BIG HEARTS BRILLIANT MINDS

IMPACT REPORT 2018

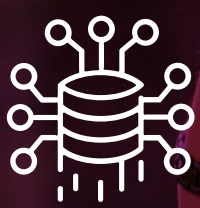
Baker
HEART & DIABETES INSTITUTE

ABOUT US

The Baker Institute is a world leader in the effort to stop heart disease and diabetes.

Heart disease is the leading killer of Australians and diabetes is the fastest growing chronic condition in Australia.

The Baker Institute's research into these areas extends from the laboratory to wide-ranging community studies.



By harnessing big data and technological advances we can transform how we tackle heart disease and diabetes and other chronic diseases.

CONTENTS

OUR CHALLENGES

DESPITE OUR EFFORT, WE STILL FACE ENORMOUS CHALLENGES

6 MILLION

About 6 million Australians have **high blood pressure**.

11%

Every year, there are a total of over **1.1 million** hospitalisations due to cardiovascular disease, accounting for 11% of all hospitalisations in Australia.

On average, **one Australian dies every 12 minutes** from cardiovascular disease.

In just 7 days, about **10% of people who have a stroke will have another.** If you've had a heart attack, you are twice as likely to die prematurely compared to the general population.

$12 BILLION

Cardiovascular disease is the most expensive disease group costing Australia $12 billion a year — a figure estimated to rise to over **$22 billion** by 2032.

Almost 2 out of 3 Australians are obese or overweight.

It is projected that by 2025 around 83% of Australian men and 75% of women aged 20 years and over will be overweight or obese.

40%

Diabetes is now the **leading cause** of end-stage kidney disease and is responsible for over 40 per cent of new cases of kidney failure.

ALMOST HALF

Almost half of adults aged 18–64 years describe their day at work as mostly **sitting**.

4 X HIGHER

Indigenous Australians are around 4 times more likely to have type 2 diabetes than non-Indigenous Australians.

WORKING TOWARDS A SOLUTION

THE BAKER INSTITUTE IS COMMITTED TO CHANGE BY...

INVESTIGATING

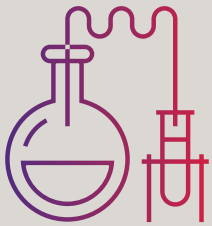
Investigating ways to reduce the size of impact and improve cardiac function following a heart attack.

Developing a novel antioxidant and anti-inflammatory approach to **improve type 2 diabetic heart function after heart attack.**

Developing unique therapies for chronic illness in remote communities.

WORKING

Working to understand and prevent sudden cardiac death.



Investing in a new Biomarker Discovery laboratory to analyse known biomarkers and identify new ones to detect and treat disease.

Calculating the productivity **burden of diabetes** to inform healthcare policy with regard to prevention and management strategies.

Fostering research collaborations to translate into better health.

DEVELOPING

Developing a new genomic risk score to predict the risk of coronary artery disease in adults which has the potential to transform primary prevention of cardiovascular disease.

Informing health policy regarding the health consequences of physical inactivity and sedentary behaviours.

CHAIRMAN'S MESSAGE

SAVING YOUNG HEARTS

A PARTNERSHIP BETWEEN THE BAKER INSTITUTE AND THE ROSS DENNERSTEIN FOUNDATION WILL HELP FUND RESEARCH INTO THE CAUSES AND PREVENTION OF UNEXPLAINED CARDIAC DEATH IN YOUNG PEOPLE.

Captain Ross Dennerstein was a fit and active family man who was regularly put through the medical tests that all commercial airline pilots are required to undertake — so when he suddenly and inexplicably died at home aged just 47, his family was left devastated.

The Baker Institute and the University of Sydney are tackling the unexplained cardiac death phenomenon with the establishment of the Ross Dennerstein Foundation.

The Baker Institute's Chairman, Peter Scott, says a world-first registry and genetic database will now be established in Australia to better understand and prevent cardiac death in young people.

"The data will form the basis of a significant research program," says Peter.

"As well as including individuals aged up to 50 years affected by sudden cardiac arrest, the registry will be the first to include at-risk family members."

Around 15,000 Australians die from sudden cardiac arrest each year, including many young people.

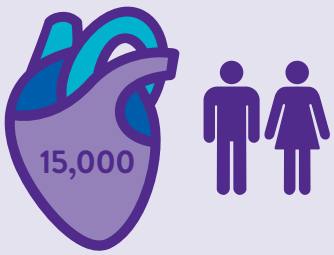
"Understanding the precise causes, clinical circumstances and triggers are critical steps in developing targeted clinical and genetic screening programs to prevent sudden cardiac arrest in the community," says Peter.

Penny Dennerstein says the registry will not only save lives but also honour her late husband's memory.

"Ross was an enthusiastic sportsman and an outstanding pilot who underwent regular health checks as part of this job. He had none of the risk factors or physical symptoms generally associated with cardiac death," she says.

"More research in this area is greatly needed, with the existing evidence base showing that common risk factors for heart events do not always apply."

Ross' mother, psychiatrist Lorraine Dennerstein, says the establishment of this unique registry would bring comfort to her family and help prevent other families from suffering the same experience of sudden bereavement.



AROUND 15,000 AUSTRALIANS DIE FROM SUDDEN CARDIAC ARREST EACH YEAR, INCLUDING MANY YOUNG PEOPLE.

DIRECTOR'S MESSAGE

SUPPORTING FEMALE RESEARCHERS TO DELIVER PIONEERING OUTCOMES

SCIENTIST DR ADELE RICHART, WHOSE CRITICAL RESEARCH AIMS TO STOP THE PROGRESSION OF HEART FAILURE IN PEOPLE WHO SUFFER A HEART ATTACK, IS THE RECIPIENT OF A PRESTIGIOUS GENDER EQUITY FELLOWSHIP.

Adele's pioneering research, which aims to stop the health decline of people who suffer a severe heart attack, could benefit millions of Australians.

It is estimated that 430,000 Australians have had a heart attack at some time in their lives. Further, heart disease is the most important complication of type 2 diabetes.

It is an issue very close to Adele, after she witnessed a friend with type 2 diabetes suffer a heart attack and, with little treatment options available, the onset of heart failure. Now she is determined to do more to help these high-risk people.

Adele's research is investigating the use of treatments which could be administered to people immediately following a heart attack to reduce the size of the injury to the heart and improve heart function.

It is potentially lifesaving work and thanks to a generous fellowship, it will help Adele overcome a career disruption that is faced by many early to mid-career female scientists. In Adele's case, it was a move from France to Australia to pursue her research career.

Baker Institute Director, Professor Tom Marwick says putting in place support mechanisms to ensure there are more senior women in science, both at the Institute and in science more broadly, is critical.

Tom says these fellowships are one important initiative in an ambitious program at the Institute to champion change around gender equity in science.

The Alice Baker and Eleanor Shaw Gender Equity Fellowship is named in honour of two trailblazing women who were instrumental in establishing the Baker Institute in 1926, and is funded by the Baker Foundation, long-time supporters of the Institute.

WOMEN COMPRISE MORE THAN HALF OF SCIENCE PhD GRADUATES AND EARLY CAREER RESEARCHERS, **BUT JUST 17% OF SENIOR ACADEMICS** IN AUSTRALIAN UNIVERSITIES AND RESEARCH INSTITUTES.

BLOOD TEST TO BETTER PREDICT HEART ATTACKS

IT WAS THREE WEEKS BEFORE HIS WEDDING AND NATIONAL SALES MANAGER, DAMIEN SORENSEN WAS DOING THAT LITTLE BIT EXTRA TO BE FIT, HEALTHY AND LOOKING GOOD FOR THE BIG DAY BUT SOMETHING WENT TERRIBLY WRONG.

While running to work last April, the 44-year-old from Hawthorn East in Melbourne collapsed near the MCG and went into cardiac arrest. Some quick thinking members of the public stopped to help and called Triple Zero. Expert medical support was on the scene quickly. Damien spent two days in a coma and several days in hospital recovering but made it to his wedding in Noosa as scheduled, with his children by his side.

"It certainly was a turning point in my life," says Damien. "While traumatic for myself and my family, it has helped me to re-evaluate my life and the priority that I place on my health and lifestyle."

Damien knows that those that have had a heart attack are twice as likely to have another heart attack compared to the general population.

"It would be good to know before it happens so you have a chance at prevention," says Damien.

Professor Peter Meikle, Head of Metabolomics at the Baker Institute, agrees.

He is developing a blood test to better predict your risk of having a heart attack and hopes to trial it in clinics in two to three years.

"It gives a doctor a better idea if a patient who has had a heart attack is at high risk of having another one," says Peter.

"The test relies on measuring the amount of certain lipids (fats) in your blood. These lipid levels seem to be different in people who have heart attacks."

57,000 AUSTRALIANS

EACH YEAR, AROUND 57,000 AUSTRALIANS SUFFER A HEART ATTACK. THIS EQUATES TO **ONE HEART ATTACK EVERY 10 MINUTES.**

SCIENCE STRATEGY

RESEARCH PROGRAMS

Bioinformatics and Validation

Incorporating the Cambridge Baker Systems Genomics Initiative, this program uses big data approaches to inform our science. Access to major international registries informs our investigators of the associations between genes, proteins and fats, and various disease entities. We use this information to identify whether these links are truly causative, and this information can lead us on the pathway to drug discovery.

Immunometabolism

Cardiovascular disease is an inflammatory disease. The program will identify the unique metabolic signatures of specific cells and will allow for cell-specific targeting to either neutralise or alter the function of immune cells that cause disease. Alternatively, manipulating metabolism could boost the function of anti-inflammatory or regulatory immune cells. We are developing a world-first, lipid atlas of immune cells in order to understand in great detail the lipid composition of specific immune cell subtypes.

RESEARCH PROGRAMS

Hypertension and Cardiac Disease

Our researchers aim to reverse chronic heart disease, and to prevent and repair structural damage to the heart from hypertension, heart disease and associated rhythm disturbances.

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 move more.

A SCIENCE STRATEGY TO DELIVER REAL-WORLD IMPACT

Our science strategy is critical in leading an international effort to stop heart disease, diabetes and obesity, in Australia and globally.

Our world-renowned researchers are embarking on a new era of detection, prevention and early intervention of cardiometabolic disease.

The Baker Institute's science strategy reflects the breadth of the areas that we work across and harnesses our research strengths so that our scientists can focus on answering big-picture questions and delivering breakthroughs that will transform healthcare.

Aboriginal Health

Our work in Aboriginal health encompasses research, education and clinical services that aim to address the profound health disadvantage experienced by Aboriginal people. Our researchers are bringing their skills and resources to bear on answering these challenges.

Atherothrombosis

We aim to find out who is at risk of developing blocked arteries, allowing us to predict heart attack and stroke, and 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 'size' of the attack and preventing further attacks.

Diabetes Complications

We aim to reduce the burden of diabetes 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.

Obesity and Lipids

Obesity today stands at the intersection between inflammation and metabolic disorders causing an aberration of immune activity, and resulting in increased risk for diabetes, atherosclerosis, fatty liver, and pulmonary inflammation. This program explores the connection that lipids play in obesity as well as how obesity affects metabolism.


MONARK
MONARK
ERGOTRON

HOW LEG EXERCISES COULD HELP PREVENT HEART DISEASE

A STUDY BY OUR PHYSICAL ACTIVITY LABORATORY HAS SHOWN THAT BREAKING UP PROLONGED SITTING WITH SIMPLE LEG EXERCISES EVERY HALF AN HOUR COULD LESSEN THE DAMAGE CAUSED BY INACTIVITY IN THOSE MOST AT RISK OF HEART DISEASE.

An increasing body of evidence by Baker Institute researchers and others around the world shows that many hours of sitting increases the risk of heart disease, type 2 diabetes and some cancers.

In this study, adults sat uninterrupted for five hours, or broke up their sitting every 30 minutes with three minutes of half squats, calf raises or single knee lifts.

When participants sat continuously they had impaired vascular function, particularly within the first two hours of sitting, which is associated with the onset of heart disease. In contrast, doing the brief bouts of leg exercises mitigated these effects, as outlined in the Journal of Applied Physiology.

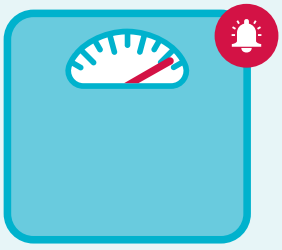
Almost two thirds of adults are overweight or obese, and with two million Australians at high risk of developing type 2 diabetes, it is the nation's fastest growing chronic condition.

Head of Physical Activity research, Professor David Dunstan says it is important to look at practical alternatives to the normal 'default' of prolonged sitting, particularly for those who have sedentary jobs and may typically sit for long periods throughout the day.

Busy Melbourne woman and part-time administrative worker, Tiffany Slabik, is aware of the dangers of prolonged sitting. She intermittently uses her standing desk to vary between standing and sitting throughout the day.

She is also conscious about regular movement and exercise, and likes to break up her working day with a quick walk outside of the office during her break periods, using the stairs where possible.

Her grandmother had type 2 diabetes and Tiffany is very conscious about the importance of movement in maintaining good health.



ALMOST **TWO THIRDS OF ADULTS ARE OVERWEIGHT OR OBESE**, AND TWO MILLION AUSTRALIANS ARE AT HIGH RISK OF DEVELOPING TYPE 2 DIABETES.

DELIVERING EXERCISE-ELEVATED GENES TO THE FAILING HEART

DONOR FUNDING IS HELPING HEART RESEARCHER, ASSOCIATE PROFESSOR JULIE McMULLEN TO ADVANCE A NOVEL WAY TO DELIVER LIFE-SAVING TREATMENT TO THE FAILING HEART.

At least 300,000 people in Australia have heart failure. It is the cause of death for one in five people and it is responsible for significant healthcare costs. These factors, coupled with an ageing population and increased rates of obesity and diabetes, make heart failure one of the new epidemics of cardiovascular disease. That's why better prevention, diagnosis and treatment of heart failure is so critical.

There are two types of heart failure; the weak heart and the stiff heart, with the latter becoming more common. Julie and her team are focused on both types of heart failure, which can be caused by factors such as high blood pressure, diabetes and obesity.

Thanks to a seed grant from David Thurin AM and Lisa Thurin, Julie is building on her well-established work activating 'good' genes in the heart elevated by exercise so that she can reproduce this and deliver it to the failing heart.

She is using a non-pathogenic virus which has been found to be selective for targeting the heart to deliver this package of 'good' genes to activate the failing heart.

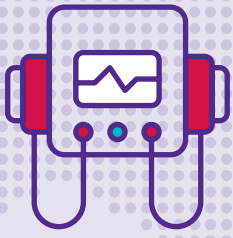
This method has several advantages. It allows her to target specific tissues, to deliver a therapeutic for long periods with a single dose, and this type of treatment has been shown to be safe.

Julie's research in healthy mice has shown that the therapy increases the protective genes in the heart and she is now looking to test this approach in disease models.

"Heart failure is already a leading cause of hospitalisation in Australia and we desperately need better treatment for heart failure," Julie says. "I am very grateful to the Thurins for recognising the importance of this research and helping to advance this exciting approach."

300,000 AUSTRALIANS

ABOUT 300,000 AUSTRALIANS HAVE HEART FAILURE, AND THE NUMBER IS RISING.



IMPROVING HEALTH OUTCOMES FOR MOTHERS AND THEIR BABIES

THE BAKER INSTITUTE IS DEDICATED TO IMPROVING THE CARE AND HEALTH OUTCOMES FOR WOMEN WITH DIABETES DURING PREGNANCY IN THE NORTHERN TERRITORY AND FAR NORTH QUEENSLAND.

Diabetes during pregnancy carries an increased risk of short and long-term health risks, including reduced life expectancy, for mothers and their babies.

With rates of diabetes in pregnant women rising, it is vital that interventions are established as early as possible.

The Diabetes in Pregnancy Partnership, led by Menzies Professor Louise Maple-Brown, combines researchers, policy makers and health service providers, to improve models of health care and service delivery to women and their babies in remote northern Australia.

Running alongside the project is the Pregnancy and Neonatal Diabetes Outcomes in Remote Australia study. The study provides a better understanding of the long-term effects of diabetes during pregnancy on both mother and child.

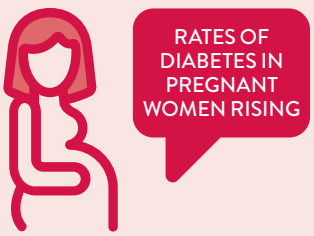
Results from the first wave of the study in children aged 2–5 years, show Aboriginal children were smaller than non-Aboriginal children. It also showed an increase in body fat distribution between children, which was linked to whether the mother had diabetes during pregnancy. This finding is concerning as other studies have reported links between higher childhood body fat and chronic diseases later in life.

The next wave will involve assessing all the mothers and children aged between 6 and 10 years and will commence in late 2019.

These studies are a collaboration between the Baker Institute and Menzies School of Health Research, Northern Territory Department of Health Research, Aboriginal Medical Services Alliance Northern Territory and Healthy Living NT.

The benefits of the partnership are wide-reaching for the broader community and the health of future generations.

DIABETES IN PREGNANCY CAUSES **SERIOUS COMPLICATIONS IN PREGNANCY AND BIRTH** AND IS AN IMPORTANT DRIVER OF TYPE 2 DIABETES IN ABORIGINAL AND TORRES STRAIT ISLANDER POPULATIONS.



PREDICTORS THAT DETERMINE TOXIC FATS IN THE LIVER

ACCUMULATION OF FAT IN THE LIVER, KNOWN AS FATTY LIVER DISEASE, IS EXPERIENCED BY OVER 5.5 MILLION AUSTRALIANS, INCLUDING MORE THAN 40% OF ADULTS OVER THE AGE OF 50.

Fatty liver develops from a combination of genetic and environmental causes, which influence the age of onset and severity of the disease. Experts are describing the condition as a hidden epidemic, which is driving up rates of liver transplant, contributing to a range of illnesses and ultimately death.

Belinda (Bin) Dixon-Smith didn't know she had fatty liver disease until she was told she had it.

"It was a surprise as I didn't even know the condition existed," says Bin. "I didn't feel sick. I didn't have any pain."

The Melbourne jeweller learned she had the condition after a routine blood test to check her cholesterol.

The diagnosis has given Bin an extra push to improve her lifestyle, including changing her diet to lose weight. She rides her bike regularly and surfs.

Fatty liver disease usually has no early symptoms and diagnosis with current technologies mostly comes when it's too late to prevent major illness. But now, for the first time in a study published in the prestigious journal, Nature, researchers from the Baker Institute, University of California and University of Sydney, have discovered biomarkers in the blood that can predict the accumulation of toxic fats in the liver, an early sign of fatty liver disease.

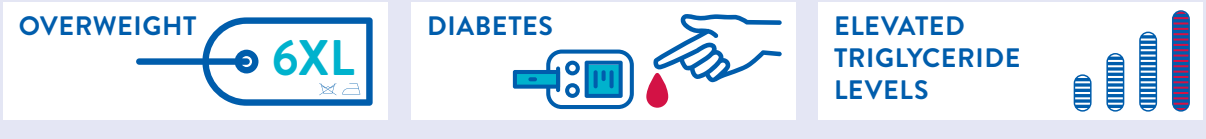
Fatty liver is a risk factor for diabetes and heart disease, and if left unchecked, can lead to liver cancer and failure.

"It is expected to be the leading cause of liver transplant in the next 10 to 20 years," says Dr Brian Drew, head of the Institute's Molecular Metabolism and Ageing Laboratory.

Dr Anna Calkin, head of the Institute's Lipid Metabolism and Cardiometabolic Disease Laboratory says, "With more and more younger people getting diagnosed with fatty liver, it is a growing issue around the world. It's important to realise that fatty liver is not just a lifestyle disease, and there are few effective tools available to treat this condition in its early stages."

The team is now hoping to establish why some people are more prone to fatty liver disease than others.

THE RISK FACTORS MOST COMMONLY LINKED TO FATTY LIVER DISEASE ARE:




THE EARLY YEARS
During the Baker Institute's early years, scientists conducted a wide variety of research ranging from surgery to asthma and infectious diseases. Some of the key achievements included:
PIONEERING ADVANCES
Researchers at the Baker Institute have been responsible for many scientific breakthroughs and we are committed to translating this research into better health. Here is some of the cutting-edge work that has been undertaken by our researchers.

PROTECTING AGAINST DEEP VEIN THROMBOSIS

A NOVEL DRUG THAT PROTECTS PEOPLE AGAINST DEEP VEIN THROMBOSIS ON LONG-HAUL FLIGHTS IS BEING DEVELOPED BY OUR SCIENTISTS.

Usually fit and healthy, father of two James Atkinson was shocked when last year he developed a blood clot in his calf which travelled to his lungs.

"I was in incredible pain for a few days and could hardly move. Just getting up and sitting down was torture. I've recovered pretty much completely now. But because it's happened once, I'm at a higher risk of it happening again.

"So my doctor recommends staying on the blood thinner medication, which I take daily," says James.

A keen traveller, James says he is excited about the prospect of a blood clot medication that reduces the likelihood of bleeding as a side effect. "If there is a new medication which can reduce the risk of blood clots and also reduce the chance of excessive bleeding after an accident, I would love it. I'm excited by the potential to reduce the general bleeding risk."

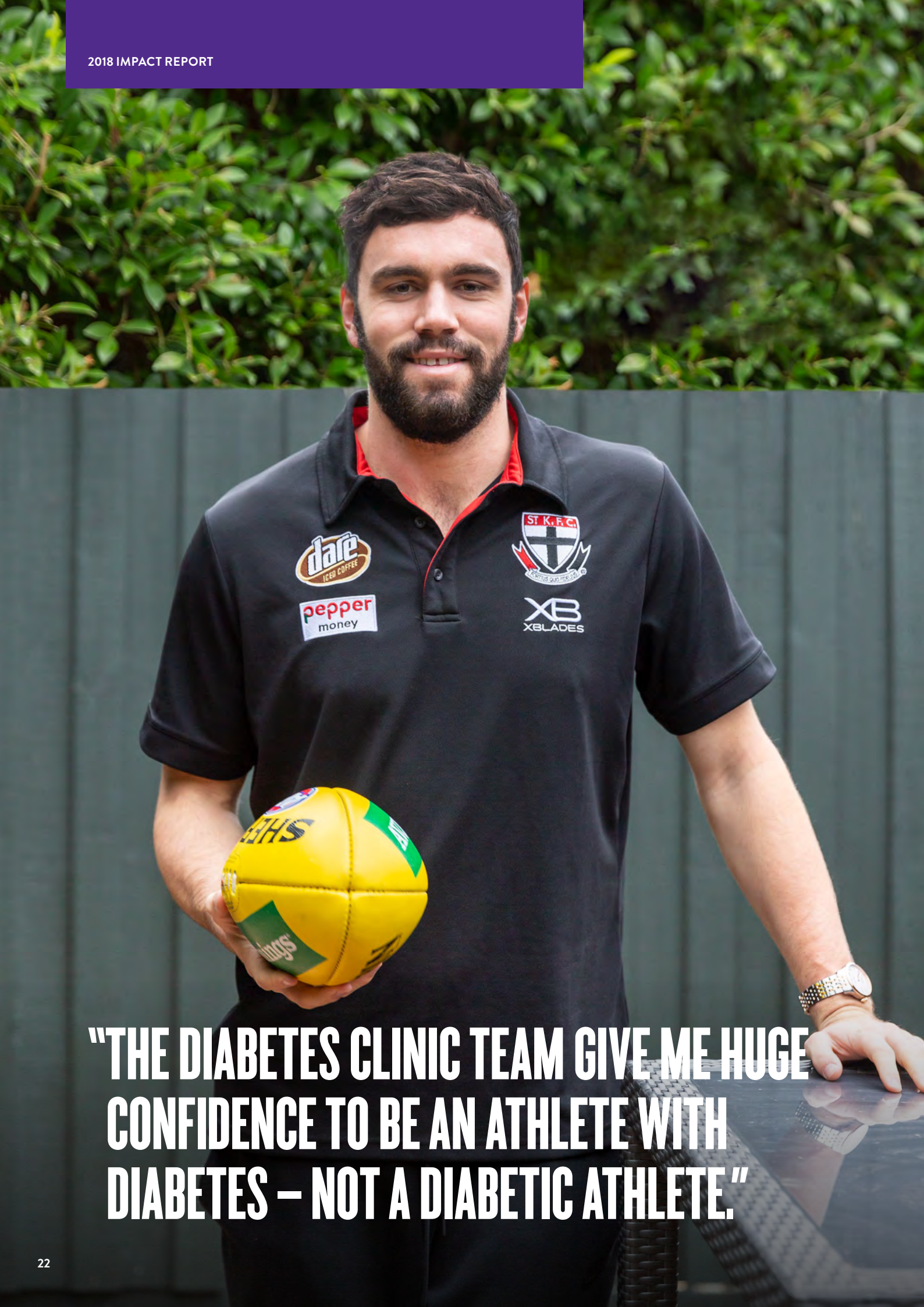
The good news for James and those like him is that Baker Institute scientists are developing an antibody able to attach to the specific platelets that are beginning to form the clot and stop the process.

"As only very small doses of the new drug are needed, further bleeding side effects are avoided and the therapy promises to be safer," says Dr Xiaowei Wang.

"The drug can do two things," Xiaowei says. "It can prevent a clot from forming and break down one already formed."

"Our hope is that a patient at high risk of DVT, about to take a long-haul flight, can be injected with it. If a clotting process begins, the drug will find its way to the clot, bind to it and prevent it forming."

THERE IS EVIDENCE THAT LONG-HAUL FLIGHTS (LASTING OVER FOUR HOURS) CAN INCREASE YOUR RISK OF DEVELOPING DVT. THE RISK IS MAINLY THE RESULT OF **SITTING DOWN FOR LONG PERIODS OF TIME**, WHICH CAN HAPPEN DURING ANY FORM OF LONG-DISTANCE TRAVEL.



"THE DIABETES CLINIC TEAM GIVE ME HUGE CONFIDENCE TO BE AN ATHLETE WITH DIABETES – NOT A DIABETIC ATHLETE."

KICKING GOALS WITH TYPE 1 DIABETES

ELITE FITNESS IS A PRIORITY FOR AFL PLAYER PADDY McCARTIN WHO WAS DIAGNOSED WITH TYPE 1 DIABETES AT THE AGE OF EIGHT.

Paddy relies on the expertise of endocrinologist, Associate Professor Neale Cohen to successfully manage his health on and off the football field.

Playing professional sport while having type 1 diabetes is a challenge few people know about, but for Paddy McCartin, it's a daily juggling act.

He was diagnosed with type 1 diabetes in 2004, when he was only eight years old.

Despite the diagnosis, the youngster was determined to never let diabetes stop him from doing anything.

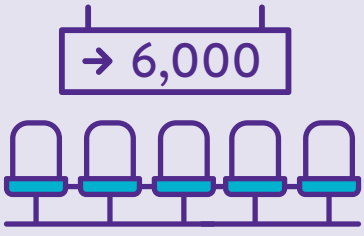
Paddy has been a patient at the Baker Institute's Diabetes Clinic for the past three years. He came to know about the Institute and its specialised diabetes services through his dietician and doctor at the St Kilda Football Club.

"Both the clinic and Neale have been absolutely phenomenal in their care and helping me to manage my diabetes. Playing football, it can be quite hard to juggle diabetes, even playing and living a normal life to some degree, and Neale has given me the tools and support to do that. Currently my diabetes management is the best it's been in the 15 years I've had it," says Paddy.

"There's no doubt in my mind that without the expertise of the Baker Institute, not only would I not be able to play professional sport, but my quality of life would not be anywhere near as good. The community at the Institute is accessible and willing to help me with anything, including blood sugar levels on game day," says Paddy.

Neale says the close collaborative link with the Institute's researchers on site ensure that health professionals offer evidence-based care and the most progressive therapies, which are complemented by facilities such as onsite pathology.

"We believe that a team approach is the best way to help people manage their diabetes, prevent complications and get the best out of life," Neale says.



BETWEEN 2018 AND 2019 THE DIABETES CLINIC ASSISTED OVER **6,000 PATIENTS** TO BETTER MANAGE DIABETES ON A RANGE OF FRONTS.

BIG THINGS GROW FROM LITTLE SEEDS

FAMILY AND GOOD HEALTH ARE WHAT THE CASELLA FAMILY TREASURE MOST. THAT'S WHY SUPPORTING MEDICAL RESEARCH AT THE BAKER INSTITUTE HAS BEEN A PRIORITY FOR THIS FAMILY WHOSE INTERNATIONAL SUCCESS COMES FROM HUMBLE ROOTS.

"Medical research has made great achievements towards better health. Without doubt, there is so much more to achieve and we hope that our contribution to the Baker Institute will assist future generations to overcome the ailments of our generation," says Phillip Casella.

When Filippo and Maria Casella immigrated from Italy to Australia in 1957, they had a dream to build a winery where their family could work together. They purchased a farm outside of Griffith, New South Wales, and began to grow grapes for local winemakers. Winemaking was in the family's DNA, and by 1969 the 'Casella Winery' produced a vintage of its own.

Fast forward three decades to when Filippo and Maria's middle son John took over the small family vineyard and winery. John was 32, and his then 70-year-old father Filippo needed to slow down after bypass surgery.

John had big dreams for the small family vineyard, and saw the potential of exporting Australian wine overseas. He helped to grow the business into the remarkable international success that it is today.

Family remains a core value to the Casella clan. "We are a small family. My grandparents played a very strong role in all of our lives until they passed away. They lived through hard times in World War II and instilled a strong sense of family, hard work and appreciation for all that we have. They were both very proud and humble people, which I hope we have learned from their influence," says Phillip.

The Casella family was introduced to the Baker Institute 20 years ago through Life Governor Bobbie Renard and a close family friend. In this time, the philanthropic family has generously supported the Baker Institute's scientific strategy, contributing over $500,000 to research projects.

WE ARE VERY PROUD THAT OUR CONTRIBUTION TO THE BAKER INSTITUTE MEANS EXCELLENCE IN RESEARCH **NOW AND INTO THE FUTURE.**

BREADTH OF OUR WORK

Personalised medicine to predict your risk of disease

Harnessing big data and technological advances to transform how we tackle heart disease and diabetes

Showing how exercise and movement can lower blood pressure and help the heart function

Investing in areas such as metabolomics to predict disease risk and efficacy of therapies

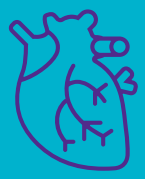
Establishing global partnerships to drive global solutions

Informing government health policy about disease trends

Easy to access cardiac and diabetes clinics

Engaging grassroots communities to empower self-determination

MOVING FORWARD



Preventing young Australians dying prematurely of unexplained cardiac death

Keeping heart muscle healthy from the potential effects of diabetes, irregular heartbeats and heart attack

Accelerating and enhancing approaches to prevent secondary disease and disease complications

Developing effective and novel therapies for chronic illness in remote communities

Understanding how the environment interacts with our genes and the role of lifestyle in developing disease

Recruiting the best teams to identify disease trends and predict the risk of people developing disease

Deepening our understanding of how the heart and brain work together in stress-induced conditions

"I FEEL THAT I SHOULD BE DOING MY PART IN NOT ONLY TELLING MY PATIENTS TO LEAD A HEALTHIER LIFESTYLE, BUT I HAVE TO LEAD BY EXAMPLE AS WELL"

A WINDOW INTO THE HEART OF ATHLETES

HELPING PEOPLE WITH CARDIOVASCULAR DISEASE IS PART OF ELOISE THOMPSON'S DAILY LIFE, AND SHE'S DOING HER PART TO DRIVE BETTER HEALTH.

"The Baker Institute is at the forefront of research in the field of endurance sport and cardiology. It is definitely the best place for people to go if they are in that endurance field," says Eloise.

In 2018, 23-year-old Melbourne runner, Eloise Thompson, participated in an Institute research study looking at endurance athletes with low heart rates led by cardiologist and cardiovascular researcher, Associate Professor Andre La Gerche.

"The study was looking into any relationships between bradycardia and the cardiovascular changes you can see in athletes from long term endurance exercise training. My resting heart rate sits between 36–40 and that made me an eligible candidate for the study," says Eloise.

"A low resting heart rate is a physiological adaptation in the endurance scene, but as a nurse I know that persistent bradycardia could become dangerous to your health. That's why I went to the Baker Institute and participated in the study. I wanted to learn, I wanted to be tested and put through my paces and make sure everything was good," Eloise says.

A cross country, track and marathon runner, Eloise experienced her own health scare after collapsing twice due to heat stroke at the Gold Coast Marathon. The incident was a reality check for Eloise, which led her back to the Institute searching for answers and reassurance.

"After the Gold Coast Marathon I got in touch with Andre at the Institute to see if he had seen anything abnormal with the cardiac testing from the study. Thankfully there was nothing to note, but it was nice to deal with the uncertainty that I had," she says.

A dedicated cardiac nurse by profession, Eloise has turned her attention to the triathlon scene, making her debut at the Baker Heart and Diabetes Institute IRONMAN 70.3 event in Geelong in February 2019.

The Baker Institute is proud to be a series partner at IRONMAN® events in Australia until 2020.

AN ATHLETE'S RESTING HEART RATE MAY BE CONSIDERED LOW WHEN COMPARED TO THE GENERAL POPULATION. A YOUNG, HEALTHY ATHLETE MAY HAVE A HEART RATE OF **30 TO 40 BPM**.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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

- Boehringer Ingelheim and Eli Lilly Diabetes Alliance
- The Centers for Disease Control and Prevention (USA)
- CASS Foundation
- CSANZ
- CSL Ltd
- Central Australian Aboriginal Congress Corporation
- Diabetes Australia
- Federal Government of Australia – National Health and Medical Research Council
- Institute De Recherches Servier
- Juvenile Diabetes Research Foundation Australia
- La Trobe University
- National Heart Foundation
- National Institutes of Health (USA)
- RACGP
- Victorian Government – Department of Health and Human Services

MAJOR GIFTS ($10K+)

- Anonymous
- R A Amarant
- Bertalli Family Foundation
- Casella Family Brands
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- Francesca Di Natale
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- Mr Gerry Ryan AO*
- Peter and Anna Scott
- Mr Robert Stewart AM
- Dr David Thurin AM and Mrs Lisa Thurin
- Sean Triner and Christiana Stergiou

TRUSTS AND FOUNDATIONS ($20K+) AND PRIVATE TRUSTS ($10K+)

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BEQUESTS IN PERPETUITY ($20K+)

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- Estate Ruth Potter
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- Estate Thelma Spicer MBE
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- Sylvia Winifred and John Eastment Endowment

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- Matthew Keenan
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* Donations for Ross Dennerstein Foundation

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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 a practising cardiologist and Director of the Institute, as well as a director of AMREP AS Pty Ltd. He was previously the Director at Menzies Institute for Medical Research, University of Tasmania and continues to hold an Adjunct Professorship there, as well as at University of Melbourne, Monash University and Swinburne University. Tom also worked as the Head of Cardiovascular Imaging at Cleveland Clinic.

NON-EXECUTIVE DIRECTOR

DR ANDREA DOUGLAS

Andrea Douglas is the Senior Vice President, Organisation Transformation and External Affairs at CSL Limited in Melbourne. Prior to this, Andrea was the CEO of the Gene CRC and previously a senior researcher at the Walter and Eliza Hall Institute. Andrea has been a Director of AusBiotech since 2013 and BioCurate since February 2018.

NON-EXECUTIVE DIRECTOR

MARINA KELMAN

Marina Kelman is the CFO at MLC Life Insurance. Marina is responsible for the Finance, Strategy and Internal Audit functions and is Chair of the Performance; Strategic Investments; and Assets and Liabilities committees. Prior to MLC Life Insurance, Marina worked in a senior role at NAB in Group Development/Mergers & Acquisitions, and at UBS Investment Bank specialising in M&A and capital raisings.

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, University of Tasmania. He is 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 Research.

CHAIRMAN

PETER SCOTT

Peter Scott is Deputy Chairman of Gresham Advisory Partners and has more than 35 years' experience in providing financial advice to large Australian companies and governments. He served as a director of the Association of Australian Medical Research Institutes (AAMRI) from 2013 until 2019, and as Chairman of the Medical Research Future Fund Action Group in 2014 and 2015.

NON-EXECUTIVE DIRECTOR

KATE METCALF

Kate Metcalf is a senior solicitor operating her own legal practice and is 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. Previously she was the Legal Director Asia, General Counsel Australia and New Zealand and Director and Company Secretary with Carestream Health Australia Pty Ltd.

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 is a director of Landcare Australia Limited and was Chairman of the Nucleus Network group.

NON-EXECUTIVE DIRECTOR

CHRISTINE O'REILLY

Christine O'Reilly is a director of CSL Limited, Transurban Group, Medibank Private and Stockland. She was Co-head of Unlisted Infrastructure at Colonial First State Global Asset Management from 2007 to 2012 and prior to that, Chief Executive Officer of the GasNet Australia Group.

NON-EXECUTIVE DIRECTOR

DR DAVID THURIN AM

David Thurin is the Executive Chairman and Owner of Tigcorp Pty Ltd, which has property ownership in retirement villages and land subdivision, and an investment arm focused on private equity, listed securities and biotechnology. David was previously the joint Managing Director of The Gandel Group of Companies, and 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 SECRETARIES

JACQUELINE GOODALL
(GENERAL COUNSEL)

HILARY BOLTON
(DEPUTY DIRECTOR, ADMINISTRATION)

FINANCIAL HIGHLIGHTS

A defining moment in our long and proud history was the sale of our wholly-owned subsidiary, Nucleus Network, which is enabling us to redirect investment to our core research activities and to ambitiously pursue our vision around personalised medicine.

We announced the $100 million sale of the clinical trials facility to Australian private equity firm, Crescent Capital Partners, in January 2018, with Nucleus Network having outgrown the remit of the Institute which is firmly focused on medical research.

In recent years, Nucleus Network had been an important source of income and the proceeds of the sale have been invested to replace this income which the organisation was reliant upon, along with philanthropic funding, to pursue our research agenda.

In addition to restructuring our income, the sale of Nucleus Network has also allowed us to establish a Director's Development Fund to facilitate new investment in our science. This is enabling us to expand our research capabilities as we develop an exciting new approach to tackling cardiovascular disease and diabetes that aims to identify disease before symptoms appear, before disease sets in, and before premature death strikes. This is the realm of personalised medicine. By harnessing big data, new technology and our existing research strengths, we aim to provide greater reliability about describing disease risk and a more individualised approach to the prevention and treatment of disease and its complications. The drive toward personalised medicine has seen the addition of new laboratories in 2018 in areas such as bioinformatics and proteomics. In addition, we have sought to strengthen areas of research excellence with the recruitment of bench-top researchers studying areas such as the cellular systems of the heart. It has also allowed us to strengthen the Cambridge Baker Strategic Partnership for Systems Genomics, which is helping us to harness big data to target approaches in disease prediction and personalised medicine. This exciting initiative with Cambridge University in the UK will help to ensure that we are at the forefront of global efforts to drive predictive disease modelling and precision targeting of therapies.

Philanthropic funding continues to be critical to shaping this exciting path toward personalised medicine, global collaboration and the pursuit of gender equity in science.

We are delighted by the strong commitment from Moniton which has supported three missions to Israel, helped to strengthen scientific ties between the Institute and Israeli researchers and facilitated the development of two exciting research projects with scientists at the Technion-Israel Institute of Technology. Through seed funding, we are able to drive these two novel projects that aim to bring new approaches to the diagnosis and treatment of heart failure. One project will combine the latest in engineering and cardiovascular imaging in a bid to pave the way for automated heart imaging which can be utilised in various environments, including remote communities. A second project will explore a new way to treat and help restore the damaged heart utilising Israeli ingenuity to deliver treatment to the heart, via a promising pathway being explored by Baker Institute scientists.

During a year when gender equity in science was in sharp focus, the Baker Foundation's support was critical to our work in championing change in this space. The Foundation's $900,000 establishment grant for three Alice Baker and Eleanor Shaw Gender Equity Fellowships to recognise outstanding women in science was a key platform of our ATHENA Swan Science in Australia Gender Equity submission. In 2018, the third fellowship was awarded to Dr Adele Richart, a cardiovascular researcher who aims to stop the health decline of people after a heart attack. And later that year, we were recognised nationally as one of 15 Australian institutions for our work in gender equity and diversity in science, an achievement that we are very proud of.

In 2018, we received $3.8 million for Operational Infrastructure Support (OIS) funding from the Victorian Government. The OIS program provides essential funding towards indirect costs that are not provided by competitive grants.

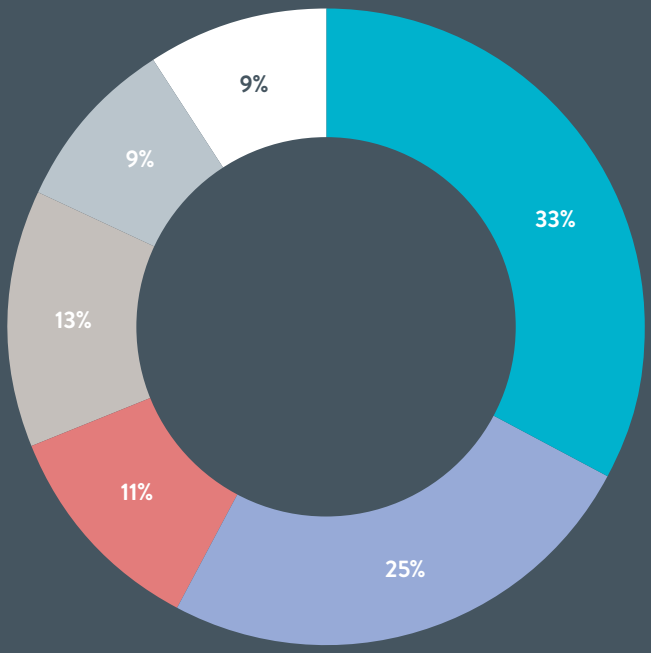
The Institute was awarded $2.1 million through the Federal Government's Independent Research Institute Infrastructure Support Scheme (IRIISS).

In terms of competitive scientific funding, the Institute secured $11.3 million in 2018 from National Health and Medical Research (NHMRC) grants.

The Institute is also applying for funding opportunities through the Federal Government's Medical Research Future Fund. This includes a $220 million 10-year Mission for Cardiovascular Health, and $56 million for diabetes research.

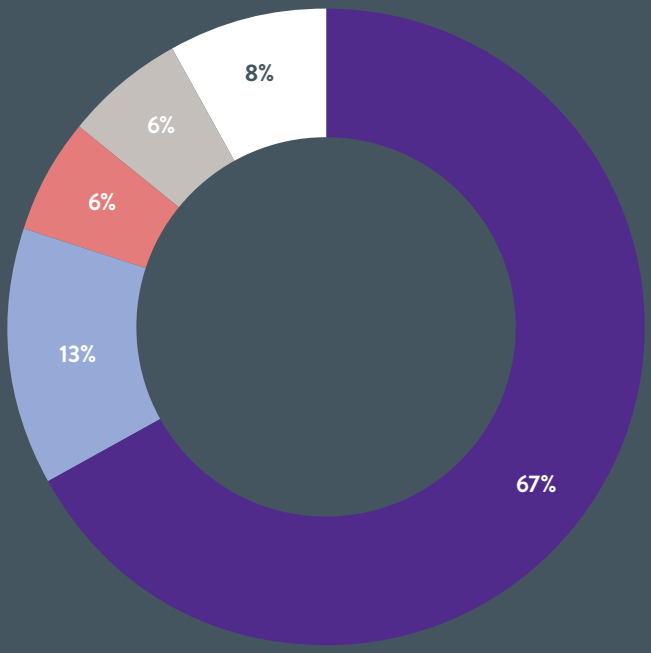
REVENUE

Fundraising, including bequests	$17,743,190
Competitive grants	$13,764,565
Government support	$5,952,252
Investment income	$6,828,944
Service & clinical income	$4,834,424
Other income	$4,780,089
	$53,903,464
Add Sale of subsidiary	$101,037,000
TOTAL REVENUE	**$154,940,464**



EXPENDITURE

Research and laboratory expenditure	$35,668,483
Administration	$6,867,981
Building costs	$2,917,382
Business development	$2,941,551
Depreciation	$4,490,815
	$52,886,212
Sale of subsidiary expenditure	$3,167,949
TOTAL EXPENDITURE	**$56,054,161**



STATEMENT OF FINANCIAL POSITION AS AT 31 DECEMBER 2018

	Consolidated		Parent	
	2018 $	2017 $	2018 $	2017 $
ASSETS				
Current assets				
Cash and short term deposits	20,054,353	34,295,811	20,054,038	31,660,322
Trade and other receivables	3,637,590	13,364,386	3,637,590	2,366,608
Right to use	635,119	507,619	635,119	507,619
Prepayments	410,777	438,376	410,777	272,037
Total current assets	24,737,839	48,606,192	24,737,524	34,806,586
Non-current assets				
Property, plant and equipment	43,337,036	46,298,894	43,337,036	42,445,900
Right to use	6,745,631	6,180,126	6,745,631	6,180,126
Intangible assets	577,114	377,326	577,114	377,326
Investment in an associate	2,802,777	2,852,775	2,015,001	2,015,001
Investment in subsidiaries	-	-	300	312
Non-current financial assets	118,571,063	28,592,710	118,571,063	26,492,710
Other non-current receivables	210,000	-	210,000	-
Total non-current assets	172,243,621	84,301,831	171,456,145	77,511,375
TOTAL ASSETS	196,981,460	132,908,023	196,193,669	112,317,961
LIABILITIES				
Current liabilities				
Trade and other payables	5,191,919	7,300,195	5,191,919	4,503,064
Unearned income	11,579,282	21,522,083	11,579,282	20,657,753
Provisions	6,589,501	6,706,833	6,589,501	5,932,500
Total current liabilities	23,360,702	35,529,111	23,360,702	31,093,317
Non-current liabilities				
Provisions	361,232	1,280,363	361,232	1,094,665
Total non-current liabilities	361,232	1,280,363	361,232	1,094,665
TOTAL LIABILITIES	23,721,934	36,809,474	23,721,934	32,187,982
NET ASSETS	173,259,526	96,098,549	172,471,735	80,129,979
EQUITY				
Restructure reserve	-	-	5,578,233	5,578,233
Retained earnings	176,394,321	90,354,186	170,028,312	70,855,317
Other reserves	(3,134,810)	5,744,348	(3,134,810)	3,696,429
Equity attributable to members of the parent	173,259,511	96,098,534	172,471,735	80,129,979
Non-controlling interests	15	15	-	-
TOTAL EQUITY	173,259,526	96,098,549	172,471,735	80,129,979

STATEMENT OF COMPREHENSIVE INCOME FOR THE YEAR ENDED 31 DECEMBER 2018

	Consolidated		Parent	
	2018 $	2017 $	2018 $	2017 $
Continuing operations				
Grants supporting research activities	13,764,565	16,891,940	13,764,565	16,891,940
Infrastructure funding	5,952,252	7,001,577	5,952,252	7,001,577
Fundraising, corporate and private support	13,243,190	12,338,633	17,743,190	17,338,633
Service and clinical income	4,801,847	3,919,958	4,834,424	4,241,097
Investment income	6,828,944	2,651,939	6,828,944	2,651,939
Income from sale of subsidiary	101,037,000	-	101,037,000	-
Other revenue	4,701,002	2,132,561	4,780,089	3,111,195
Revenue	150,328,800	44,936,608	154,940,464	51,236,381
Employee benefits expense	30,101,495	29,213,077	30,101,495	29,213,077
Research, service and clinical expense	7,110,931	7,524,801	7,110,931	7,524,801
Depreciation and amortisation expense	4,490,819	4,260,302	4,490,819	4,260,302
Share of loss of associate	49,998	551,334	-	-
Impairment of available for sale financial assets	-	209,647	-	209,647
(Gain) / loss on disposal of assets	-	(2,377)	-	(2,377)
Building overheads	1,699,800	1,065,322	1,699,800	1,065,322
Laboratory support expense	2,623,092	2,883,479	2,623,092	2,883,479
Donor acquisition expense	1,919,322	1,821,176	1,919,322	1,821,176
Expenditure associated with sale of subsidiary	3,167,949	-	3,167,949	-
Other expenses from ordinary activities	4,940,753	3,580,827	4,940,753	3,580,827
Expenditure	56,104,159	51,107,588	56,054,161	50,556,254
Surplus / (deficit) before tax	94,224,641	(6,170,980)	98,886,303	680,127
Income tax expense	-	-	-	-
Surplus / (deficit) for the year from continuing operations	94,224,641	(6,170,980)	98,886,303	680,127
Discontinued operations				
Surplus / (deficit) from discontinued operations	3,233,816	9,958,865	-	-
Surplus for the year	97,458,457	3,787,885	98,886,303	680,127
Other comprehensive income				
Net gain/(loss) on non-current financial assets from continuing operations	(6,516,125)	759,152	(6,516,125)	759,152
Net gain / (loss) on non-current financial assets from discontinued operations	(2,047,919)	2,047,919	-	-
Total comprehensive income for the period	88,894,413	6,594,956	92,370,178	1,439,279
Total comprehensive income attributable to:				
Members of the parent	88,894,413	6,594,956	92,370,178	1,439,279
	88,894,413	6,594,956	92,370,178	1,439,279

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.

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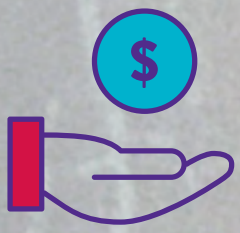

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For more information or to make a gift today, please visit baker.edu.au/get-involved/ways-to-give, email fundraising@baker.edu.au or free call 1800 827 040.

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