

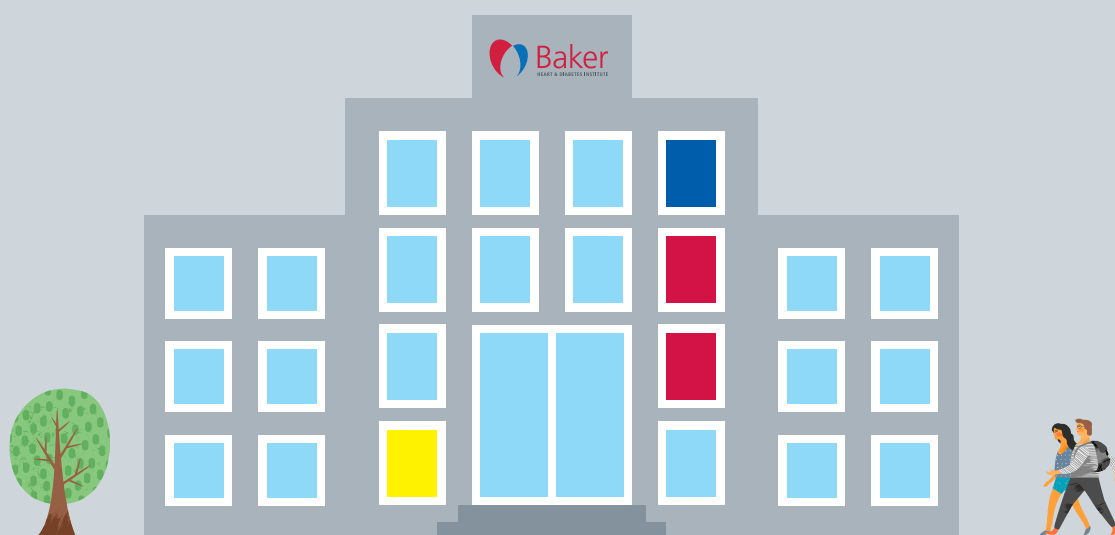


AT THE *heart*  
IMPACT REPORT  
**2017** *of* DISCOVERY

# About us

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Baker Heart and Diabetes Institute is an independent, internationally renowned medical research facility, with a history spanning more than 90 years. The Institute's work extends from the laboratory to wide-scale community studies. Our goals are to prevent chronic disease, and to reduce death and disability from cardiovascular disease, diabetes and other related health disorders.



Diabetes and cardiovascular disease are responsible for the most deaths and the highest costs in the world in terms of treatments and hospitalisation.

The comprehensive range of research undertaken to prevent and treat these deadly diseases, combined with the flexibility and innovation to respond to changing health and community needs, is unique and sets the Baker Institute apart from other health and research organisations.

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# OUR *Vision*: AUSTRALIANS LIVING HEALTHIER

FOR LONGER, FREE FROM THE BURDEN OF  
CARDIOVASCULAR DISEASE AND DIABETES.

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The Baker Institute's highly diverse team includes cardiologists, endocrinologists, bench-top scientists, epidemiologists, dietitians, nurse educators, and physical activity experts. Together, they are working to translate laboratory findings into new approaches to prevention, treatment and care.

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# Snapshot of the problem

Despite the scientific and medical advances we still face significant challenges.



The 1.5 million Australians living with type 2 diabetes are **twice as likely to suffer a sudden cardiac death** compared to those without the condition.



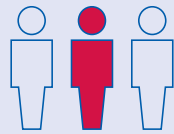
Cardiovascular disease is the **number one cause of death** among Australians with type 2 diabetes.



Aboriginal and Torres Strait Islander peoples with type 2 diabetes have a **higher incidence of cardiovascular disease (CVD)** and death from CVD.



Aboriginal Australians are around **three times more likely to develop diabetes** compared with non-Aboriginal Australians.



Almost **one-third of Australians** aged over 50 years have high blood pressure.



Heart disease and stroke are the **top two causes of death** and are among the leading causes of disability in Australia.



Heart disease kills one Australian every **12 minutes**.



More than **1 million adult Australians** have clinically severe obesity.



Only 32 per cent of 5–9 year old children **meet physical activity guidelines** (60 mins per day) and this declined to only 11 per cent of those aged 10–17 years.

Problems

# Fixing the problem



**We are using** infrared light to identify dangerous plaques or blockages in the arteries to try and prevent heart attack and stroke.



**We have found** we can stop the cell damage that occurs with a heart attack. With less scarring the heart is stronger – meaning a healthier and longer life.



**We are looking** at ways to prevent diabetes causing heart and kidney damage, by targeting and treating the inflammation a person with diabetes experiences.



**We are developing** new approaches to lowering blood pressure, such as a natural dietary supplement.



**We are working** on a new treatment for people who suffer a heart attack to keep the heart muscle alive and reduce secondary heart attacks.



**We are harnessing** big data to try and identify people at risk of the country's biggest killer – heart disease – years before disease occurs.



**We are pioneering** a simple lipid-based blood test to better screen for heart disease. This test could also be used to better predict other chronic diseases, such as type 2 diabetes and Alzheimer's disease.



**Together with** La Trobe University, we are leading one of the world's first population-based studies to understand why some people with type 2 diabetes develop complications and others do not.



**We are demonstrating** how to introduce more activity and less sedentary behaviour in the workplace and in our communities, and building the evidence to show why this is important for our health.

# Solutions

## CHAIRMAN'S MESSAGE

# New era of personalised medicine

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Undertaking our scientific research, which spans basic, clinical and public health research, is possible thanks to our wonderful supporters and will help us to better predict, prevent, diagnose and treat disease.



*Peter*

*Brian*

*Elizabeth*

**“Our passion is to nurture scientific talent and we are committed to supporting the next generation of researchers so they can make significant advances to enhance the health of the community,” say Brian and Elizabeth Randall, major donors to the Institute.**

The Randalls believe having the brightest early-career scientists working alongside world-class research leaders in a dynamic, collaborative organisation creates a conducive environment for impactful science.

**Investing in the Institute’s scientific talent as well as recruiting world-class research leaders to tackle big picture questions about cardiovascular disease and diabetes is a key focus for the Institute, says Baker Institute Chairman, Peter Scott.**

The Institute’s research strategy includes initiatives such as internal Baker fellowships to retain talented early and mid-career scientists independently of the external funding environment, which is typically uncertain.

The Institute recently welcomed global experts including Professor Vaughan Macefield who is examining the interactions between the heart and brain including the impact of chronic stress; computational specialist Associate Professor Mike Inouye who is leveraging genomic and biomolecular technologies to detect and treat disease; and Finnish computational medicine expert, Professor Mika Ala-Korpela who is harnessing big data to accelerate our understanding of disease.

These experts are helping us to embrace a new era of medicine to better identify risk factors of disease and to personalise both prevention and treatment. The advance of

the ‘omics’ technologies, including scientific areas of exploration such as genomics, metabolomics and bioinformatics, shows potential to predict disease long before it appears, paving the way for more effective prevention strategies.

The Institute is also investing in these new areas of exploration by supporting leading Institute scientists like metabolomics expert, Professor Peter Meikle with state-of-the-art equipment. The Institute recently purchased an advanced mass spectrometer which helps scientists like Peter to obtain metabolic profiles to improve understanding of disease mechanisms, and support discovery of new biomarkers of metabolic disease.

But this type of research does not happen in a vacuum. To do this type of work effectively, you need to draw on expertise across a range of areas including basic science, clinical research and public health. You need to understand the potential drivers of disease, to test hypotheses in patients and to understand the clinical challenges in translating this knowledge. You also need to understand how the environment interacts with our genes and the role of lifestyle.

“Unlike many other research institutes, we have a spectrum of basic research, clinical and public health expertise, and are now building our expertise in genomic technologies and informatics, as we look to delivering personalised medicine,” says Peter Scott.

He says the recent sale of the Institute’s Phase One clinical trials subsidiary, Nucleus Network, was an important step for the Institute, enabling it to redirect investment to its core research activities as it looks to its centenary in 2026.

“This is an exciting time in the Institute’s long and proud history and, with strong support from people like the Randalls, the Institute is ideally placed to transform the health of our community.”

DIRECTOR'S MESSAGE

# New frontiers in disease detection

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Using coronary scanning to help target people like Anne could be pivotal in changing the natural history of heart disease.



Tom

Anne



**“I’m incredibly lucky – my brother and father didn’t have that second chance, with heart disease claiming them far too young,” says 59-year-old Anne Pengelly, a marketing professional from Melbourne.**

Anne has always been careful about her diet and exercise, but with a strong family history of heart disease, the mother of three knew genetics was likely to be working against her. Her father and brother had both died of heart disease before the age of 60. So too, other extended family.

So when Anne heard about a unique study at the Baker Institute targeting people with a strong family history of heart disease, she decided to get involved. The study is trialling coronary scanning, or an X-ray of the heart, to see if it might be useful to reliably identify people at high risk of coronary artery disease.

The multicentre study involving 800 participants, led by the Institute’s Director and cardiologist, Professor Tom Marwick, aims to identify heart disease in the early stages, before it narrows the arteries and treatment can be initiated to stop it progressing.

The timing of Anne’s decision to get involved in this study, prior to flying overseas on holiday, was fortuitous. While her cardiac capacity was above average for her age, there was the indication of something sinister. An angiogram revealed just how close she had come — a 90 per cent blockage in one of her arteries that could have led to a heart attack without treatment.

That’s why researchers at the Baker Institute, and those around the country, have been looking at how scanning of the heart can be used to identify high-risk groups of people.

Tom says the selective use of coronary scanning may be one way to help identify and treat high-risk people before heart disease has more devastating consequences.

**This is the future of modern medicine, Tom says. “We aim to better predict, test and treat your risk of heart disease before you end up in a hospital’s coronary care unit having suffered a heart attack or stroke.”**

“We are at the forefront of developing new ways to detect, prevent and treat disease, with our combination of scientific, clinical and public health expertise placing us in an ideal position to deliver real health impacts in the community.

Tom says the Institute’s approach is to develop the scientific evidence to prevent disease or complications earlier by intervening earlier.

“In this case, with the knowledge about when and who to scan, we aim to provide the evidence to change clinical practice and reduce both the number of cases and impact of heart disease.

“Not only does it make sense from a health cost and health professional resourcing point of view, but most importantly it ensures better health and quality of life for people like Anne.”

# A science strategy to deliver real-world impact

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The Baker Institute's science strategy reflects the breadth of the areas we work across in order to enhance the prevention, diagnosis and treatment of chronic disease.

In order to ensure our work is relevant to the communities in which we operate, the strategy reflects a strong focus on collaboration and translation, and working with investors, industry and government to drive better health.

## RESEARCH AREAS

### Basic Research

Our scientists aim to understand the cellular mechanisms, biomarkers and progression of disease and the pathways of gene expression in order to develop new and enhanced treatments.

### Translational Research

Our researchers are working to improve the diagnosis and therapy for patients with heart failure, coronary artery disease, vascular disease, atherosclerosis and metabolic disease.

### Clinical Research

Imaging and other diagnostic tools are being used by our researchers to better understand disease development and treatment, while clinical trials are informing how healthcare can be best delivered. The Institute also runs a number of clinical services such as heart, diabetes, eye and weight management clinics.

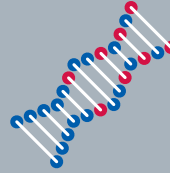
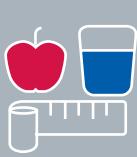
### Population Health

The work of our researchers in examining trends in diabetes and obesity prevalence and incidence is used to inform policy, government and health authorities. Our researchers are also investigating novel risk factors at a population level, and new therapeutic approaches to prevent and treat diabetes, heart disease and obesity.

### Aboriginal Health

Our work in Aboriginal health encompasses research, education and clinical services, which aim to address the profound health disadvantage experienced by Aboriginal people.





**Thank you to the Ernest Heine Family Foundation, which funds the development of these five pioneering research programs. These programs support our scientists to answer big-picture questions that could transform healthcare.**

## RESEARCH PROGRAMS

### Physical Activity

- ▶ We want to know how people's bodies adapt to exercise and how we could use that information to predict heart failure, as well as how exercise changes our cellular make-up.
- ▶ We aim to reduce the burden of disease by encouraging Australians to sit less and move more.

### Obesity and Diabetes

- ▶ We want to find out why some ethnicities are more likely to develop diabetes than others.
- ▶ We want to track diabetes incidence to provide a more accurate picture of national and international trends and what, if any, interventions are working.
- ▶ We aim to find out if there are environmental and lifestyle factors that contribute to diabetes.

### Diabetes Complications

- ▶ We aim to reduce the burden of diabetic complications (dialysis, heart attack, amputation) by establishing clinical trials of new drugs.
- ▶ We seek to develop sophisticated diagnostics for early identification and prevention of symptoms.

### Atherothrombosis

- ▶ We aim to find out who is at risk of developing blocked arteries, which can lead to heart attack and stroke.
- ▶ We develop and test new and improved drug treatments.
- ▶ We conduct trials with anti-inflammatory, anti-diabetic and lipid-lowering drugs in patients who have experienced a heart attack, with the aim of reducing the heart damage and preventing further attacks.

### Hypertension and Cardiac Disease

- ▶ We aim to reverse chronic heart disease, and prevent and repair structural damage to the heart from hypertension, heart disease and associated rhythm disturbances.

*collaboration*

## Lighting the way

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Identifying risky plaque in the arteries to determine if Sue is in danger of another heart attack is seen as the 'holy grail' of cardiovascular medicine.

*Sue*

*Karlheinz*



**“Living with the threat of another heart attack can create fear and anxiety. As you get older, you realise health is everything,” says 61-year-old Sue Daperis, an aged care worker and mother of two from Melbourne’s inner south-east.**

Sue has a family history of heart disease and has suffered two heart attacks, but has high hopes that medical research will ensure she has many precious years of family life ahead.

Research shows people who have a family history of heart disease are more likely to suffer a cardiovascular event. It also shows that people who have a heart attack are more likely to suffer another one and that their risk of death is greater. But imagine if there was a reliable way to identify those at high risk of a devastating event like a heart attack or stroke.

That’s why researchers at the Baker Institute have been working to develop a method of reliably identifying high-risk plaque in the arteries before it causes major heart damage or death.

In a groundbreaking development, Institute researchers led a team who have discovered how near-infrared light can be used to reliably detect high-risk plaque, which typically leads to heart attack and stroke.

The team, led by the Institute’s Professor Karlheinz Peter, in collaboration with researchers from Monash University and the Victor Chang Cardiac Research Institute, developed a model using infrared fluorescence light to identify bleeding in the plaque, the high-risk flag that indicates potentially serious problems.

While current imaging technology, such as coronary angiogram, can identify obstructive plaque in the arteries, it does not specifically identify the unstable plaque that may lead to plaque rupture and consequently, to heart attacks or stroke.

The quest to develop a method to reliably pinpoint high-risk plaque is seen by many scientists as the ‘holy grail’ of contemporary cardiovascular medicine, and the novel findings by Institute researchers published in the journal *Nature Communications* bring this goal a step closer.

**This pioneering work means people might one day be given definitive answers about their risk of a coronary event like a heart attack.**

Karlheinz says the next step in this discovery process is to test this innovative approach in large clinical studies of people.

The ultimate aim is that cardiologists use the laser light, which could be attached to a catheter inserted into a patient during a cardiac procedure, to identify who is at high risk of a heart event.

The most obvious starting point, in terms of affordability and practicality in rolling this out in a clinical setting, would be to introduce the use of this device for people who have had a heart event and are already undergoing cardiac interventions.

The team is now looking for investors to help develop a device, which could be used in the future to help people like Sue.

# Tracking the risk

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Understanding what drives the development of diabetic complications in Terry and not others is critical in developing new ways of treating diabetes.



**“I wasn’t totally surprised when I was diagnosed with type 2 diabetes. Even though I regularly exercise and eat well, we have a strong family history of the disease. What scares me the most is that I’m now facing kidney disease. My kidneys are functioning at less than 20 per cent capacity and I’m looking at the possibility of dialysis or a kidney transplant. I’m an active, independent person and this terrifies me,” says 62-year-old Hampton mother, Terry Lustig.**

By understanding more about type 2 diabetes, Terry hopes health professionals can direct resources, such as new medications, to those who are identified early as being at risk of diabetes complications.

To date, there are no studies anywhere in the world that have taken an approach using study participants, who are representative of the full spectrum of people with the disease, in order to understand diabetes complications.

That’s why Baker Institute researchers have teamed up with those at La Trobe University to spearhead a new study to advance understanding of the progression of diabetes complications.

Some 1,500 adults across metropolitan and regional Victoria with type 2 diabetes will take part in this \$2 million study.

Together with collaborators from Monash University, Centre for Eye Research Australia and Deakin University, the researchers will study these participants for the next five to 10 years to track the development of any complications of their diabetes.

The study will examine biological, behavioural and psychological aspects in people with type 2 diabetes. This will include looking at some of the newest, cutting-edge measurements in blood tests; adherence to medication and lifestyle modification; as well as stress, anxiety and depression to ascertain what factors might impact the development of complications.

Head of Population Health at the Baker Institute and La Trobe Adjunct Professor Jonathan Shaw, says the study aims to gain a better understanding of what drives the development of diabetic complications in some people and not others.

In addition to looking at classical complications of diabetes such as eye, heart and kidney disease, Jonathan says the study will examine less well-known complications that can greatly impact a person’s independence, such as cognitive impairment and physical disabilities.

**It is critical to be able to predict the risk of complications in people with type 2 diabetes to help clinicians improve patients’ quality of life and inform future prevention and treatment strategies.**

This research will help inform the best treatment approaches that doctors like Jonathan can offer people such as Terry, who are actively trying to manage their diabetes to live a long, healthy life.

## Eating your way to good heart health

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“I wanted to show others my age that diet, together with exercise, can help a person avoid illness and keep the brain and body working optimally,” says 65-year-old Errol Lobo, from the Dandenong Ranges.



*Errol*

*Francine*



**“High blood pressure affects one in four people in Australia, and is known as a ‘silent disease’ as it usually doesn’t produce any symptoms until it might be too late,” says Dr Francine Marques.**

Errol firmly believes what we eat and also how that food is processed internally in the body is the main factor behind good health.

“I now have my blood pressure under control, as well as my type 2 diabetes with diet and exercise,” he says.

“I need to keep myself healthy for as long as I possibly can through regular exercise and eating nutritious food to give myself the best chance at a long and fulfilled life.”

Errol is part of a study at the Baker Institute, led by Francine, that is investigating gut bacteria in people with normal and high blood pressure to help us understand the types of bacteria present in hypertensive people.

High blood pressure, also known as hypertension, is a condition where the blood inside the heart and blood vessels is pumped with more force than normal. This adds stress to these important tissues, increasing the chance of a heart attack, stroke and, as we age, heart failure.

Francine is part of the Institute’s Heart Failure Research laboratory and believes gut bacteria research could be useful for future intervention strategies and food guidelines.

“It is well known that our diet influences the risk of high blood pressure. While salt intake is associated with higher blood pressure, consumption of fruit, vegetables and other food rich in fibre is usually associated with lower blood pressure,” she says.

**“While our bodies are incapable of digesting some types of fibre, they are fermented in the gut, where they feed the community of ‘good’ bacteria. This results in the release of substances that can be detected in our blood and might be beneficial in lowering our blood pressure.”**

# Eradicating a human retrovirus

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The Institute is committed to improving Aboriginal health disadvantage in Australia. Understanding the impact and best approach to treating people with a retrovirus devastating Aboriginal communities is now a critical public health issue.



Joel

Lloyd

**Holly was healthy at birth. And now, at four years old, she has battled weeping sores and sepsis as this virus inflames her body. What's more, she has a high risk of spinal cord injury and leukaemia.**

Holly and her mother both have HTLV-1, a largely unknown virus distantly related to HIV that is endemic in remote areas of the Northern Territory, Western Australia and South Australia. Holly was the first child in Australia to be diagnosed with complications of HTLV-1.

The virus, which can cause serious and life threatening complications in some people, is particularly problematic because people are unaware they are infected and continue to transmit the virus to others through sexual transmission and prolonged breast feeding. However, not everyone infected with the virus will go on to develop disease. Central Australia has the highest reported prevalence of HTLV-1 infection in the world and more evidence-based information is critical to educate communities and remote healthcare workers.

The Institute's HTLV-1 expert and Infectious Disease specialist at the Alice Springs Hospital, Dr Lloyd Einsiedel is behind a push to understand the national impact and transmission modes of this infection, to develop an effective and culturally appropriate public health response and identify potential targets for drug development.

"People with high amounts of this infection in their system are largely dying from lung disease, but we are also seeing cases of rapidly fatal leukaemia, spinal cord injury causing paralysis and very severe skin infections causing organ damage," Lloyd says.

Aboriginal researcher, Joel Liddle, who is working with Lloyd on a mother to child pilot study, says Aboriginal people are fearful; they don't know about this disease nor how to reduce their risk of acquiring it.

"We need to present this information to them in a way that is sensitive and culturally appropriate, with clear messages about what they can do to protect themselves and their children," Joel says.

**The Institute is conducting a pilot study to determine whether the introduction of national infant feeding guidelines could safely improve infant nutrition and reduce HTLV-1 transmission within at-risk communities.**

The study is a collaboration between the Institute, Alice Springs Hospital, and Aboriginal community controlled organisations, such as the Central Australian Aboriginal Congress.

The Institute is also collaborating with global experts at Imperial College, London, the Institut Pasteur, Paris, and the University of Tokyo to understand the implications of HTLV-1 infection in Australia.

Lloyd hopes we will soon have the knowledge and technology to ensure people like Holly and her family don't face an uncertain future.

# Reversing risk of heart attack

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Middle-aged people who are unfit can reduce or even reverse their risk of heart failure if they start exercising regularly.



**“The terror of having a heart attack at 47 and seeing my son watching me being loaded into the ambulance was what changed everything for me,” says 53-year-old Terry Lonergan, a transport worker from inner Melbourne.**

At the time of his heart attack, Terry was significantly overweight, did not exercise, and knew his health was deteriorating. Unfortunately Terry’s story is not uncommon.

Luckily for Terry and his family, he turned his life around by slowly incorporating physical activity in his life. He is now inspiring others to do the same after becoming a fitness instructor.

This is welcome news for researchers at the Baker Institute, who have found exercising at a high or moderate intensity for two years could reverse the impact on the heart of being sedentary.

Dr Erin Howden, a researcher from the Sports Cardiology laboratory, says participants who stuck to regular sessions of aerobic exercise had significant improvements in how their body utilised oxygen and reduced cardiac stiffness, both of which are markers of a healthier heart.

“These findings give hope to thousands of people who for some reason or another may believe it’s too late to start exercising later in life,” says Erin.

**The study found that the ‘sweet spot’ in life to get off the couch and start regular exercise is in late-middle age, when the heart still has plasticity.**

“Low fitness in middle age is a strong predictor of the future risk of heart failure and is associated with increased cardiac stiffness, a potential precursor to heart failure. However, by waiting until heart failure develops or older age cements the effects of a sedentary lifestyle, it may be too late to reverse any damage,” says Erin.

The Institute’s Sports Cardiology team investigates the effects of exercise on cardiovascular health, using exercise testing and specialised heart imaging to measure the heart’s ability to respond to the challenge of exercise.

The studies span the health spectrum from patients with severe heart disease through to elite athletes.

# A marathon effort to raise awareness

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Chris White knows the importance of recognising the warning signs when it comes to heart disease and related conditions, and he is making sure many others do too.

*Chris*



**“Knowing I am making a difference in combatting heart disease and diabetes is something that makes me very proud,” says Chris.**

A family history of high blood pressure, stroke and angina means Chris has always been aware of his health and conscious of his susceptibility to cardiac issues. As a marathon runner, sports cardiology is a particular area of interest for him. Intrigued by the work the Baker Institute does in this area, especially in endurance sport, Chris approached the Institute with the idea of running 12 marathons. He ended up running 17 marathons in 2017.

Just like the challenge our scientists face in eradicating Australia’s number one killer in heart disease, Chris took on his marathon challenge with determination, spirit and courage, which increased with every completed marathon.

Chris captured the imagination of the nation, with media detailing his inspirational journey along the way.

“Running 17 marathons around Australia in 2017... shifted my mindset about what is possible,” says Chris.

“Not only from the perspective of my achievements, but what can be achieved in medical research if we all got together for such an important cause. Involving the community on the road to medical discovery is crucial to beating heart disease and diabetes.

“If this challenge showed me anything, it was that sometimes we can’t foresee all that is about to happen, no matter how well we plan. At the point when we need to adapt, it’s about how we make the most of the cards we are dealt.

**“It’s about finding new ways of doing things, new discoveries that lead to triumph. I think the Baker Institute and I have that in common.”**

Our fundraisers get involved for many reasons. They do it to remember a loved one, or to raise awareness about heart disease and diabetes. They do it for fun, or to get fit and look after their own health. But they all want to make a difference and so can you!

## Our commitment to prevention

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**“There is no conclusive evidence well-trained athletes are more likely to suffer sudden cardiac death,” Associate Professor André La Gerche says.**

*André*

*Sue*





**When Sue Forsyth started noticing something was wrong with her heart, it was a frightening experience that led to one of the most challenging times of her life.**

“I have been involved in endurance sports for over 10 years primarily through competitive road cycling and now with trail running. Midway through 2017, I started to have a few episodes at the end of a workout where my heart rate seemed to spike and I would feel light-headed, cold and clammy. After an hour my heart rate would return to normal.”

This was the start of Sue’s battle with what she learned later was ventricular tachycardia, a problem with the heart’s electrical impulses.

Sue has since been treated for the condition and is starting to make progress on her comeback to elite sport.

She is part of the Baker Institute’s ProAFHeart study, which aims to assess the association between heart rhythm disorders and intense endurance exercise.

**“I feel we are all taking more ownership of our health. I personally have a desire to be more proactive, informed and educated on the long-term impact of the choices I am making today,” explains Sue.**

“Whilst the study applies to those who have competed in endurance sport, I see that it will also have huge value to the general population, not just athletes.”

Sue says she was excited when learning of the new partnership between the Baker Institute and IRONMAN® Oceania.

“As an athlete receiving clinical support from a team that is actively engaging with organisations like IRONMAN® means that they are aware of the training loads I would be placing on myself, exposure to similar athletes with similar conditions and more importantly the lifestyle that I would like to return to,” she says.

“I have missed being out in the mountains the most and the freedom of being off the beaten track, but I am confident the team at the Institute has the right plan for me to get back to my best.”

The Institute’s head of Sports Cardiology, Associate Professor André La Gerche says partnerships like the one with IRONMAN® can further assist athletes and their supporters in terms of health education and prevention, especially in the area of cardiovascular health.

“We are doing a lot of research in this area to understand what the long-term health benefits of endurance exercise are, the causes of sudden cardiac death and the effect of exercise on heart rhythm disorders,” says André.

“Just as triathlon involves pushing the mind and body to its limits, the Institute is also engaged in examining the physiological impact of exercise on metabolic health, including that of endurance athletes, to advance prevention, diagnosis and treatment.”

# Hunting cellular targets

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Understanding how the increased production of white blood cells in people with diabetes like Suzanne can trigger heart disease is critical to preventing heart attack and stroke.



Andrew

Suzanne

**“Type 1 diabetes has cast a shadow over my family’s life for years. I lost my sister and uncle to cardiovascular complications of diabetes, and my father and I were lucky to survive heart attacks. Protecting the health of future generations of my family has never been more important,” says 53-year-old Suzanne Gaffey.**

Suzanne was diagnosed with type 1 diabetes when she was 13, followed by her younger sister, brother and niece. Her dad and uncle also had type 1 diabetes. Despite trying to maintain good health, Suzanne knew the odds were stacked against her, with the mother of two suffering a heart attack seven years ago. Today, she also faces peripheral neuropathy and rheumatoid arthritis, which have forced her to give up a successful IT career.

But Suzanne is thankful her adult children don’t have type 1 diabetes and is concerned about protecting her family. That’s why the work of Baker Institute researchers is so important. They are studying the overproduction of white blood cells in people with diabetes to better understand how and why they are at greater risk of heart disease.

Researchers know platelets, the blood cells in plasma, play an integral role in heart disease, including the formation of blood clots responsible for heart attacks and strokes. Patients with diabetes have increased numbers and reactivity of platelets, which contribute to their increased risk of heart complications.

Current blood-thinning therapies prescribed to patients at high risk of heart disease, such as aspirin, have been shown to be less effective in patients with diabetes because the platelets become resistant to this.

**Researchers from the Baker Institute and the US have uncovered a novel mechanism behind excessive platelet production in people with diabetes. This discovery could lead to a novel therapy for Australians with diabetes – 70 per cent of who are likely to experience some form of heart disease.**

The research, led by CSL Centenary Fellowship recipient Associate Professor Andrew Murphy, demonstrated that high blood glucose is responsible for the increased platelet production and the subsequent acceleration of heart disease in diabetes. Using a glucose-lowering drug as a therapy for type 2 diabetes, the researchers were able to normalise levels of platelet production. While these studies were able to completely control blood glucose levels, this is not always the case in people on this or related drugs.

Fortunately, Andrew’s group found that a specific inhibitor of the protein, currently approved as a drug for another medical condition, was able to prevent the exacerbated platelet production, curbing the development of heart disease. With the drug already approved, it could mean a quicker route to market for use in diabetes.

This groundbreaking research means there might be an effective treatment to prevent people with diabetes like Suzanne suffering another heart attack in the future.

# The breadth of our work

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OUR WORK EXTENDS FROM THE

# LABORATORY

TO WIDE-SCALE

# COMMUNITY STUDIES

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WE AIM TO

# TRANSLATE

OUR RESEARCH THROUGH COMMERCIALISATION OF SCIENTIFIC DISCOVERIES, INCLUDING THE DEVELOPMENT OF NEW DRUGS AND DEVICES.

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OUR WORK HELPS TO

# INFORM POLICY,

DEVELOP BEST-PRACTICE TREATMENT GUIDELINES AND FACILITATE EDUCATION PROGRAMS.

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WE ARE



COMMITTED TO IDENTIFYING THE

# GENETIC AND ENVIRONMENTAL

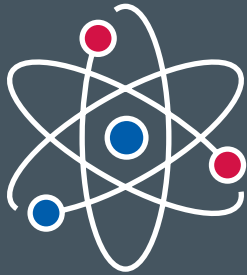
DETERMINANTS OF DISEASE.

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WE ARE COMMITTED TO PROVIDING

# CREDIBLE AND INFORMED HEALTH INFORMATION

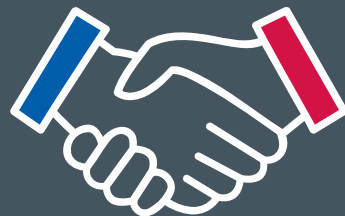




WE HAVE MULTIDISCIPLINARY  
TEAMS COMPRISING

MEDICAL SPECIALISTS,  
SCIENTISTS AND  
PUBLIC HEALTH EXPERTS

WE ARE COMMITTED TO  
FORMING PARTNERSHIPS  
WITH GOVERNMENT  
AND INDUSTRY, AND  
ENGAGING IN ADVOCACY



WE ARE PROUD OF OUR  
STRONG HISTORY

OF RESEARCH EXCELLENCE. OUR SCIENTISTS HAVE BEEN  
RESPONSIBLE FOR MANY GROUNDBREAKING ADVANCES  
IN CARDIOVASCULAR DISEASE AND DIABETES.

# Big data meets modern medicine

Being able to predict heart disease before it strikes is something that Grace, Elyse and Ada would love to see in their lifetime so other families don't face the same heartbreak they did.



**“I remember watching him in disbelief, and thinking, I don’t want others to have to go through this. I never want other families to experience the pain of losing someone they love so suddenly and unexpectedly,” 14-year-old Elyse Pretty says.**

Teenagers Grace, Elyse and Ada Pretty were motivated to compete and fundraise in Melbourne’s City2Sea run after their 56-year-old Uncle Vin suffered a sudden cardiac arrest on his way back from the gym in September 2017. He endured major surgery and spent several days in intensive care, but never woke up.

**Uncle Vin was a much-loved member of his family and a highly regarded accountant. The inexplicable loss of precious years with his family, friends and colleagues is what drives people like Associate Professor Mike Inouye and his team.**

US-born Mike, who joined the Institute in 2017, is working in one of the hottest fields of medical research, harnessing big data to identify disease trends and new opportunities for treating disease.

His recent work involved the development of a genomic risk score for coronary heart disease to predict both the risk of a person developing heart disease 10 years into the future and over their lifetime.

In a major study published in the *European Heart Journal*, Mike and his team showed they could potentially distinguish in early life who is at high risk of heart disease through the development of a score based on the human genome sequence.

Integrating this genomic information with known risk factors improved their ability to predict the risk of someone developing heart disease a decade into the future, especially for people over 60 years.

Mike says this type of research utilising bioinformatics and computational biology provides the opportunity to develop individualised prevention and treatment of a range of diseases.

“By rapidly crunching big data to identify disease trends and new and unique opportunities for treating disease, we aim to provide personalised health assessment and treatment for individuals in the future,” Mike says.

“Medical research can be very slow, but what is especially exciting is that this technology promises to accelerate exploration so that we can identify and develop new opportunities more quickly.

“Just like the internet has revolutionised our world, we believe that by harnessing big data we can transform modern medicine and provide a healthier future and greater confidence around disease risk for people like the Pretty family.”

# Women shaping science

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The Institute is proud to be part of the Science in Australia Gender Equity (SAGE) pilot.



*Kate*



*Stephanie*



**“There has never been a more exciting time than now to be a scientist,” says Dr Stephanie Yiallourou, Gender Equity Fellow.**

A good night’s sleep may be more important than many realise, with researchers now looking at the way sleep patterns are intricately linked to heart health. A lack of sleep is also linked to high blood pressure, type 2 diabetes, and obesity.

Stephanie is leading the way in this research at the Institute. As part of the ongoing BIRCH study, she coordinates the sleep sub-study, having successfully led community screening for sleep problems in 200 Aboriginal Australians.

The study’s aim is to see if abnormal sleep patterns contribute to potentially serious heart conditions.

Also, as part of the NHMRC-funded MODERN study, she supervises analysis of sleep assessments in 275 residents within regional communities.

As a member of the Australasian Sleep Association Indigenous Working Party, Stephanie is an emerging leader in sleep and cardiovascular research, with her research focused on improving cardiovascular disease (CVD)-related health outcomes.

“Improvement of poor sleep may represent a therapeutic target to reduce the risk of CVD. This research has potential to inform health service programs in vulnerable populations where there is health inequity – such as Indigenous Australians and individuals who live in regional communities,” says Stephanie.

Stephanie was last year awarded the Alice Baker and Eleanor Shaw Gender Equity Fellowship by the Baker Foundation, long-time supporters of the Institute.

The Baker Foundation’s Kate Metcalf says the Fellowships are named in honour of two trailblazing women, who were instrumental in the Baker Institute’s establishment.

**“The aim of the Alice Baker and Eleanor Shaw Fellowship is to assist the advancement of women in science. The Fellowship supports outstanding female scientists recruited to or employed at the Institute, who are striving for career independence but have not yet reached the appropriate milestones to receive competitive funding through traditional granting bodies,” says Kate.**

“This Fellowship has provided much needed career support as I advance my research with the ultimate goal of becoming an independent researcher. Importantly, this Fellowship not only provides salary support, but funding to trial new research ideas across the next two years,” says Stephanie.

Since 2015, the Baker Institute has offered two Women in Science Support Grants per year of up to \$10,000, which staff can use towards a Research Assistant while on maternity leave and/or other project support. These grants will be expanded in 2018 to include travel support for an accompanying adult and child for post-doctoral scientists who are primary carers on leave or recently returned from leave, and will be travelling to present at a national or international conference.

# At the heart of discovery

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# Connecting the heart and mind

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“My grandfather and two uncles died of heart attacks in their 40s. Seeing my grandmother bury her two sons made me very aware of cardiac disease and heart health from a young age,” says Matthew Keenan, sports commentator and Baker Institute Ambassador.

*Matthew*



*Vaughan*

**Heart disease and diabetes have an enormous impact on people's quality of life and cause the premature death of more Australians each year than cancer. This is part of the reason Matthew Keenan decided to lend his support as an official ambassador for the Institute.**

With a significant family history of heart disease, Matthew says the Institute gives him a chance to contribute to keeping families together for longer, by supporting the work to reduce premature death caused by heart disease and diabetes.

"There is a misconception that heart disease is only caused by lifestyle decisions. In many cases they are a contributing factor, but it's not that simple. Many fit and active people who have a healthy diet can also be affected. Just as type 1 diabetes is genetically determined, this can also happen with heart disease," he says.

**"Being part of the Institute has opened my eyes to the scale of chronic disease and the consequences for people, including family and friends, affected by it. Eventually I hope researchers discover a way to turn off the genes that cause diabetes and cardiovascular disease."**

Professor Vaughan Macefield, head of Human Autonomic Neurophysiology at the Institute, agrees there are many possible reasons for the prevalence of heart disease and diabetes in Australia.

He says scientists are now exploring innovative and new ways of looking at one of the biggest determinants of heart health: the brain.

"Given that many forms of cardiovascular disease – like high blood pressure – are brought about by changes in brain activity in the first place, it is kind of surprising we don't think about the brain more," he says.

Vaughan says the way the brain regulates blood pressure is remarkable.

"Each blood vessel in your body is surrounded by small muscles, supplied by nerves that are controlled by the brain. Squeezing those muscles ramps up your blood pressure, which in itself can damage the brain. We're trying to identify areas in the human brain responsible for cardiovascular control in health and disease, including those higher areas of the brain that are engaged when we experience emotional stress. Work at the Baker Institute has shown that stress has harmful effects on the heart and can lead to high blood pressure."

# Supporters and acknowledgements

We are extremely grateful for the commitment and support we receive from individual members of the community, as well as philanthropic trusts and foundations, industry and government.

Thank you to all who are helping to secure a healthier future for Australia.

## Major Institutional Support

Abbott  
AstraZeneca Australia  
Boehringer Ingelheim  
The Centers for Disease Control and Prevention (USA)  
CSL Ltd  
Diabetes Australia  
Federal Government of Australia  
– National Health and Medical Research Council  
FSHD Global Research Foundation  
Juvenile Diabetes Research Foundation Australia  
National Heart Foundation  
National Institutes of Health (USA)  
Singapore Institute for Clinical Sciences  
Victorian Government  
– Department of Health and Human Services

## Major Gifts (\$10K+)

Anonymous  
Mrs Rosetta Bloom  
Dean Canham  
Mr Stephen Cook  
Prof Lorraine Dennerstein\*  
Mrs Jean E Drury  
The Gillespie Family Foundation  
Janine Hanrahan  
Stephen Hogg  
Mrs Anne King and Mr Beresford King OAM  
Prof Tom Marwick  
Lynton and Susan Morgan  
Mr Baillieu S Myer AC  
Mr Dennis and Mrs Fairlie  
Nassau  
Loris N Peggie  
Perelberg Family\*  
Randall Foundation  
Mrs Margaret S Ross AM  
Mr Gerry Ryan OAM\*  
Peter and Anna Scott  
Anthony Stewart  
Mr Robert Stewart AM

Jenny Tatchell  
Dr David and Mrs Lisa Thurin  
Sean Triner and Christiana Stergiou

## Trusts and Foundations (\$20K+) and Private Trusts (\$10K+)

Anonymous  
Pierce Armstrong Foundation  
Australian Unity Trustees Foundation  
The Baker Foundation  
Bell Charitable Fund  
The Cybec Foundation  
Weary Dunlop Foundation  
The Marian and E H Flack Trust  
The Isabel and John Gilbertson Charitable Trust  
GRAS Foundation  
Ernest Heine Family Foundation  
The Miller Foundation  
Portland House Foundation\*  
Prescott Family Foundation  
Walter and Eileen Ralston Trust

John T Reid Charitable Trusts  
 The Search Foundation  
 The G W Vowell Foundation  
 Ltd  
 Joe White Bequest  
 Alan Williams Trust Fund

### Partnerships (\$20K+)

Advantage Salary Packaging  
 AstraZeneca Australia  
 Blue Illusion  
 Boehringer Ingelheim and Eli  
 Lilly Diabetes Alliance  
 Carroll-Marsh Investments Pty  
 Ltd  
 Casella Family Brands  
 GlaxoSmithKline Australia Pty  
 Ltd  
 Homyped®  
 MSD  
 Penguin Random House  
 Australia  
 Sanofi  
 Victorian Lions Foundation  
 Inc.  
 Victorian Government  
 – Department of Health and  
 Human Services

### Bequests In Perpetuity (\$20K+)

Hazel and Pip Appel Fund  
 Lesley Dickson Charitable  
 Endowment  
 Joanna and Lyonel Middows  
 Research Foundation  
 M A and V L Perry Foundation  
 Estate E E E Stewart

### Bequests (\$20K+)

Estate Dudley Barton Adams  
 Estate Jack Roy Aspinall  
 Estate Frank Vernon Brettell  
 Estate Thomas Corbett Estate  
 Constance Estelle Crerar  
 Estate Dorothy Joan England  
 Estate Geoffrey Keith  
 McCalman  
 Estate Valmai H Notley Estate  
 Hanka Schreiber Estate  
 Solomon H Solomon

### Endowments

Sylvia Winifred and John  
 Eastment Endowment  
 Estate Daryl Giles Howard

### Ambassadors

Matthew Keenan  
 Mike McKay OAM

\* Donations for Ross  
 Dennerstein Foundation

Thank you!

# Out of rhythm

Identifying and treating abnormal heart rhythm in Norman is critical in trying to prevent heart failure and stroke.



*Liz*

*Norman*



**“Over the years, I have experienced heart palpitations and more recently, a heart attack. These are powerful reminders that I need to be extra vigilant to keep events like stroke at bay,” says 76-year-old Norman Wodetzki, a retired photographer, father and grandfather.**

Norman is among 330,000 Australians who suffer from atrial fibrillation, the most common type of irregular heartbeat or arrhythmia, which places him at greater risk of heart disease compared with the general population.

More than two years ago, Norman suffered a heart attack, but says cardiac rehabilitation and renewed focus on his lifestyle have paid dividends. He maintains a balanced diet and walks wherever he can, and says he feels healthier than he did 10 years ago.

Norman has been living with atrial fibrillation for 18 years, and his son also has the condition. He knows a balanced lifestyle is even more critical for his family, who are at greater risk of cardiovascular events.

That’s why Norman has been a regular visitor to the Institute’s free Healthy Hearts Clinic for more than 15 years.

Clinic nurse, Liz Jenkins says atrial fibrillation causes the heart to work inefficiently so it can reduce the person’s ability to exercise and may lead to heart failure. Atrial fibrillation makes the blood flow inside the heart somewhat irregular, which can cause blood clots to form. Consequently, the condition carries a risk of stroke that is five times greater than the general population.

Atrial fibrillation is on the rise and is projected to increase by 60 per cent over the next 15 years.

The Institute identified this concerning trend in a national report into cardiovascular disease called *Change of Heart: Time to End Cardiovascular Complacency*. The report called for heart health to be prioritised among community, health professionals and government.

**That’s why the Baker Institute is carrying out a range of studies to understand more about atrial fibrillation, and offers a free screening service in Melbourne for people at high risk of developing this condition.**

Liz says the multidisciplinary service aims to prevent heart disease, including arrhythmia, through exercise and weight loss. The Healthy Hearts Clinic involves leading health professionals canvassing areas including electrophysiology and pacing, cardiac imaging, heart failure, and preclinical disease and prevention.

“The aim is to ensure people who might be at risk of atrial fibrillation can be detected, and, like Norman, they have access to an additional resource to try and prevent more serious heart events in the future,” Liz says.

# Board of Directors



*Peter*

## Chairman Peter Scott

Peter Scott is a Deputy Chairman of Gresham Advisory Partners and has more than 30 years' experience in providing financial advice to large Australian companies and governments. He was a member of the Australian Takeovers Panel from 2002 to 2014 and the New Zealand Takeovers Panel from 2008 to 2014. He is a Director of the Association of Australian Medical Research Institutes (AAMRI), and served as Chairman of the Medical Research Future Action Group.



*Lindsay*

## Treasurer Lindsay Maxsted

Lindsay Maxsted is the Chairman of Westpac Banking Corporation and Transurban Group, a director of BHP Billiton Limited and BHP Billiton plc, and is the Managing Director of Align Capital Pty Ltd. He was the CEO of KPMG from 2001 to 2007.

## Executive Director Professor Tom Marwick

Tom Marwick is the Director and Chief Executive Officer of the Institute. He is a practising cardiologist, and prior to joining the Baker Institute, he was the Director at Menzies Institute for Medical Research, University of Tasmania, and continues to hold an Adjunct Professorship there. He is a foundation member of the Australian Academy of Health Sciences, and is an Associate Editor for the *Journal of the American College of Cardiology*, and *JACC Imaging*.



*Tom*

## Non-Executive Director Dr Andrea Douglas

Andrea Douglas is the Vice President, R&D Strategy and External Affairs at CSL Limited in Melbourne. She has held various roles at CSL since 2005. Prior to this, she was the CEO of the Gene CRC. She also held a senior research role at Walter and Eliza Hall Institute. Andrea has been a director of AusBiotech since 2013 and BioCurate since February 2018.



*Andrea*

## Non-Executive Director Professor Simon Foote

Simon Foote is Director of The John Curtin School of Medical Research at The Australian National University. He has been Dean of the School of Medicine at Macquarie University, and Director of the Menzies Research Institute at the University of Tasmania. Simon is also a Fellow of the Australian Academy of Science, the Academy of Technological Science and Engineering, and Director, Fellow and Council Member of the Australian Academy of Health and Medical Sciences.



*Simon*



*Marina*

## Non-Executive Director Marina Kelman

Marina Kelman is the CFO at MLC Life Insurance. Marina is a CPA and has a Bachelor of Accounting from Monash University achieved under scholarship. She is a member of the Finance Committee of the State Library of Victoria.

**Non-Executive Director  
Kate Metcalf**



*Kate*

Kate Metcalf is a senior solicitor operating her own legal practice and is also a sessional Member at the Victorian Civil and Administrative Tribunal. She is a Trustee of the Baker Foundation and a Director of Boroondara Aged Services Society, BASS Care. She has previously held positions as the Legal Director Asia, General Counsel Australia and New Zealand, Director and Company Secretary of Carestream Health Australia Pty Ltd, and Senior Counsel and Company Secretary, Kodak (Australasia) Pty Ltd.



*Robert*

**Non-Executive Director  
Robert Nicholson**

Robert Nicholson is a senior partner of Herbert Smith Freehills, practising in a wide range of corporate transactions. Robert was a member of the Freehills board between 2000 and 2011 and was Chairman of that board between 2008 and 2011. He also served as Chairman of Nucleus Network Limited, and is a director of Landcare Australia Limited.

**Non-Executive Director  
Christine O'Reilly**



*Christine*

Christine O'Reilly is a director of CSL Limited, Transurban Group, Medibank and Energy Australia, and a member of the Loreto Mandeville Hall Finance Committee. She was formerly co-head of Unlisted Infrastructure at Colonial First State Global Asset Management from 2007 to 2012 and, prior to that, CEO of Gasnet.

**Non-Executive Director  
(Resigned 12 Dec 2017)  
Ian Smith AM**



*Ian*

Ian Smith is co-owner of Bespoke Approach, a corporate and political advisory firm. He is Honorary British Consul in Adelaide, a Director of the East Arnhem Regional Economic Development Corporation and a board member of the Committee for Adelaide. He chairs Barefoot to Boots, which provides support for refugees in camps overseas. He is also an Ambassador for ENUF, a campaign to reduce stigma and support people living with HIV/ AIDS, and an Ambassador for The Orangutan Project.

**Non-Executive Director  
Dr David Thurin**



*David*

David Thurin is the Executive Chairman and Owner of Tigcorp Pty Ltd, which has property ownership in retirement villages and land subdivision, as well as an investment arm that focuses on private equity, listed securities and biotechnology. David was previously the joint Managing Director of The Gandel Group of Companies, and the Chairman of the International Diabetes Institute. He is currently a Director of Vicinity Centres, and Director of the Melbourne Football Club.

**The Baker Institute Company  
Secretary is Jacqueline Goodall  
(General Counsel).**

# Financial highlights

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**A transformative step for the Institute was the sale of our wholly-owned subsidiary, Nucleus Network, which will enable us to redirect investment to our core research activities as we look to our centenary in 2026.**

**In January 2018, we announced the sale of our phase one clinical research subsidiary, Nucleus Network, to Australian private equity firm, Crescent Capital Partners.**

The clinical trials business, which was sold for \$100 million, had outgrown the remit of the Institute, which is firmly focused on heart and diabetes research, and the Board saw an opportunity to monetise the asset and redeploy the funds received for the benefit of the Institute. The Institute has been very grateful for the support that Nucleus Network provided in more recent years, with donations of \$5 million per annum and in January 2018, a further donation of \$4.5 million prior to completion of the sale. These donations have provided a sound base to support the Institute's research strategy, which aims to answer big-picture questions that could transform healthcare. Investment of the net proceeds from the sale of Nucleus Network will partially achieve a replacement of this revenue stream.

There were also many other highlights. One of these was joining forces with The Ross Dennerstein Foundation to spearhead a unique research program into the causes and prevention of unexplained cardiac deaths in young people. Unexplained cardiac deaths is one of the biggest killers of Australians yet there is little data, research or understanding of why healthy young men in particular die without warning. The Foundation's namesake was an active and engaged member of the community whose cardiac death at age 47 was unexpected, and remains unexplained. The Institute is leading a national collaborative program to support this research initiative.

Gerry Ryan OAM was a great supporter of The Ross Dennerstein Foundation, pledging a significant gift. Gerry is passionate about furthering research in areas such as sudden cardiac death in young people, and we are most grateful for his contribution.

The Baker Foundation continues to be a major supporter of the Institute, gifting \$2.2 million in

2017 to support our research. A further initiative of the Foundation is the \$900,000 establishment grant for three Alice Baker and Eleanor Shaw Gender Equity Fellowships to recognise outstanding women in science. In 2017, the second fellowship was awarded to Dr Stephanie Yiallourou, a public health researcher with a focus on heart disease risk and poor sleep.

Significant support from Melbourne's Jewish community resulted in the funding of our annual mission to Israel where we are building critical research collaborations, with special thanks to Moniton Pty Ltd for their generous support. These collaborations are helping us pursue novel studies using the combined scientific expertise, commercialisation experience and technological insights of Australian and Israeli researchers.

In 2017, we received \$4.2 million for Operational Infrastructure Support (OIS) funding from the Victorian Government, an increase of 31 per cent. The OIS program provides essential funding towards indirect costs that are not provided by competitive grants.

The Institute was awarded \$2.73 million through the Federal Government's Independent Research Institute Infrastructure Support Scheme (IRIIS), a decrease of 6 per cent from the previous year.

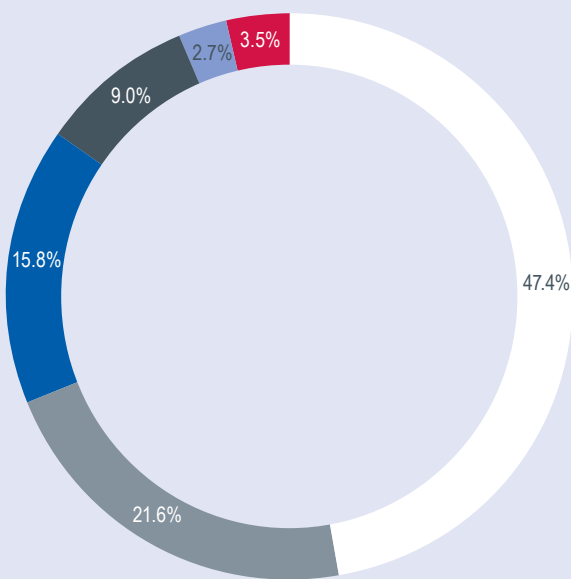
The Institute received \$13.9 million in 2017 from National Health and Medical Research (NHMRC) grants, which is less than the previous year. This largely reflects the broader issue facing Australian scientists of increased competition for a limited pool of research funding.

The Institute is also looking forward to the Federal Government's Medical Research Future Fund being fully funded to \$20 billion by 2021. In March 2018, the Federal Government announced more than \$6 million from the Fund for the Central Australia Academic Health Science Centre (of which the Baker Institute is a member) to support better treatment and diagnosis of health challenges experienced by Indigenous Australians.

## Financial performance at a glance

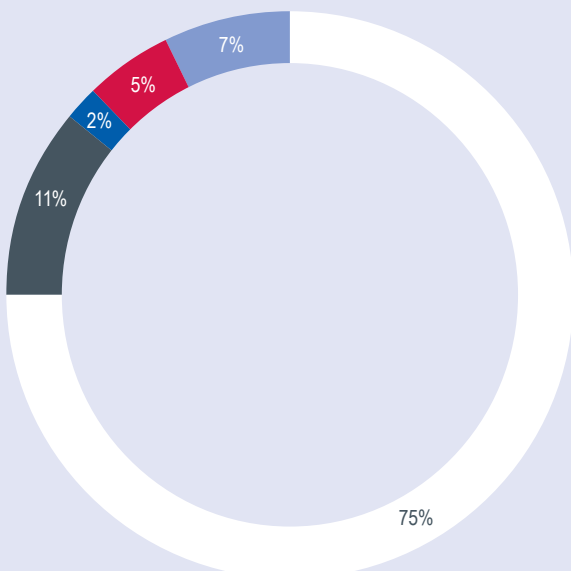
In all, we received more than \$12.3 million from individuals and organisations across Australia to support our research. Without their contribution much of what we do could not be achieved and we are extremely grateful for their ongoing support.

### Consolidated Revenue



Service and clinical income	\$37,115,841
Competitive grants	\$16,891,940
Fundraising, including bequests	\$12,338,633
Government support	\$7,001,577
Other income	\$2,132,561
Investment income	\$2,748,186
<b>TOTAL REVENUE</b>	<b>\$78,228,738</b>

### Consolidated Expenditure



Research and laboratory expenditure	\$55,932,520
Administration	\$7,886,266
Building costs	\$1,672,599
Business development	\$3,656,247
Depreciation/amortisation	\$5,293,222
<b>TOTAL EXPENDITURE</b>	<b>\$74,440,854</b>

# Financial statements

## Statement of Financial Position as at 31 December 2017

	CONSOLIDATED		PARENT	
	2017 \$	2016 \$	2017 \$	2016 \$
<b>ASSETS</b>				
<b>Current assets</b>				
Cash and short term deposits	34,295,811	24,585,700	31,660,322	20,806,898
Trade and other receivables	13,364,386	8,783,707	2,366,608	2,016,633
Right to occupy	507,619	507,619	507,619	507,619
Prepayments	438,376	493,729	272,037	325,545
<b>Total current assets</b>	<b>48,606,192</b>	<b>34,370,755</b>	<b>34,806,586</b>	<b>23,656,695</b>
<b>Non-current assets</b>				
Property, plant and equipment	46,298,894	47,726,304	42,445,900	43,983,599
Right to occupy	6,180,126	6,687,745	6,180,126	6,687,745
Intangible assets	377,326	31,746	377,326	31,746
Investment in an associate	2,852,775	3,404,109	2,015,001	2,015,001
Investment in subsidiaries	-	-	312	-
Available-for-sale financial assets	28,592,710	23,418,155	26,492,710	23,366,074
<b>Total non-current assets</b>	<b>84,301,831</b>	<b>81,268,059</b>	<b>77,511,375</b>	<b>76,084,165</b>
<b>TOTAL ASSETS</b>	<b>132,908,023</b>	<b>115,638,814</b>	<b>112,317,961</b>	<b>99,740,860</b>
<b>LIABILITIES</b>				
<b>Current liabilities</b>				
Trade and other payables	7,300,195	8,644,608	4,503,064	4,600,043
Unearned income	21,522,083	9,177,727	20,657,753	9,042,307
Provisions	6,706,833	6,986,896	5,932,500	6,158,506
<b>Total current liabilities</b>	<b>35,529,111</b>	<b>24,809,231</b>	<b>31,093,317</b>	<b>19,800,856</b>
<b>Non-current liabilities</b>				
Provisions	1,280,363	1,326,005	1,094,665	1,249,304
<b>Total non-current liabilities</b>	<b>1,280,363</b>	<b>1,326,005</b>	<b>1,094,665</b>	<b>1,249,304</b>
<b>TOTAL LIABILITIES</b>	<b>36,809,474</b>	<b>26,135,236</b>	<b>32,187,982</b>	<b>21,050,160</b>
<b>NET ASSETS</b>	<b>96,098,549</b>	<b>89,503,578</b>	<b>80,129,979</b>	<b>78,690,700</b>
<b>EQUITY</b>				
Restructure reserve	-	-	5,578,233	5,578,233
Retained earnings	90,354,186	86,566,301	70,855,317	70,175,190
Available-for-sale reserve	5,744,348	2,937,277	3,696,429	2,937,277
<b>Equity attributable to members of the parent</b>	<b>96,098,534</b>	<b>89,503,578</b>	<b>80,129,979</b>	<b>78,690,700</b>
Non-controlling interests	15	-	-	-
<b>TOTAL EQUITY</b>	<b>96,098,549</b>	<b>89,503,578</b>	<b>80,129,979</b>	<b>78,690,700</b>

# Financial statements

## Statement of Comprehensive Income for the year ended 31 December 2017

	CONSOLIDATED		PARENT	
	2017 \$	2016 \$	2017 \$	2016 \$
<b>Continuing operations</b>				
Grants supporting research activities	16,891,940	20,931,447	16,891,940	20,931,447
Infrastructure funding	7,001,577	6,150,715	7,001,577	6,150,715
Fundraising, corporate and private support	12,338,633	12,179,914	17,338,633	17,179,914
Service and clinical income	37,115,842	38,468,791	4,241,097	5,846,636
Investment income	2,748,186	1,888,072	2,651,939	1,804,368
Other revenue	2,132,561	2,263,057	3,111,195	3,065,644
<b>Revenue</b>	<b>78,228,739</b>	<b>81,881,996</b>	<b>51,236,381</b>	<b>54,978,724</b>
Employee benefits expense	40,786,103	42,157,399	29,213,077	31,580,137
Research, service and clinical expense	16,983,987	19,538,269	7,524,801	9,339,913
Depreciation and amortisation expense	5,293,222	5,008,478	4,260,302	4,478,662
Share of loss of associate	551,334	24,877	-	-
Impairment of available for sale financial assets	209,647	114,561	209,647	114,561
Impairment of fixed assets	-	26,121	-	26,121
(Gain) / loss on disposal of assets	(2,377)	10,130	(2,377)	10,130
Building overheads	1,276,121	1,216,299	1,065,322	1,056,427
Laboratory support expense	2,883,479	2,167,728	2,883,479	2,167,728
Donor acquisition expense	1,821,176	1,603,452	1,821,176	1,603,452
Other expenses from ordinary activities	4,638,162	4,771,771	3,580,827	3,203,403
<b>Expenditure</b>	<b>74,440,854</b>	<b>76,639,085</b>	<b>50,556,254</b>	<b>53,580,534</b>
<b>Surplus before tax</b>	<b>3,787,885</b>	<b>5,242,911</b>	<b>680,127</b>	<b>1,398,190</b>
Income tax expense	-	-	-	-
<b>Surplus for the year</b>	<b>3,787,885</b>	<b>5,242,911</b>	<b>680,127</b>	<b>1,398,190</b>
<b>Other comprehensive income</b>				
Net gain/(loss) on available-for-sale financial assets	2,807,071	657,416	759,152	657,416
<b>Total comprehensive income for the period</b>	<b>6,594,956</b>	<b>5,900,327</b>	<b>1,439,279</b>	<b>2,055,609</b>
Total comprehensive income attributable to:				
Members of the parent	6,594,956	5,900,327	1,439,279	2,055,606
	6,594,956	5,900,327	1,439,279	2,055,606

The Statement of Financial Position and Statement of Comprehensive Income provided above have been extracted from the audited general purpose financial statements of Baker Heart and Diabetes Institute and its controlled entities. The summary financial information does not include all the information and notes normally included in a statutory financial report.

The statutory financial report (from which the summary financial information has been extracted) has been prepared in accordance with the Australian Charities and Not-for-profits Commission Act 2012 and Regulations 2013, Australian Accounting Standards and other authoritative pronouncements of the Australian Accounting Standards Board.

# The gift that gave rise to a global institute

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In continuing Thomas Baker's legacy, we are committed  
to advancing medicine and health.



*Logan*



**The Baker Foundation has supported the Baker Institute from its very beginnings with personal gifts from highly regarded philanthropist, Thomas Baker, his wife Alice and her sister Eleanor Shaw, establishing the Institute in 1926. Upon his death, Thomas Baker made a provision in his will to support the Baker Institute, and Alice and Eleanor provided additional support to continue his legacy.**

Given his interest in science, Baker made friends with biochemist Dr J.F. Mackeddie, and before long he was supporting his scientific research, beginning with a trip to England to investigate a new cure for tuberculosis. Financed by Baker, Mackeddie set up a biochemistry laboratory at The Alfred Hospital in 1922. When the new building was opened in 1926, the Bakers announced they would maintain the laboratory for the next five years, their first grant being 20,000 pounds, equivalent to \$1.7 million today. Thomas Baker became the Lay Chief of the Baker Institute, and was deeply invested in the Institute's scientific direction, contributing scientific content that he translated from German, French and Italian journals.

Within a year, Baker's support increased to 30,000 pounds and Baker communicated this via a letter to the Chairman of The Alfred Hospital on his golden wedding anniversary.

Baker's letter expressed his desire that 'our' Institution should do something worth global recognition, and in order to do so it would need to be conducted on a much more ambitious scale than was first laid out. He said it was a privilege to undertake this responsibility, and he felt he could not do better than to celebrate his wedding anniversary by making additional provision for the Baker Institute's work.

Shortly after this enormous act of generosity and vision, Baker died suddenly at his Mornington estate on 4 December 1928. His will not only sought to provide for those who worked for him, but provided for a trust to be set up to continue the support of the Baker Institute.

Today, the trustees of the Baker Foundation seek to carry out Thomas Baker's wishes in a world that is very different from that which he left.

**The Foundation's chairman, Logan Armstrong, says there is "great need for research into areas of vital concern and interest to all Australians; heart disease and diabetes are major issues for Australia".**

"The Baker Institute has a great future," says Logan.

To date, donations made by the Baker Foundation total in excess of \$100 million and have underpinned every achievement and discovery in the Institute's history. The Foundation's ongoing support and Thomas Baker's vision of a 'gift of healing' ensures the Baker Institute can continue to improve the health of Australians.

# How you can help create a brighter, healthier future

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Help us fight cardiovascular disease, diabetes and obesity.  
There are many ways you can be part of the solution.

“Some Australians follow sports,  
but I follow medical research.”

– Jenny Tatchell, philanthropist.



*Jenny*

# Support us



Make a financial gift and directly support our life-saving work



Leave a gift in your Will to create a lasting legacy



Become a corporate partner



Attend an event or host your own to support the Baker Institute

For more information or to make a gift today, please visit [baker.edu.au/get-involved/ways-to-give](https://baker.edu.au/get-involved/ways-to-give), email [fundraising@baker.edu.au](mailto:fundraising@baker.edu.au) or free call **1800 827 040**.

If you would like to hear more about our projects or funding opportunities, please contact Jaclyn Moore, Executive General Manager, Community and Corporate Relations, on 03 8532 1529.



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