Perkins

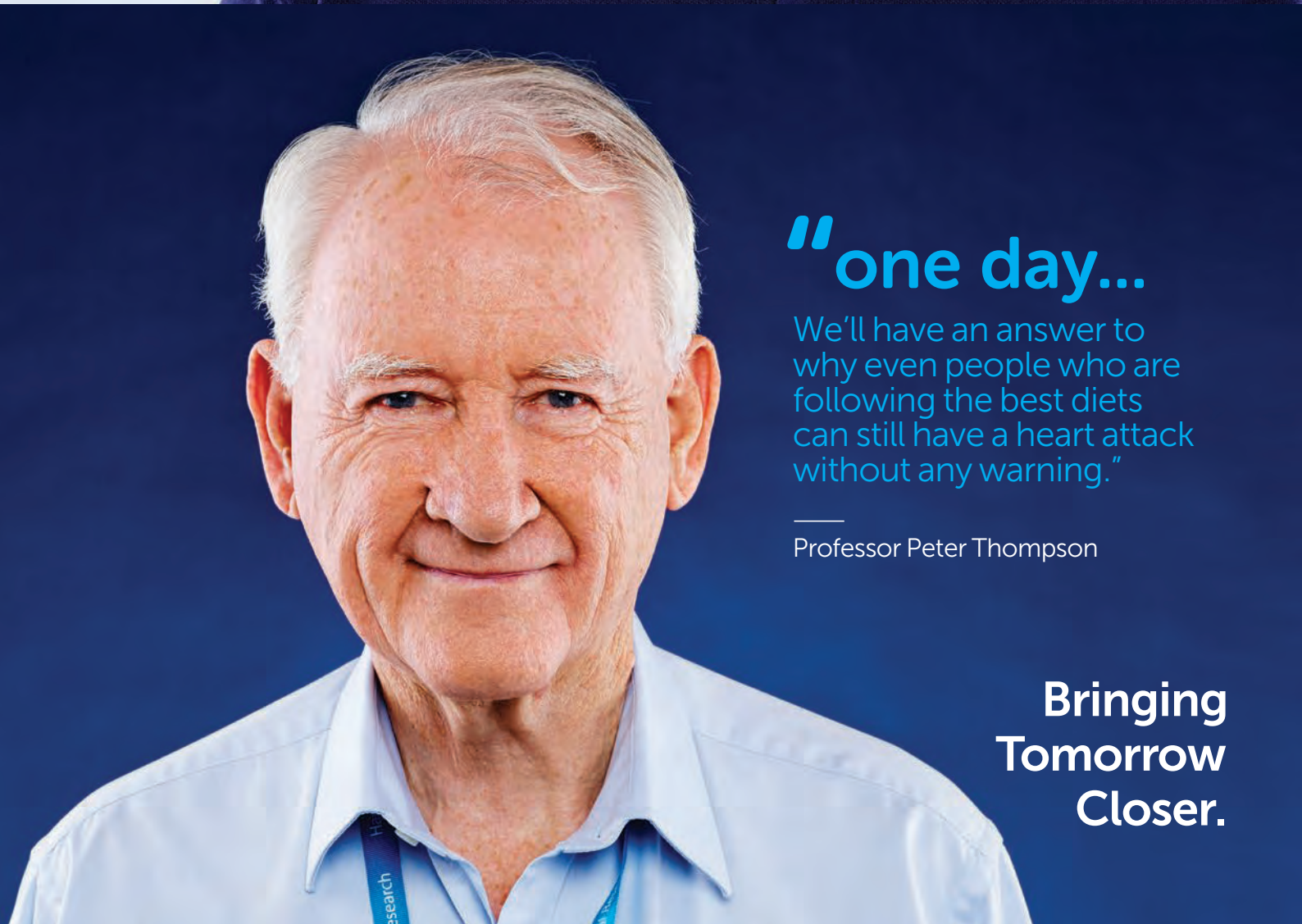
Magazine of the Harry Perkins Institute of Medical Research

Issue 1 2017

"one day...

I went on a simple trip to the shops with my 48 year old dad. I came back without a father."

Andrew



"one day...

We'll have an answer to why even people who are following the best diets can still have a heart attack without any warning."

Professor Peter Thompson

Bringing Tomorrow Closer.

"one day...

we'll understand what causes cardiovascular disease and then we will be able to prevent heart attacks and strokes from occurring.

From the Director

The 1977 public health campaign 'Life. Be in it' featuring the affable cartoon character Norm, fast became one of Australia's most successful health campaigns.

Forty years of good campaigns later, we have successfully brought down rates of heart disease by more than 70% but still it remains the leading cause of death in our community.

Why do people who are following the best diets, who exercise regularly and are relatively fit and young still experience heart attacks?

Every 10 minutes, an Australian has a heart attack. That's about 54,000 people each year.

To understand why it isn't just the "Norms" who have heart attacks we need a greater understanding of the fundamental causes of heart disease.

Despite remarkable advances in the clinical treatment of heart disease, we have surprisingly little understanding of the basic causes.

The benefits of supporting medical research are clear: investing to find cures and preventions reduces the need to keep treating patients.

Research undertaken in WA gives WA patients the opportunity to be involved in potentially life-saving trials of new treatments and research conducted here provides financial returns to the State when our discoveries are commercialised.

We must invest more in medical research so that one day we can reduce the toll of this disease.

It's time for our explorers in our laboratories and clinical trial centres to receive the support they need to finish off Norm's good work.

Professor Peter Leedman
Director, Harry Perkins Institute of Medical Research

one day... that changed my world

A shopping trip with his father and younger brother became a tragic event in Andrew Friars life, when his 48-year-old father died suddenly from a heart attack.

Andrew said his father had no reason to believe he might have problems with his heart.

"I went on a simple family outing to go shopping, and I came back without a father," Andrew said.

"Without any warning, without any inkling, my father dropped dead."

"It affects me to this day. I'm just past the age my father was when he died and it's the prime of your life. But it's not just my life that has been affected, it's had a profound effect on everyone else around me."

Cardiologist and Perkins Deputy Director, Professor Peter Thompson, says that more research is needed to determine why people who are fit and receiving the best care can suddenly have a life-threatening heart attack.

"Even though we've understood elements of the problem for 30-40 years, no one has yet arrived at a solution," Professor Thompson said.

"One of the areas we're working on at the moment is administering a drug to prevent plaque from becoming unstable, and leading to a heart attack."

"I very passionately believe that one day, and it won't be too much longer, we'll be seeing prevention of heart attacks and prevention of stroke. We're not there yet and we need a lot more research but one day we'll get there."

Andrew Friars

Andrew's parents on their wedding day

Andrew tells his moving story in a video alongside Professor Peter Thompson, whose team is focused on finding better treatments for heart disease.

Watch the video now at perkins.org.au

Dr Mark Nidorf and Professor Peter Thompson

Gout medicine tested to prevent heart attacks

Perkins Deputy Director, Professor Peter Thompson, is co-leading a ground breaking clinical trial of a drug, used for generations to treat gout, to determine if it can be used to prevent heart attacks.

The drug, Colchicine, is currently used to treat the inflammation of joints in sufferers of gout, but research has indicated that Colchicine can be used long-term to dramatically reduce cardiovascular incidents in patients with heart disease.

Professor Thompson is leading the trial with Perth Cardiologist Dr Mark Nidorf. It has escalated from a 500-participant West Australian study to an international trial involving more than 4,000 patients.

"When it works for gout it attacks the inflammatory cells called neutrophils and they appear to be quite actively involved in the process of instability of plaque in the coronary artery. Colchicine seems to prevent that inflammation in the plaque and thereby reduce the number of heart attacks," Professor Thompson said.

Dr Nidorf has recruited local patients from his clinic at Genesis Heart Care.

"When we gave the drug to patients, the risk of cardiovascular incidents were reduced by half and the side effects were minimal compared to those who did not receive the drug," Dr Nidorf said.

"It's the first time we've been able to show that a drug with primarily inflammatory effects can alter the natural history of patients with coronary disease," he said.

Professor Thompson says a positive outcome from the trial could be doubly significant because Colchicine is a low cost, readily available medicine.

"There are other drugs being developed to target particular pathways in the inflammatory process, but they are all going to be brand new drugs which take a long time to develop," Professor Thompson said.

"This is a widely available, relatively inexpensive, relatively innocuous drug that has been with us for generations - and this may end up being the one to go for."

Heart expert recruited to fight Australia's leading killer

In a major step toward reducing fatal heart attacks the Perkins, through the generosity of Wesfarmers, has recruited one of the few heart specialists in the world with expertise in using a range of sophisticated cardiac imaging technology.

Professor Girish Dwivedi is a leading cardiologist and medical researcher whose work has the potential to accurately predict which patients are likely to suffer a heart attack.

Perkins Director, Professor Peter Leedman, announced Professor Dwivedi as the first Wesfarmers Chair in Cardiology during Heart Week in May.

"This new position is testament to the Perkins commitment to recruiting and building internationally renowned, highly skilled research teams," said Professor Leedman.

Professor Dwivedi utilises the latest imaging techniques with the capacity to identify the signals in some plaques that indicate if it is about to rupture and cause a heart attack.

"We know the most common cause of heart disease and stroke is the build-up of plaque in arteries, but the key is knowing how to identify whether the plaque will remain stable and be harmless or rupture and cause a heart attack," Professor Dwivedi said.

Professor Dwivedi will continue the research he headed at the University of Ottawa Heart Institute in Canada, in Perkins laboratories, in addition to working as a cardiologist at the Fiona Stanley Hospital.

"Professor Dwivedi's research is definitely cutting edge. It will be a major breakthrough if a cost effective and safe technique of scanning patients can be developed that identifies the plaque likely to rupture," said Professor Leedman.

Professor Girish Dwivedi

> "Most people don't realise how common heart disease is, for women as well as men."
>
> Professor Girish Dwivedi

"His research is also relevant for patients suffering cancers, including breast and blood cancers, because the radiation typically used to treat cancers can lead to a build-up of plaque in coronary arteries."

"We are very grateful to Wesfarmers, the founding benefactor of the Perkins, whose support has enabled us to establish the Wesfarmers Chair in Cardiology and bring to Perth such an outstanding cardiologist and researcher."

Wesfarmers

Doctor says generosity will shape our future

Radiologist, Dr Ashok Kumar, and his family have made a generous contribution to the Harry Perkins Institute of Medical Research in an effort to give back to the State they love.

Ashok and Renu Kumar with Professor Peter Leedman at the Perkins in 2016

Dr Kumar moved from Malaysia to Perth to study medicine at UWA in the 1970s. He completed his internship at Sir Charles Gairdner Hospital.

Since his years as a junior doctor, Dr Kumar worked in Derby and Wyndham as a medical officer, before training as a radiologist at Royal Perth Hospital and St. Vincents Hospital in Sydney, settling in Perth with his wife and three sons.

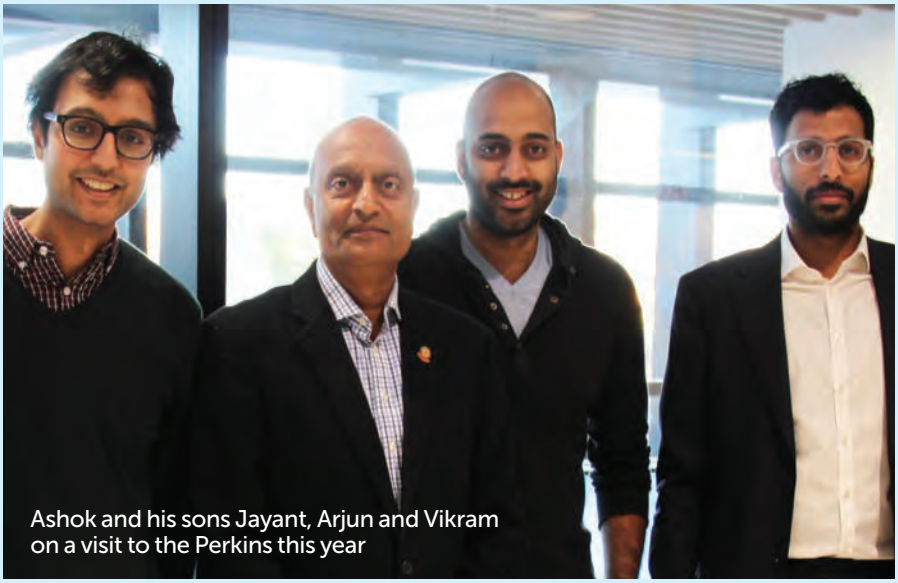
"My wife, Renu, and I always felt that we should give back to the community. Unfortunately she passed away a few months ago from cancer but she has always been passionate about donating generously," Dr Kumar said.

"We felt that Perth has given us a lot and we wanted to reinvest back to the community and one of the best ways of doing that is through medical research.

"The leaps and bounds we've experienced in technology, pharmacology and medicine is all due to research and I'm proud to contribute to that.

"My wish is that whatever we find here can be used for the benefit of mankind and that hopefully we can commercialise it and the money comes back to the State. That's the best thing we can hope for at the end of the day".

Dr Kumar encouraged more people to support research to ensure that discoveries are translated into practical outcomes to help patients as quickly as possible.



Ashok and his sons Jayant, Arjun and Vikram on a visit to the Perkins this year

Hawaiian Walk for Women's Cancer raises $1 Million

An enthusiastic crowd of more than 500 women and men joined together on Saturday 6 May to make strides against cancer in the Hawaiian Walk for Women's Cancer.

Walk participants collectively raised an impressive $925,000 to support cutting-edge women's cancer research at the Harry Perkins Institute of Medical Research.

A major surprise for the event came when Hawaiian Director Kate O'Hara announced at the starting line that the $925,000 raised would be topped up by Hawaiian to achieve a total of $1 million.

Perkins Director Professor Peter Leedman congratulated the walkers for their extraordinary efforts and thanked them for their commitment to supporting medical research at the Perkins.

"I am in awe of the remarkable efforts of our supporters. I know that one day we will have much better treatments for women's cancer and medical research is the only way we can bring that day closer," Professor Leedman said.

Walker, Gerry Smith, said she was motivated to join the Hawaiian Walk for Women's Cancer after being diagnosed with breast cancer two days before Christmas in 2015.

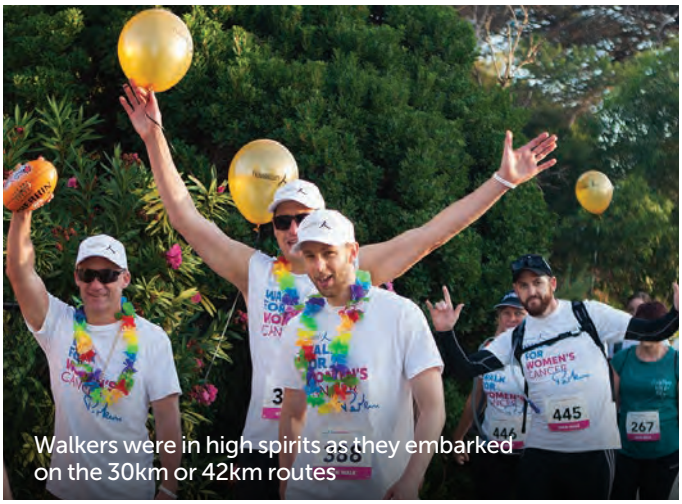
"I did the walk, because I want to help find the cure. I want to grow old with my husband and I want to see my two boys grow up, get married and have babies of their own."

"I brought a few friends on board and we were determined to raise as much as we could to help as many people as possible," Gerry said.

"The walk is an opportunity to help so many people. It's a huge challenge but there is a massive reward at the end."

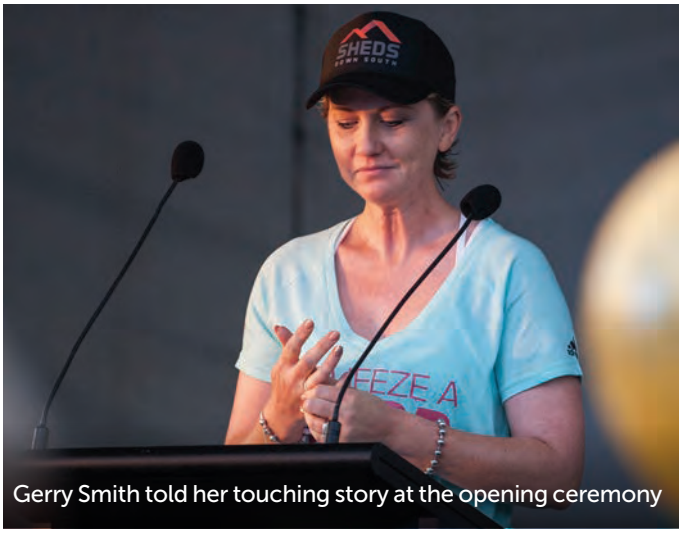
Hawaiian Director Kate O'Hara, who walked 30km herself, said she was excited to continue the partnership with Perkins.

"By walking with Perkins, we help to bring brilliant minds together right here in Perth to focus on the tough cancers that face women," Ms O'Hara said.



Walkers were in high spirits as they embarked on the 30km or 42km routes

Stephen and Sheila walked in honour of their late daughter Leanne Russo



Gerry Smith told her touching story at the opening ceremony

Perkins medical entrepreneur wins 40under40

Perkins researcher, Associate Professor Kevin Pfleger, topped the Intrapreneur category as well as receiving the coveted City of Perth Strategic Alliance Award at the Business News 40under40 Awards in Perth on Wednesday 8 March.

Associate Professor Pfleger received the award for his commitment to developing better medicines with fewer side-effects, and for his leadership emboldening medical researchers nationwide to progress their discoveries into new treatments.

Associate Professor Pfleger won the Eureka Prize for Emerging Leader in Science, and in 2006 he co-invented a new approach to enable researchers to better understand how hormones, neurotransmitters and medicines work on the cells of our body.

"One of my most significant career achievements is the success of Dimerix Limited, a spin-out company from my laboratory's work at the Perkins. Dimerix is commercialising a patented new combination therapy to treat kidney disease, which is currently progressing well through Phase 2 clinical trials."

Chronic Kidney Disease is a major world health concern, with 82,000 Western Australians currently affected, many of whom may need kidney transplants if their condition is not effectively treated.

Associate Professor Pfleger said that while cutting edge science had always been a motivating force, he also works hard to create opportunities for other medical researchers.

I believe collaboration is essential because the competition is not each other, it is disease and ill health."

Associate Professor Kevin Pfleger and Hon. Lord Mayor Lisa Scaffidi.
Photo courtesy of Attila Csaszar and Business News

> "I'm passionate about helping my fellow scientists by facilitating a network of mentors that accelerate the transition of discoveries in the laboratory to treatments for the community."
>
> Associate Professor Kevin Pfleger

Funding for cutting-edge cancer research

Associate Professor Oliver Rackham received a Cancer Council WA Research Fellowship

Perkins researchers have received more than $500,000 in funding in 2017 to investigate new and improved ways to diagnose and treat some of the most aggressive forms of cancer.

The funding was awarded by Cancer Council WA in the form of scholarships, fellowships and project grants to research a broad range of cancer types such as breast, pancreatic and lung cancer.

Professor Peter Leedman congratulated the grant recipients for their hard work and their commitment to improving the health of the community.

"Our researchers are dedicated to delivering answers for patients and families. We're not doing research for the sake of doing it, we are constantly on the hunt for solutions so that one day we can beat cancer together," Professor Leedman said.

The funded projects include research into new treatments for a range of cancers, methods for stopping the spread of cancer cells and new techniques to improve tumour detection.

Grant to investigate new muscular dystrophy treatment

The Perkins Neurogenetic Diseases team, headed by Professor Nigel Laing AO, has been awarded a Muscular Dystrophy Association (MDA) research grant totalling $149,412USD over 18 months to test two promising new treatments for McArdle disease.

McArdle disease is a rare, inherited condition that causes severe muscle pain and cramping. It occurs because an important enzyme required to break down energy stores in muscles is missing.

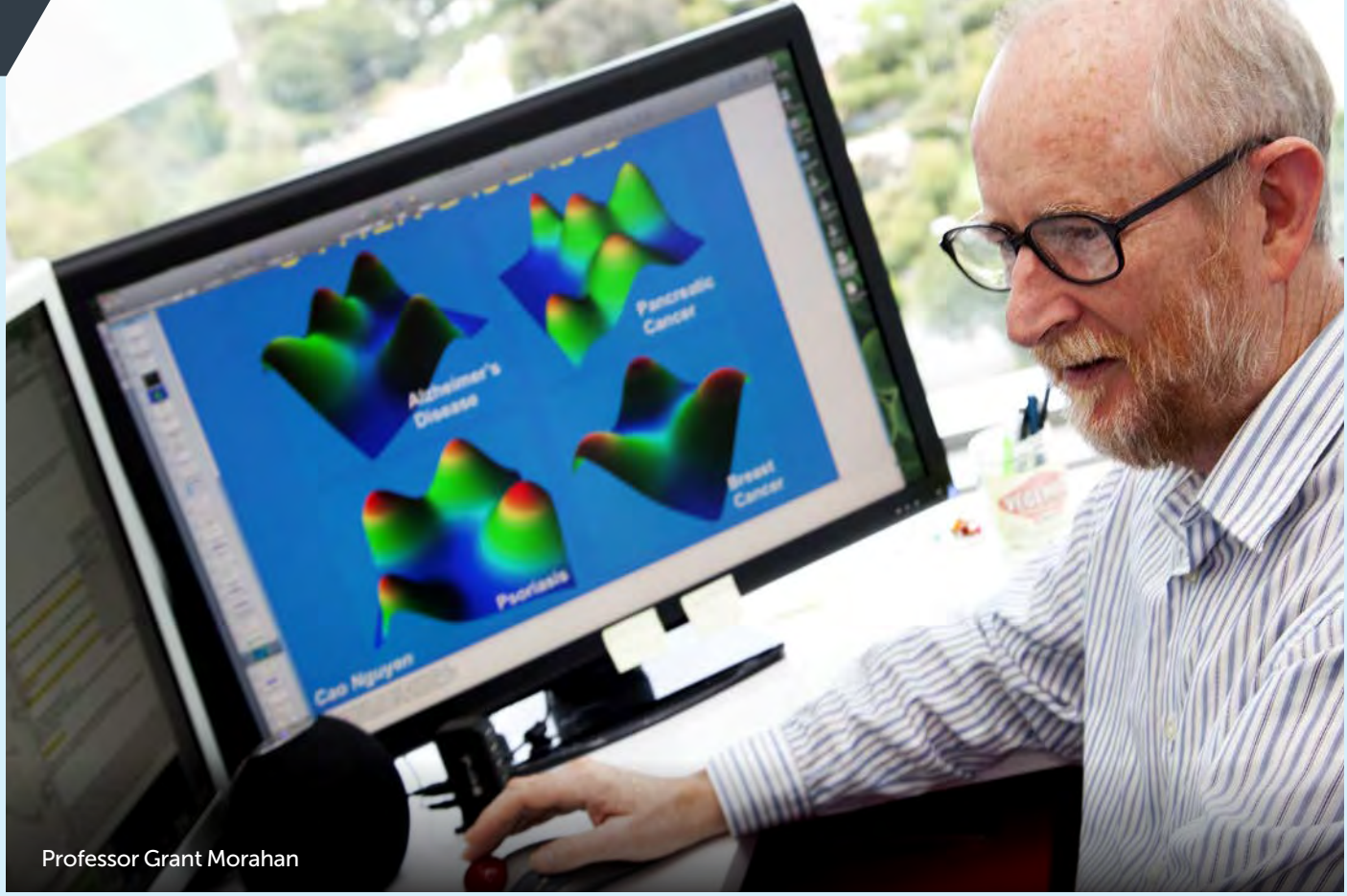
Professor Laing said his team will use a cutting-edge technique known as gene therapy, which involves transplanting normal genes into cells that have missing or faulty genes.

"For the first treatment test, our team will deliver a normal version of the missing enzyme. This may cause an immune reaction because the body of a McArdle disease patient will not have been exposed to the enzyme before," Professor Laing said.

In a parallel set of experiments, an alternative version of the enzyme will be transplanted, which functions in a similar way to the missing enzyme. The alternative enzyme is normally found in adult brain tissue and fetal skeletal muscle and is unlikely to provoke an immune response.

If successful, the team's work could have major impacts for patients, delivering new treatments to improve muscle function and reduce muscle damage.

The grant was awarded to Professor Laing, Dr Kristen Nowak and Dr Rhonda Taylor.



Professor Grant Morahan

Devolving pancreatic cells could cause diabetes

Researchers from the Perkins Centre for Diabetes Research have created a new scientific model to better understand the development of type 2 diabetes, which affects more than 1.4 million Australians.

Diabetes is thought to arise from the lack of response to insulin, which leads to the insulin-producing beta cells working harder, and eventually dying. Recently, it has been proposed that one form of type 2 diabetes could be due to the beta cells not dying, but 'going backwards' and returning to a more primitive developmental stage.

Professor Grant Morahan said the new model his team has produced shows that the insulin-producing pancreatic beta cells could indeed revert to a more primitive form – in a process known as 'dedifferentiation'.

"This research performed by Abraham John and Fang-Xu Jiang has established a model to study dedifferentiation. The next step is to test various compounds to see if we can reverse the process of differentiation," Professor Morahan said.

"Our goal is to find a new way to treat or cure type 2 diabetes by identifying a drug that can return the primitive beta cells into mature cells that will work as they should."

Study doubles the estimate of our functional genes

Perkins Professor Alistair Forrest has led a landmark study mapping a poorly understood and highly controversial class of genes, uncovering evidence of evolutionary selection and links with major diseases, including cancer.

The findings, published in *Nature*, involved generating a comprehensive atlas of 27,919 genes, known as long non-coding RNAs, and summarising their expression patterns across the major human cell types and tissues.

By comparing this atlas with genomic and genetic data, the results suggest that 19,175 of these RNAs might be functional, hinting that there could be as many, or even more, functional non-coding RNAs than the approximately 20,000 protein-coding genes in the human genome.

"By integrating the improved gene models with existing genetic data, we find compelling evidence that the majority of these long non-coding RNAs appear to be functional, and for nearly 2,000 of them we reveal their potential involvement in many genetic traits including predisposition to heart disease, obesity, depression, autoimmunity and various cancers."

The study is the latest work of the FANTOM5 consortium, which was awarded the 2016 Eureka Scopus Prize for Excellence in International Scientific Collaboration.

Professor Forrest is funded by the Perth based Cancer Research Trust (CRT) and by funds raised through the MACA Ride to Conquer Cancer.

New treatment targeting chronic kidney disease

A new breakthrough treatment, based on technology developed by Perkins researchers, could potentially control a major symptom of chronic kidney disease.

Chronic kidney disease is an illness which affects one in three Australians and can lead to kidney failure, cardiovascular disease and premature death.

The treatment aims to control protein leakage (proteinuria) from the kidneys - a common symptom of chronic kidney disease.

Associate Professor Kevin Pfleger, Perkins Head of Molecular Endocrinology and Pharmacology and the Chief Scientific Advisor of biotechnology company Dimerix, said additional results from Phase II clinical trials of its flagship drug therapy DMX-200 would be released in the coming months.

DMX-200 was generated from the Receptor-Heteromer Investigation Technology (Receptor-HIT) developed in Perkins laboratories and assigned to Dimerix in 2006.

The US Food and Drug Administration (FDA) recently validated the Receptor-HIT screening technology as important in understanding and identifying new treatments.

Associate Professor Pfleger says the drug therapy has the potential to treat other conditions such as non-alcoholic steatohepatitis (NASH), a form of non-alcoholic fatty liver disease, which affects an estimated 6 million people in the US and currently has no established treatment.

Associate Professor Pfleger

Perth Radiological Clinic staff step out for the Perkins

Throughout April staff of the 20 Perth Radiological Clinics in Perth fundraised for the Perkins and the PerthRadClinic Foundation with an organisational step-a-thon.

The 'Steps Towards Better Health' initiative involved Perth Rad staff being sponsored for the number of daily steps they took.

For a donation of $10, staff were supplied with a pedometer to track their steps during the month.

PerthRadClinic Foundation Chairman, Dr Martin Blake, was one of the staff who adopted the pedometer for the healthy initiative.

"PerthRadClinic Foundation was established to foster improvement in social and healthcare outcomes for the Western Australian community by supporting innovation in medicine, health education, community programs, and staff participation in charitable activities," Dr Blake said.

The PerthRadClinic Foundation also supports the employment of radiologist and nuclear medicine specialist, Dr Liesl Celliers, whose work at the Perkins aims to fast-track cancer research.


Dr Martin Blake

Team MAMILS continue to conquer

Since 2013 Team MAMILS (Middle Aged Men In Lycra) has been a regular feature at every MACA Ride to Conquer Cancer. In that time the team, led by captain Craig Wells, has cycled thousands of kilometres and raised a staggering $240,000 for cancer research at the Perkins.

Craig was inspired to join the Ride after one of his closest friends, Franko, was diagnosed with throat cancer.

"Franko and I have been best friends since early high school in the mid 80's. When he was first diagnosed I didn't know how to help, but when I saw an ad on TV for the Ride I knew I wanted to sign up and ride for him," Craig said.

"At the end of the first ride, Franko was standing at the finish line and he looked a shadow of his former self. After a few celebratory tears and while still undergoing treatment, Franko walked over to the sign-up tent and registered us both for the following year."

"The great news is Franko's treatment was successful, and he has been riding with us every year since."

This year the team has grown to 22 riders, with half of them starting the ride from Kalgoorlie with a goal to raise over $80,000.

Learn more about the MACA Ride to Conquer Cancer at conquercancer.org.au

Craig Wells

Add these dates to your calendar!

Learn more about perkins.org.au/events

Perkins Open Day
– Saturday 26 August

Student Information Sundowner
– Tuesday 8 August

Major supporters

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