group - Diagnostic Markers in Chronic Immune Disorders

Dr Raffi Gugasyan

Hogarth Group - Inflammation, Cancer and Infection

Prof Mark Hogarth

Infection, Inflammation and Innate Immunity

Dr Anna Hearps

International field research - to improve the health of Asia-Pacific Communities

Dr Chris Morgan

Maternal, Newborn, Child Health and Nutrition

Co-heads: Lisa Davidson and

Dr Chris Morgan.

Special Adviser on Nutrition: Prof Mike Toole

Palmer Group - Immunometabolism in HIV and Inflammatory Diseases

Dr Clovis Palmer

Beeson Group - Malaria Immunity and Vaccines

Prof James Beeson

Gilson/Crabb Group - Malaria Virulence and Drug Discovery

Dr Paul Gilson,

Prof Brendan Crabb AC

Global Adolescent Health

Dr Peter Azzopardi and

Dr Elissa Kennedy

Healthy Mothers, Healthy Babies (PNG)

Head: Prof James Beeson,

Principal Research Investigator:

Dr Chris Morgan

Malaria and Infectious Diseases Epidemiology

A/Prof Freya Fowkes

Modelling and Biostatistics

Prof David Wilson

Robinson Group - Vector-Borne Diseases and Tropical Public Health

Dr Leanne Robinson

Tachedjian Group - Retroviral Biology and Antivirals

Prof Gilda Tachedjian

Alcohol and Other Drugs

Prof Paul Dietze and

Dr Peter Higgs

Drummer/Poumbourios Group - Viral Entry and Vaccines

Prof Heidi Drummer and

Dr Andy Poumbourios

Field research in Australia - High Quality, Policy-Relevant and Innovative Research

Prof Mark Stoové

HIV Prevention

Prof Mark Stoové

Richards Group - Malaria and Tropical Diseases

Dr Jack Richards

Tannock Group - Influenza

Prof Greg Tannock

Tuberculosis Elimination and Implementation Science

Dr Suman Majumdar and

Prof Steve Graham

Viral Hepatitis Elimination

Prof Margaret Hellard and

Dr Joseph Doyle

Wright Group - Strategies for HIV Prevention, Management of Acute & Chronic HIV Infection

Dr Edwina Wright

Justice Health

Prof Mark Stoové

Surveillance and Evaluation

Manager: Carol El-Hayek

Young People's Health

Dr Megan Lim

Burnet Institute



Director and Chief Executive Officer
Prof Brendan Crabb AC

www.burnet.edu.au

Burnet Institute is an Australian, unaligned, independent, not-for-profit organisation that believes in equity through better health.

The Institute's mission is to achieve better health for vulnerable communities in Australia and internationally by accelerating the translation of research, discovery and evidence into sustainable health solutions.

Burnet brings together a highly diverse skill base to help solve devastating health problems, linking medical research with public health action through international and local field activities, its laboratories, and mixed development and research cultures. The Institute is a program-led organisation, placing interdisciplinary health programs at the heart of daily decision-making.

Burnet has offices or representatives in Australia, Myanmar, Papua New Guinea, China, Zimbabwe and Lao PDR, and also contributes to activities in other Asian, Pacific and African countries.

Research Strengths

Central to maximising its breadth of expertise, the Institute has restructured to form a 'new Burnet', built around key programs:

- Maternal and Child Health
- Disease Elimination (HIV, malaria, hepatitis viruses and tuberculosis)
- Behaviours and Health Risk
- Healthy Ageing
- Health and Security

Activities are led by working groups which bring a broad perspective to each area and strengthen the Institute's translational and commercialisation capacity, especially in the areas of rapid diagnostics, vaccines, and new drug discovery.

Burnet's Global Health Diagnostics Laboratory, which focuses on developing prototype rapid, point-of-care diagnostic tests for infectious diseases and other priority global health conditions, works with

spin-off Nanjing BioPoint Diagnostic Technology Co. Ltd in China to develop and commercialise those products. Using Optima Decision Science modeling we are able to help countries around the world optimise investment and assist with strategic and operational planning for the most effective interventions to address public health challenges.

Burnet 2020

The past year has been an exciting time with the implementation of Burnet 2020, the Institute's new and ambitious strategic plan. The result of an in-depth review in 2016, and extensive discussions with internal and external stakeholders, this has radically transformed the thinking and work processes within the Institute.

While Burnet's key focus remains the same, the Institute now brings laboratory researchers, public health professionals and international development staff together in a more collaborative and enabling framework to improve effectiveness.

The new structure takes full advantage of all expertise to address major global health issues and, together with the new strategic plan, has been well received across the Institute and among our many donors, partners and collaborators.

In 2017, Burnet Institute received more than \$7M from the Department of Foreign Affairs and Trade and NHMRC for research into malaria, sepsis, hepatitis, and the impact of new media on young people's health. These went to Dr Leanne Robinson and collaborating partners in PNG, A/Prof David Anderson, Dr Jack Richards, Dr Megan Lim, A/Prof Freya Fowkes and Dr Jack Wallace. The Institute also received a \$11.33M grant from the Paul Ramsey Foundation to support the elimination of Hepatitis C in Australia.

Research Highlights 2017-2018



Point-of-care CD4 test for HIV patients released

The Burnet-developed VISITECT®CD4 point-of-care test was released commercially in late 2017, achieving the CE Mark accreditation following successful performance evaluations in India and in the UK, and conformity with health, safety and environmental protection standards.

This was a major achievement for all those who have worked to develop the test kit over the past 10 years, especially A/Prof David Anderson, Prof Suzanne Crowe AM and Mary Garcia.

The CD4 test is the world's first instrument-free and affordable rapid test for determining CD4 threshold in people living with HIV, and will enable those patients in resource-poor settings to access testing more easily without the need for investment in equipment or highly technical scientific staff to operate.

Research Strength: *Epidemiology and Public Health*

Research Theme: *Applied Research*



Healthy Mothers, Healthy Babies reaches milestone

Healthy Mothers, Healthy Babies, one of the Institute's flagship programs, achieved a significant milestone with the recruitment of 700 women into the first of five studies.

Preliminary data is revealing a number of significant health issues such as high levels of anaemia and infectious disease burdens, major challenges for pregnancy and newborn health outcomes. This will allow researchers to identify key interventions to support better outcomes for mothers and their babies.

Research Strength: *Epidemiology and Public Health*

Research Theme: *Public Health /Health Services*



Exciting progress in elimination of Hepatitis C, HIV, TB and Malaria

Burnet's disease elimination program is progressing well on a number of fronts. The Institute's work to eliminate hepatitis C, led by Prof Margaret Hellard, is working with 'at risk' communities to prevent infection and support access to treatment with recently available direct-acting antiviral drugs, with a cure rate of greater than 95 per cent. This project is part-funded by a \$7M NHMRC program grant and an \$11.33M grant from Paul Ramsay Foundation, and is complemented by Burnet's strong hepatitis C vaccine program led by Prof Heidi Drummer.

A continued focus on HIV research and public health has seen Burnet modelling demonstrating that better prevention, testing and treatment programs could avert more than 2000 transmissions of HIV in Australia over the next three years. This data supported a successful bid to have pre-exposure prophylaxis (PrEP) drugs listed on the Pharmaceutical Benefits Scheme, which will be a major tool in HIV elimination in Australia.

Burnet clinicians and public health staff in Daru, Papua New Guinea, have made tremendous efforts to manage the outbreak of multi-drug resistant tuberculosis. Daru has one of the highest rates of infection in the world, and this program is helping to reduce transmission by identifying active cases, linking patients to effective treatment and scaling up treatment for cases of latent TB infection.

Burnet researchers and Axxin Pty Ltd are developing a new point-of-care test to diagnose the genetic G6PD enzyme deficiency, which can cause devastating red blood cell destruction, anaemia and death in patients being treated with Primaquine, the only medication currently available to treat the parasites which cause Plasmodium vivax malaria. The team hopes to have a working prototype by the end of 2018 to take to market soon after.

Research Strength: *Infection and Immunity*

Research Theme: *Applied Research, Public Health/Health Services*







Nursing

A/Prof William McGuinness

Physiotherapy

Prof Anne Holland

Occupational Therapy

A/Prof Natasha Lannin



Director
A/Prof Bill McGuinness

La Trobe University (Alfred Health Clinical School)

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

The broad objectives of the Clinical School are to:

- Provide national and international research leadership in allied health and nursing
- Conduct clinical research that makes a difference to patient outcomes
- Promote interdisciplinary and inter-institutional collaboration in healthcare delivery and research
- Provide a centre of excellence for undergraduate and postgraduate education in nursing and allied health
- Lead the translation of best evidence into clinical practice.

Research Strengths

Research programs include:

Rehabilitation for Chronic Lung Disease:

Prof Anne Holland leads a research program that aims to optimise health and wellbeing for people with cardiorespiratory disease, including new models for pulmonary rehabilitation.

Neurological Rehabilitation:

A/Prof Natasha Lannin's research program is focused on neurological rehabilitation as a means to improve quality of life.

Time Critical Interventions:

A/Prof Bill McGuinness leads a research program that aims to optimise the delivery of time critical interventions in acute care, including new methods for preventing and treating pressure injuries and for facilitating wound healing.



**Clinical Chair, Physiotherapy,
La Trobe University and
Alfred Health**
Prof Anne Holland

www.latrobe.edu.au/she/business-and-industry/academic-and-research-network/alfred-health

La Trobe Nursing and Allied Health undergraduates undertake placements at The Alfred, with nursing students attending the Clinical School for part of year two and all of year three of a Bachelor of Nursing degree.

Under the leadership of professorial staff in physiotherapy (Prof Anne Holland), occupational therapy (A/Prof Natasha Lannin) and nursing (A/Prof Bill McGuinness), the Clinical School provides allied health and nursing clinicians with postgraduate research opportunities and supervision on-site at Alfred Health. This includes access to laboratory space for patient testing, postgraduate student space and access to university resources.



Research Highlights 2017-2018



A/Prof Natasha Lannin leads research that aims to close the gaps between scientific knowledge and clinical practice in stroke care.

Knowledge Translation Research – Improving outcomes following stroke

A/Prof Natasha Lannin leads a program of research for La Trobe University embedded within Alfred Health, focused on closing the gaps between the guidelines and clinical practice in the area of stroke clinical care.

Natasha is the current Chair (Management Committee) and Chief Investigator of the Australian Stroke Clinical Registry (AuSCR), which currently supports 68 hospitals across Australia to improve clinical care and adhere to the NHMRC stroke guidelines using live auditing and data collection. As such, she led a key piece of research nationally investigating the acute treatment and outcomes of working aged adults with stroke.

Identifying that younger stroke patients exhibited distinct differences from their older counterparts with respect to clinical characteristics, prescription of antihypertensive medications and residual health status, findings are currently being used to drive forward new stroke services for younger Australians.

Research Strength: Cardiovascular, Nursing and Allied Health

Research Theme: Health Services Research

Pulmonary rehabilitation to improve outcomes in pulmonary fibrosis

Pulmonary fibrosis is a rare condition with few treatment options. A study led by Dr Leona Dowman and Prof Anne Holland showed that pulmonary rehabilitation, a program of supervised exercise training and education, markedly reduced breathlessness and improved exercise capacity in people with pulmonary fibrosis.

This study, undertaken at three sites in Melbourne, is the largest trial of pulmonary rehabilitation ever to be conducted in this group. Benefits were evident across different disease subgroups and across the spectrum of disease severity, but participants who had less impaired cardiorespiratory function achieved longer lasting benefits.

This provides a strong rationale for clinicians to refer patients to pulmonary rehabilitation as early as possible. The results of this trial underpin the recommendation in recent clinical guidelines for all patients with pulmonary fibrosis to undertake a pulmonary rehabilitation program.

Research Strength: Nursing and Allied Health & Epidemiology and Public Health

Research Theme: Health Services Research

“

La Trobe University's Alfred Health Clinical School provides national and international research leadership in allied health and nursing.

”





Foundation Chair in Nursing
(Alfred Health)
Prof Tracey Bucknall
www.deakin.edu.au

Deakin School of Nursing & Midwifery

Centre for Quality and Patient Safety Research – Alfred Health Partnership

Staff at the Deakin Centre for Quality and Patient Safety Research - Alfred Health Partnership conduct high quality research that makes a substantive contribution to scientific knowledge, clinical nursing practice and the quality of patient care.

It is led by Prof Tracey Bucknall, who was appointed Foundation Chair in Nursing at Alfred Health in 2013, expanding the long-established research and education partnership between Deakin and The Alfred.

Strategic objectives include:

- conducting high quality research that improves patient and organisational outcomes
- strengthening research training and support for nursing staff within Alfred Health
- facilitating the integration of research evidence into clinical practice
- developing partnerships between consumers, staff and researchers to strengthen research, education and health service delivery.

In addition to research training degrees, Deakin University has undergraduate and postgraduate coursework students completing clinical placements in their nursing, allied health and health science degrees across numerous departments at Alfred Health.

Research Strengths

Research programs include:

Patient Safety: This program focuses on high risk areas for the health service, including recognition and management of deterioration in hospitalised patients, pressure injury prevention, medication management and clinical communication. The research program makes a substantive contribution to evaluating Alfred Health services, and testing interventions to improve the quality of care and patient safety.

Knowledge Translation: This research uses an integrated knowledge translation approach to ensure that clinicians use the best available evidence in their practice to promote a safe and

quality system. In understanding problem areas of the service, researchers, administrators and clinicians work together to implement new evidence and de-implement out-of-date practices.

Research programs are linked closely with the National Safety and Quality Health Service Standards. Centre staff include research fellows and assistants, research students, and interdisciplinary research associates. Active international and national research collaborations are a strength of the program.

Highlights

Annual highlights include a collaboration between Deakin University and fellow Alfred Research Alliance member, Baker Heart and Diabetes Institute, to offer inaugural joint PhD scholarships. These will advance research in nursing, medicine, exercise and nutrition science, and health economic evaluations related to heart and diabetes management.

Funding applications, via international collaborations from National Institute of Health Research UK, The Danish Nurses Organisation, Denmark and the Australian Research Council, were successful, and our researchers and health professionals achieved a record number of publications in the highest quality international health journals, bringing invitations to present at international conferences.

Dr Phil Russo was also awarded an Alfred Deakin Postdoctoral Fellowship this year, to study efficient methods of identifying and tackling healthcare associated infections (HAIs) that follow certain types of surgeries, to inform the planning of national HAI surveillance and data reporting.

Research Highlights 2017-2018



Prioritising Responses of Nurses To deteriorating patient Observations (PRONTO)

Vital signs are the most common assessment technique employed in healthcare but if physiological signs of deterioration are missed, misinterpreted or mismanaged, the results can be serious, and even fatal.

Frequent and accurate measurement of vital signs by nurses is critical to detect problems early, escalate appropriately to clinical staff, and prevent serious adverse events. However, Deakin research shows activation response ranging from 3-53%, despite the release of national guidelines and the prioritisation of the National Quality and Safety Health Service Standard: Recognition and response to clinical deterioration in acute healthcare.

To address the problem, Prof Tracey Bucknall leads an international partnership between researchers, clinicians, clinical leaders and policy makers in a clinical trial which will measure the effectiveness and cost of an intervention to improve nurses' recognition and response to abnormal vital signs.

This trial is funded by an NHMRC Partnership Grant and, if successful, will improve patient safety, patient outcomes and health service delivery, as well as inform knowledge translation strategies that may be used for other healthcare standards.

Research Strength: Nursing and Allied Health

Research Theme: Public Health/Health Services Research



Untangling the Complexities of Communication Processes for Managing Medications in Older People Across Transition Points of Care

Older people are at high risk of experiencing medication errors when they move from one location to the next in the health system.

Breakdowns in communication cause 80% of medication errors that lead to serious harm.

Funded by an Australian Research Council Discovery Grant, this study examines communication processes between older people, family members and health professionals, about the management of patient medications across transition points of care and will identify strategies to improve that communication.

The project will be undertaken at The Alfred and Caulfield hospitals and is expected to produce recommendations on how to communicate more effectively, so that better strategies and guidelines can be developed for national and international patient safety and consumer organisations.

Research Strength: Nursing and Allied Health

Research Theme: Public Health/Health Services Research



Prof Janet Weir Phyland, Nursing Services Executive Director, Alfred Health, Prof Elizabeth Manias, Associate Head of School (Research) Deakin University and Prof Tracey Bucknall, Director of Nursing Research, Deakin University.

Contract Research Organisations



Chief Executive Officer
Cameron Johnson

www.nucleusnetwork.com.au

Nucleus Network

Nucleus Network is an internationally-renowned Australian provider for large-scale, Phase I healthy volunteer and first-in-human clinical trials.

They assist global biotechnology and pharmaceutical companies in developing new medicines and determining drug safety.

Over 90% of Nucleus' clients are based in the US, as well as servicing clients throughout North America, Europe, and Asia (including China, Taiwan and Japan). Expanding service offerings to China and South Korea are on the company agenda. Repeat clients currently drive over 80% of Nucleus' revenue due to their clinical expertise and excellence in service.

50- 60 Phase I Clinical Trials are conducted annually within a dedicated 80-bed patient facility,

Nucleus Network

Australia's largest Phase I Clinical Trials Facility



~60

Phase 1 Clinical
Trials Annually



80

Bed Capacity



250+

Employees

and approximately 50% of all trials run are true First-in-Human. In 2017 site capabilities expanded to include an in-house pharmacy in addition to an established and specialised laboratory.

Renowned for its clinical excellence and co-location with the Alfred Research Alliance, Nucleus actively collaborates with hospital-based investigators, researchers, and educators.

Connecting with both Australian and international biotechnology and medical research sectors, Nucleus helps raise the bar for the profile of early phase medical research within Australia and links a diverse range of professionals across the Clinical Trial industry worldwide.



Chief Executive Officer
Alistair Draffan

www.360biolabs.com

360biolabs

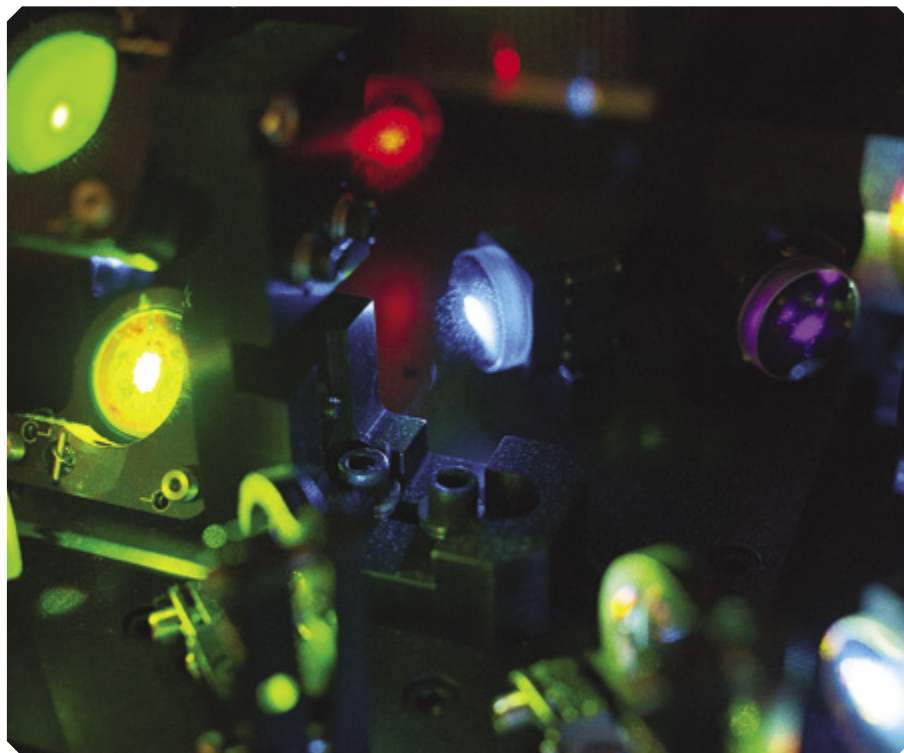
360biolabs is a contract service organisation providing speciality expertise and laboratory services in the development of new therapeutics, vaccines and diagnostics in a quality-assured environment based within laboratories at the Burnet Institute.

The company has particular expertise in virology, immunology and analytical chemistry, with broad assay capabilities. These capabilities include assays and biomarker endpoints for clinical trials and preclinical studies in a range of therapeutic areas including infectious diseases, inflammation and oncology. Clients range from small biotechs to large multinational pharmaceutical companies.

360biolabs is an accredited facility with systems that comply with strict regulatory and industry standards, offering:

- ISO / IEC 17025 and ISO / IEC 15189 accreditation in accordance with the requirements of the OECD Principles of GLP
- ICH / FDA / EMA compliant assay validation process
- Industry standard studies and reports to support global regulatory submissions
- World-class facilities including BSL-2 and BSL-3 laboratories secured with continuity fail-safes.

Platform Technologies



Alfred Research Alliance Flow Cytometry Core Facility

The Alfred Research Alliance (formerly AMREP) Flow Cytometry Core Facility (AMREPFlow) is a state-of-the-art, cell sorting and cell analysis laboratory, catering for the research community at the Alfred precinct and broader Melbourne. The facility has capacity for animal and human cell sorting in a PC2 environment and for infectious sample sorting in a dedicated PC3 environment.

The facility is equipped with four high-throughput cell sorting platforms, nine cell analysis platforms and an imaging flow cytometer that is unique to Melbourne. Offering comprehensive training in platform use and experimental design, effective data generation and interpretation is a focus of the facility staff.

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Visit

amrepflow.org.au

Collaborative Partners

Monash University
Burnet Institute
Baker Heart and Diabetes Institute
Alfred Health

Monash Micro Imaging at Alfred precinct (MMI@AMREP)

MMI@AMREP manages core imaging resources within the Baker Heart and Diabetes Institute, Monash Central Clinical School and the Burnet Institute. Resources include three confocal and several conventional fluorescence microscopes within PC2 laboratories and a dedicated deconvolution microscope within a PC3 laboratory. Super resolution technologies are also available that enable imaging beyond the capability of conventional microscopes.

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platforms.monash.edu/mmi

Collaborative Partners

Monash University
Burnet Institute
Baker Heart and Diabetes Institute

Monash Histology at Alfred precinct

A node of the Monash histology platform is located at the Alfred precinct for Alfred Research Alliance and external researchers to access on a fee-for-service basis. The facility offers both a professional histology service as well as access to equipment for do-it-yourself histology. Equipment includes a dissection and cassetting area, tissue processor, paraffin embedding units, microtomes, H&E staining and a cryostat for frozen sectioning.

Visit

platforms.monash.edu/histology

Genomics Capability

The Australian Cancer Research Foundation Blood Cancer Therapeutics Centre includes state-of-the-art sequencing facilities, including: Illumina NextSeq 500 and MiniSeq Next Generation Sequencer; Bio-Rad QX200 ddPCR system with AutoDG and ddSeq (single cell) capability; Covaris M220; MultiNA Fragment Analysis (Shimadzu); EpMotion liquid handler; microarray analysis using the Affymetrix GeneChip System 3000Dx v.2; and Intellicyt iQue high content screener. Access to the equipment is through collaboration and/or cost recovery.

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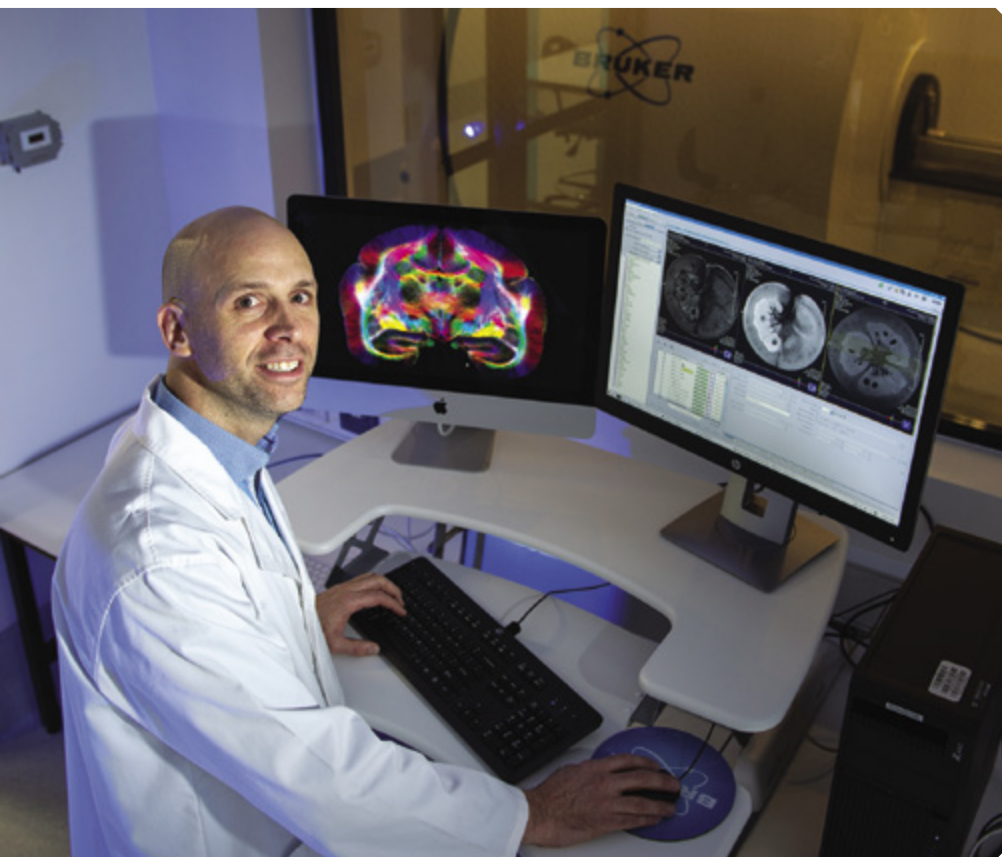
Collaborative Partners

Monash University
Alfred Health

The Monash Central Clinical School provides next-generation sequencing expertise and training on a collaborative basis, including experimental design, sample preparation (transcriptome, whole genome and epigenome profiling), single-cell transcriptome (Drop Seq) sample preparation, sequencing and basic bioinformatics. Equipment includes a DolomiteBio platform (Drop-Seq) and Illumina MiSeq and Oxford Nanopore MinION sequencing systems.

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Mouse Cardiology Platform

The Experimental Cardiology Laboratory at the Baker Institute has established facilities and techniques specialising in mouse microsurgery and cardiac physiology, enabling scientists to conduct mouse echocardiography (non-invasive), micromanometry (invasive hemodynamic assessment) and microsurgery to induce heart disease. The platform allows scientists to closely determine cardiac function of specific genes in basal and diseased conditions and to trial new therapies of cardiovascular and metabolic disease.

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Mouse Metabolic Phenotyping /Bioenergetics Facility

The Baker Institute's Mouse Metabolic Phenotyping Facility enables high-quality metabolic and physiologic phenotyping of rodents to study animal models of obesity, diabetes, cardiovascular disease and other metabolic diseases. The Bioenergetics Facility equipment allows the measurement of mitochondrial and glycolytic functionality, the two main energy pathways of the cell. Collaborative projects are welcome with access to equipment provided to external researchers for a fee.

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Metabolomics Platform

The Baker Institute's Metabolomics Laboratory uses state-of-the-art tandem mass spectrometry to obtain metabolic profiles (primarily lipids and fats) from cell and animal models, in addition to clinically relevant human samples. The platform has developed a targeted lipidomics approach that enables quantification of more than 600 lipid species across 25 lipid classes and subclasses. The analysis is performed by liquid chromatography tandem mass spectrometry.

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Preclinical Imaging Facility

A new state-of-the-art, purpose-built preclinical imaging facility has opened in 2018 for use by researchers at the Alfred precinct. The facility includes a new 9.4T MRI scanner capable of a range of imaging, including brain, abdominal, cardiovascular, muscular and articular. The facility will also house a NanoPET-CT, capable of high-resolution, high-efficiency PET and X-Ray CT scanning, and FLECT, capable of 3D fluorescence imaging. Future plans include the addition of a magnetic particle imaging (MPI) scanner. The new facility is in addition to existing IVIS Lumina XR Series III equipment, which can be used for multi-modal fluorescent, bioluminescent and X-ray imaging in vivo.

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Collaborative Partners

Monash University
Baker Heart and Diabetes Institute

Baker Clinical Research Domain

The Clinical Research Domain focuses on imaging and other diagnostic tools to better understand disease development and treatment, clinical trials and health services research. The Domain incorporates the Baker Institute's clinical services, including specialised heart, diabetes, lung, eye and weight reduction clinics, as well as a range of allied health and health education services. Equipment includes state-of-the-art MRI, transthoracic and stress echocardiography and body composition (DEXA) scanning.

The MRI scanner is capable of detailed morphologic and functional cardiac imaging, including the ability to acquire real-time data during exercise. Research and investigational services include ECG, Holter and ambulatory BP monitoring, ankle:brachial indices and cardiopulmonary exercise testing, as well as the Alfred Centre clinical research facilities comprising a clinical and research gymnasium and dedicated clinical research rooms.

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Global Health Diagnostics Laboratory

The diagnostic development team in Burnet's Global Health Diagnostics Laboratory focuses on the development of prototype rapid, point-of-care tests for infectious diseases and other priority global health conditions. The team's innovations have enabled the development of products for diagnosis of infections (hepatitis E, active syphilis), measurement of CD4 T-cells, and plasma separation for HIV viral load, which have been successfully out-licensed for manufacture, as well as for liver disease (ALT1) in partnership with Burnet's spin-off company, Nanjing BioPoint Diagnostics. The team is currently working with Alfred Health to develop a point-of-care test to detect signs of severe infection that contribute to sepsis.

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OPTIMA

Optima is a sophisticated tool to help decision-makers choose the best public health investments in areas such as tuberculosis, HIV, nutrition and maternal and child health. Developed by the Optima Consortium for Decision Science, in partnership with the World Bank, the Optima software is open-access and available via a web-based interface. It consists of a mathematical model of disease transmission and progression integrated with an economic analysis framework and a formal mathematical optimisation routine.

The Optima structure is highly flexible and can accommodate public health programs and sub-populations that are country specific. The tools have been used by more than 40 countries across Eastern Europe, Asia, South America and Africa to guide resource allocation towards the most cost-effective mix of programs and to assist with national strategic and operational planning.

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Antiviral Testing Facility

The Burnet Antiviral Testing Facility has the capacity to evaluate chemical agents for inhibitory activity against HIV and herpes simplex (HSV) type 1 and 2 viruses in cell culture assays. This enables the development of new molecules that may lead to better treatments and/or prophylactics for these chronic infections. All work undertaken by the facility uses principles outlined in the FDA guidelines for Antiviral Product Development.

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Bioinformatics and Biostatistics

Biostatistics Consulting Platform

The Biostatistics Consulting Platform (BCP), located within Monash Public Health and Preventive Medicine (SPHPM), provides high-quality biostatistical support to Alfred precinct-based Monash researchers and researchers at Alfred Health. BCP biostatisticians can provide consulting and collaborative assistance with:

- Design of experiments, clinical trials and other studies, including sample size calculations and the development of proposals and protocols
- Statistical analysis, statistical analysis plans and reporting of results
- Biostatistical appraisal of protocols and manuscripts
- Research into new or specialised biostatistical methods
- Statistical software advice and guidance.

BCP biostatisticians have experience with a wide range of statistical methods and specialist software.

Visit

monash.edu/medicine/sphpm/epidemiology/about/units-centres/biostats-consulting

Collaborative Partners

Monash University
Alfred Health

Monash Bioinformatics Platform at the Alfred Research Alliance

Monash Central Clinical School (CCS) appointed Dr Nick Wong in 2017 to liaise between CCS, Alfred Health and the main [Monash Bioinformatics Platform](#) team located at Clayton. Dr Wong's expertise spans genomics and bioinformatics. He can offer advice, consultancy and training around genomic analysis with next-generation sequencing (NGS) and nucleic acid (RNA / DNA) platforms to Monash and Alfred Research Alliance members.

Dr Wong's role is to facilitate access to computing infrastructure for data analysis; bring together existing bioinformatics expertise at the Alfred precinct and the main Clayton Campus; and coordinate specialty seminars and training workshops. The ideal interaction with the Monash Bioinformatics Platform is collaborative, with the view to acquire future funding to build bioinformatics capability at the Alfred precinct.

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monash.edu/researchinfrastructure/bioinformatics/

Collaborative Partners

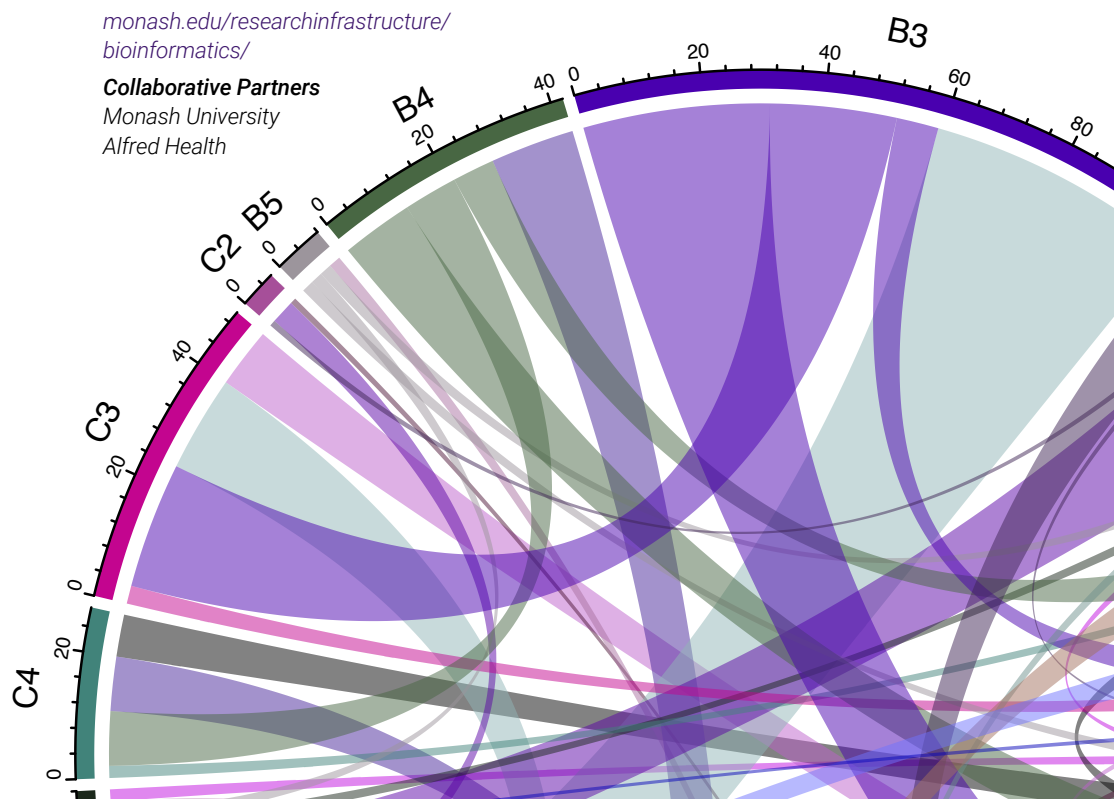
Monash University
Alfred Health

Bioinformatics Program – Baker Institute

The Bioinformatics Program at the Baker Institute aims to build bioinformatics capacity through collaboration (internal and external), support and training. Capabilities include the analysis of data from diverse technologies, including genomics, epigenomics, transcriptomics, proteomics, metabolomics and metagenomics / microbiota, and the cross-omic integration thereof. A diverse set of analytical techniques is employed, including statistical analysis, machine learning, network analysis and high-dimensional data visualisation, as well as the design of computational algorithms. This enables the identification of genetic variants, genes and other biomolecular / organismal entities that differ between conditions, as well as the use of these differences to make disease predictions, infer pathogenesis and identify targets for intervention.

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Clinical Registries and Biobanks

Monash Clinical Registries

The Alfred Research Alliance at the Alfred precinct is home to the largest concentration of clinical registries in Australia, with around 30 registries maintained by Monash Public Health and Preventive Medicine. The registries benchmark outcomes of clinical procedures, report on the quality of care, and monitor the safety of new drugs, devices and surgical procedures. The registries include state and national registries and also provide data to international registries. The registries provide the School with important health research data.

Medical conditions, devices and clinical procedures captured in the registries include:

- Transfusions
- Cardiac and thoracic surgery
- Bariatric surgery
- Rheumatology
- Trauma
- Spine and orthopaedic trauma
- Burns
- Cardiovascular conditions
- Blood disorders
- Kidney diseases
- Various cancers, including lung, gastrointestinal, prostate, lymphoma, myeloma
- Cystic fibrosis
- Breast devices.

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monash.edu/medicine/sphpm/registries

AusDiab

Coordinated by Baker Heart and Diabetes Institute, the AusDiab study is the largest Australian longitudinal population-based study examining the natural history of diabetes, heart disease and kidney disease in Australians over 25 years of age. The baseline study of 11,247 participants provided benchmark national data on the prevalence of diabetes, obesity, hypertension and kidney disease in Australia.

A new study, PREDICT, aims to develop ways of identifying those people with type 2 diabetes who are at risk of developing diabetes complications.

Researchers and potential collaborators wishing to access the AusDiab datasets or biological samples are able to do so via completing a data access form.

Visit

www.baker.edu.au/impact/ausdiab

The ASPREE Healthy Ageing Biobank

The Monash Public Health Biorepository houses biospecimens from a diverse range of studies undertaken by researchers from Monash University, including blood and urine specimens collected from Australian participants of the NIH/NHMRC-funded ASPREE (**ASP**irin in **R**educing **E**vents in the **E**lderly) clinical trial.

Baseline and three-year follow up biospecimens from ASPREE participants constitute The ASPREE Healthy Ageing Biobank and, together with clinical data from the participants, represent a unique global resource for genetic and biomarker discoveries in older Australians. The biorepository also houses tumour tissue samples collected from ACES (ASPREE Cancer Endpoints Study), an ASPREE sub-study designed to look at the effect of low-dose aspirin on cancer.

Visit

aspree.org/aus/sub-studies/





Victorian HIV Blood and Tissue Storage Bank

Established in the 1990s, the Victorian HIV Blood and Tissue Storage Bank is an initiative of the state-wide Victorian HIV Service at The Alfred and the Burnet Institute. It has prospectively stored leftover serum samples from requested HIV viral load tests for patients managed at The Alfred. The biobank holds nearly 60,000 samples linked with relevant clinical information from close to 5,000 HIV patients. The biobank is available as a research tool.

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Collaborative Partners

Burnet Institute
Alfred Health
Monash University

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.

Visit www.alfredresearchalliance.org.au/research/research-ethics-and-compliance to find out more about ethics across the precinct.

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 use and breeding 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 AEC Secretariat, which also coordinates post-approval monitoring of research projects and annual reporting to state government on behalf of Alliance members licensed for the 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 Institute and Burnet Institute, as well as Monash University.



Alfred Research Alliance

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