

Perkins

HARRY PERKINS INSTITUTE
OF MEDICAL RESEARCH

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The Harry Perkins Institute of Medical Research is Perth's largest medical research institute dedicated to fighting the major diseases affecting adults.

perkins.org.au

YOUR IMPACT IN RESEARCH BREAKTHROUGHS AT THE PERKINS

WAKING UP CANCER KILLING GENES

PERKINS researchers are developing personalised precision treatments for liver cancer by using epigenome editing technology to 'wake up' cancer-suppressing genes.

Recent large studies have uncovered several protective tumour suppressor genes that become inactive in liver cancer patients.



Perkins researcher Agustin Sgro is working to restore the cancer-inhibiting genes to help control the spread and relapse of these cancers, while making them more vulnerable to anti-cancer drugs.

Liver cancer has the second highest mortality rate of all cancers and its incidence in Australia is dramatically increasing, with very limited treatment options currently available. Agustin hopes his research will lead to improved outcomes for people facing a liver cancer diagnosis.

BREAKING DOWN CANCER'S BARRICADE

MANY cancers such as breast, liver and pancreatic cancer are more resistant to detection and treatment due to the mass production of scar tissue in and around the tumour.

This is due to the wound healing process in our bodies attempting and failing to respond to the cancer and, ultimately, forming a physical barrier that shields the tumour from drugs, imaging agents, and immune cells. Perkins researcher Derek Delaney is investigating where and how this scar tissue is generated to help develop strategies to destroy it and make the tumours more susceptible to anti-cancer medicines and the body's immune system.

GUT REACTION

RESearchers in the Perkins Neurogenetic Diseases team, together with colleagues at PathWest, examined genes in a group of patients with a potentially life-threatening disorder.

Primary chronic intestinal pseudo-obstruction (CIPO) is a rare muscular condition that presents as the inability of the intestines to push food through. In healthy people, energy is extracted from food as it is moved through the bowel, but people who live with CIPO have a problem with their gastrointestinal muscles and food can sit unmoving and even rot in their bowel.

Tragically, it can be fatal for babies and in other cases, patients need to get their daily energy through an IV, and avoid food altogether.

The study, led by Dr Gina Ravenscroft, found that mutations in a particular gene known to impact gut muscle was responsible for around 40% of cases. It also appeared that most cases were spontaneous, meaning that the risk of a couple having another affected child is low. Thanks to this recent discovery, patients could receive a diagnosis and subsequent treatment much faster.



LINKS BETWEEN PNEUMONIA AND HEART DISEASE

NEW studies have uncovered a link between pneumonia and cardiovascular complications due to prolonged inflammation damaging the heart muscle.

The studies also found that patients who had seemingly recovered from their pneumonia infection actually had a 10x greater risk of developing heart complications – a risk that remains for ten years!

As a result, up to 30% of patients admitted with pneumonia end up developing heart complications.

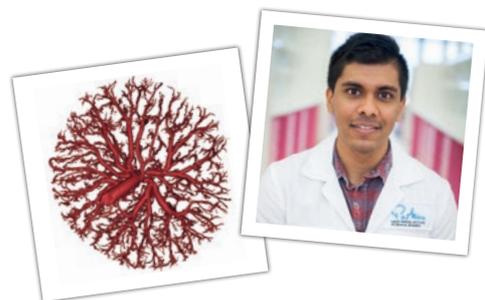
To help combat this, Perkins researchers are looking for ways to use non-invasive imaging, such as MRI and PET, to uncover heart muscle damage and excessive inflammation at important points in a patient's recovery.

Perkins researcher Ben Bartlett has been developing a model of this disease to help illustrate disease progression, allowing researchers to pinpoint the significant times of intervention. It is hoped that by identifying risk factors early in pneumonia patients, doctors will have a better opportunity to intervene with potentially life-saving treatment.

BIOENGINEERING BLOOD FLOW

NIKHILESH Bappoo, a researcher from the Vascular Engineering laboratory, has established a bioengineering framework to better understand how evolving blood flow affects the developing structure and function of placenta vessels during pregnancy.

The research involved creating complex 3D computer simulations to illustrate the flow and pressure of blood in healthy and diseased placentas. The model placenta was able to show mechanical forces in the arterial network which help explain how blood vessels respond to blood flow for a growing foetus. Nikhilesh anticipates his research will one day help doctors better understand and treat blood flow complications during pregnancy.



FROM OUR DIRECTOR

'TIS THE SEASON FOR SCIENCE

IT HASN'T been long since I last wrote to you, but lots of exciting things have happened at the Perkins in that short time.

Our 2018 MACA Ride to Conquer Cancer was held in October and 800 riders cycled through near-torrential rain to do something amazing for medical research in Perth. We could not be more grateful to you, and to the families, friends and supporters of our riders who helped in raising an astonishing \$4.1 million for cancer research. From the bottom of our hearts, thank you.

We were fortunate to be a part of the inaugural Perth Running Festival as the charity beneficiary. The run was a fun and exhilarating event, giving runners an opportunity to see themselves on the Optus Stadium big screen as they crossed the finish line. Many of our researchers and staff took part and thoroughly enjoyed the fun atmosphere. The run is now taking registrations for 2019 and we'd love to have you join us!

Our team welcomes a new executive leader who is helping the Perkins exceed in delivering world-class research breakthroughs for the community.



Our new Chief Operating Officer, Diana Forsyth has joined us from a diverse background in the health, education, community service and resources sectors where she was a leader in delivering change and business improvement. We're thrilled to welcome Diana to the Perkins.

With Christmas fast approaching, I'd like to extend a heartfelt thanks for your support throughout the year. The greatest gift the Perkins receives each year is the backing of our friends and supporters who stand with us in our mission to keep families together for longer. Thank you.

My plans for the Perkins in 2019 are extensive and exciting and I can't wait for you to see everything we have in store. Next year will also be the Institute's 21st birthday, and we plan to have plenty of celebrations throughout the year to thank you for helping us reach this milestone anniversary. Stay tuned for what's to come!

Professor Peter Leedman
Director, Harry Perkins Institute of Medical Research

Christmas is not about the presents under the tree but who is present at the table.

You can give the gift of extra time to a family this Christmas.

[DONATE NOW](#)



COMMUNITY PRIDE FOR THE MACA RIDE

Photo credit: Splash 22 Photography



MORE than 800 riders trained, fundraised, rallied their friends and family and ultimately braved two days of difficult weather, all to make a huge difference for cancer research at the Perkins.

On Saturday 13 October, Professor Peter Leedman announced that the seventh annual MACA Ride to Conquer Cancer had raised a remarkable \$4.1 million, bringing the total amount raised by dedicated riders to \$32 million.

The two-day charity bike ride has grown to become Western Australia's biggest fundraising ride, thanks to the hundreds of riders who have fostered an energetic and passionate community.

Professor Leedman said he was moved by the generosity of the riders who fundraise for months to support medical breakthroughs.

"Every year the Ride is a powerful tribute to people who suffer from this terrible disease," he said.

"With one in two Australian men and one in three Australian women diagnosed with cancer before the age of 85, we know that investment in cancer research is critical if we want to reduce the impact of this terrible disease."

One of the most inspiring participants was Carol Abramo (pictured above), who has been battling cancer for four years. Last year, undeterred by the tough anti-cancer treatment, Carol signed up for the Ride with her son Dean and took part on an electric bike.

Carol's commitment to the event continued despite being too unwell to ride, so this year Carol rode in the front of a Trishaw, provided by Cycling Without Age and powered by Dean and a team of supporters.

"Carol's amazing strength was a motivator for her 'You Can Do Fit' teammates, fellow riders, Perkins researchers and the wider community over the weekend," Professor Leedman said.

"We are incredibly grateful for the continued support of everyone involved in the MACA Ride to Conquer Cancer. The community of riders, donors, crew, volunteers and sponsors make a significant difference to our research."

The annual two-day, 200km Ride will be bigger and better in 2019. Ride with us in honour of your loved ones who have been personally touched by cancer, and to support advancements in medical research that improve the health of Western Australians.

To find out more contact ride@perkins.org.au

MACA DIGS DEEP FOR THE PERKINS

THE RIDE would not be what it is today without the support of Mining and Civil Australia (MACA).

Over the seven years since the Ride's inception, MACA has grown from a team of riders, to a powered-by sponsor, to the title sponsor and a truly essential component of the event.

In those seven years MACA has recruited more than 1,500 riders and raised over \$8 million for the Perkins, directly funding major research projects and purchasing next-generation equipment.

Far beyond their own workforce, MACA has created a culture whereby friends, family, suppliers, clients and corporate partners are all encouraged to ride alongside them. This culture led to MACA winning Leadership in Corporate Giving at the Research Australia Health and Medical Research Awards.

The executive leaders assert that supporting local cancer research has strengthened their team and improved morale, but MACA's impact far exceeds their corporate responsibilities.



Better medicines rely on research breakthroughs – and medical researchers rely on supporters like MACA, who go above and beyond in helping their community.

WA'S FIRST PRE-PREGNANCY SCREENING PROGRAM FOR GENETIC DISEASES

FOR the first time in WA, a screening program that can detect more than 450 debilitating genetic disease genes is being offered to couples planning to have a baby.

The pilot project is being run by teams at the Perkins, the WA Department of Health's Genetic Services WA, PathWest and the Busselton Population Medical Research Institute.

Rare diseases and malformations cause 51% of deaths in the first year of life. However, nearly 90 per cent of couples at risk of having babies with devastating genetic conditions have no family history of the disorders and no idea they are potential carriers.

The likelihood of a baby being born with just one of three commonly screened conditions: cystic fibrosis; fragile X syndrome; or spinal muscular atrophy (SMA) which can cause paralysis, is comparable to the chance of having a child born with Down syndrome.

Professor Nigel Laing AO is an internationally acclaimed genetics researcher who heads the Neurogenetic Disease Laboratory at the Perkins.

"One in 50 people are carriers for SMA, and if they partner with another carrier they have a one in four chance with every pregnancy of having a baby with SMA," Professor Laing said.



"The pilot project will test couples' chances of passing on severe genetic conditions to their children, including those that lead to death in the first years of life."

Neurogenetic researchers at the Perkins are searching to identify disease genes that cause babies to be born with severe disabilities or to die before or soon after birth. So far, nearly 20 genes have been identified.

SCIENCE SLEUTH SARAH

PERKINS gene detective, Sarah Beecroft, is on the hunt for genetic clues to provide much needed answers for families.

Sarah's work focuses on rare neuromuscular diseases, whose sufferers often struggle to obtain fast diagnosis, support and treatment.

Using next generation sequencing technologies, Sarah analyses muscle samples and genetic data to help provide a diagnosis; ultimately giving affected families more information about disease progression, the likelihood of passing their condition on, and potential treatment options.

Importantly, Sarah's research contributes to the global understanding of disease genetics, which can help guide the scientific community in developing new treatments in years to come.

Australian and Turkish families have already benefitted from Sarah's discoveries after she uncovered new disease-causing mutations in a gene, expanding the known spectrum of complications associated with the gene.

Thanks to the generous support of The Fred Liuzzi Foundation, Sarah has been able to advance her work toward improving diagnostic processes for patients around the world.

"The Fred Liuzzi Foundation has helped fund my work for three years and has been a vital source of support. Through the Liuzzi Foundation, and neuropathologist Professor Catriona McLean, I have been able to access a substantial bank of muscle tissue collected in Victoria over a 30 year period.



Several new discoveries have been made from having access to such a concentrated source of genetic material," Sarah said.

The Liuzzi Foundation is now funding a trip to University College London for Sarah to collaborate and create ties between medical researchers in Perth and England.

RESEARCHER SPOTLIGHT: PASCAL VOS

Tell us about yourself.

I was born in the Netherlands, where I obtained a Bachelor's degree in Biochemistry and a Master's degree in Medical Biology. During my studies, I worked for a year as an intern in a research group in Brisbane.

During this time, I started to really like the Australian culture and the way of life, as well as the beautiful weather and surroundings. Because of that, I am now pursuing a PhD back here in Australia.

Tell us about the work you do at the Perkins.

I work in the lab for Synthetic Biology and Drug Discovery, which aims to alter existing antibiotics such that they can bypass any resistance that any bacterial species have acquired and effectively treat infections.

My research involves the development of a new active form of tetracyclines (a type of antibiotic), as many resistance pathways have been found that render the treatment with tetracyclines ineffective.

How do you hope that your research will help people?

For many years, bacterial infections were easy to treat since the discovery of the first antibiotics in the 1960s. However in recent years a number of different antibiotics have been found to be ineffective, resulting in the loss of many patients.

I hope that my research will aid in finding alternative antibiotics which can be used to treat these highly resistant bacterial infections. Having an opportunity to work on life-saving research is something that is very motivating to me.

How is your work supported?

There is little financial support available for international students to study in Australia but thanks to the generous financial aid of Colliers International, I can continue with my research here in Perth and finish my PhD in the next two years.



STAR SUPPORTER: JOHN AND SHEILA RAMSBOTTOM

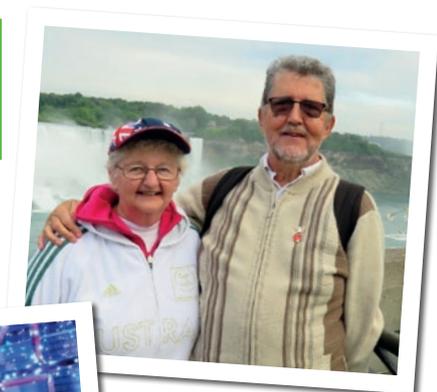
FOR 15 years, Woodvale couple John and Sheila Ramsbottom have been lighting up their Chichester Drive home in spectacular Christmas lights. This year, the couple have chosen to use their Christmas display to fundraise for Perkins research.

What inspired you to start decorating your house 15 years ago?

We were visiting lots of Christmas lights and Sheila said, 'we can do this and we will start with the traditional Christmas story.' The display at the front of our house has a full size nativity scene and children love seeing 'baby Jesus'.

What do visitors say is their favourite aspect of your Christmas display?

Ours is a hands-on Christmas display. Toys for children to play with, computer games for older children and teens, plus a sleigh pulled by 6 white boomers and a picture faceboard. Something for all ages with computers explaining various aspects of Christmas, i.e. Good King Wenceslas and Christmas around the World.



What's been a personal highlight for you, since you began creating the displays?

Seeing children having fun and enjoying the interactive display. Last year we introduced a puppet show and the creativity of children was wonderful. People's generosity last year, in tough times, is another highlight.

What made you choose to support the Perkins?

We had a speaker at our National Seniors Group in Joondalup followed by a visit to the Harry Perkins Institute of Medical Research and it was exciting to see all the research being done to aid the various health challenges facing our community.

KRISTIN LACES UP FOR RESEARCH

THE inaugural Perth Running Festival kicked off on Sunday 7 October, with runners and walkers pounding the pavement on 4km, 14km or half-marathon routes.

Local athletes and families flocked to take part in what was touted as the only event to start and finish inside Optus Stadium and cross the newly opened Matagarup bridge.

Many participants opted to donate or fundraise for the Perkins.

Runner and Manjimup local, Kristin Eames (34), said she was floored by the outpouring of community support she received for her Run fundraising.

The mother of four and passionate runner raised more than \$17,000 thanks to the generosity of her friends, neighbours and the Manjimup community.

Keen to challenge herself and raise important funds for research, Kristin initially set a goal to raise \$3,000.

"I asked local businesses to buy a kilometre of my run and held a wood raffle to reach my goal but it just went crazy! Within 2 days I had raised \$6000 and the

donations just didn't stop."

"I changed my goal to \$10,000 and made that within the week! It has been such an enormous community effort. The support I have received has just blown me away and I am so grateful and blessed to have had this response."

Kristin was inspired to fundraise by her dad, Ashley, who was diagnosed with an aggressive lymphoma in March.

"My dad is the meaning of the word strong. He fought prostate cancer 12 years ago and he is going through a really hard time with his cancer treatment now."

"I know I can't take this away from him. I just hope one day there will be big breakthroughs with these horrible diseases to spare other families having to go through the heartache this causes."

"Fundraising for medical research is so important. Even if it doesn't make a difference straight away, we need to make a difference for our children and our grandchildren. A little effort can really go a long way," Kristin said.

HOW YOU'RE HELPING

EVERY dollar raised for the Perkins helps to fund promising research projects. These projects rely on community support from people like you to get them from the laboratory to the patients that need them.

One such project is the development of specialised nanoparticles for women with hard-to-treat breast cancer, led by breast cancer researcher Dr Anabel Sorolla.

Anabel is creating tiny microscopic carriers for anti-cancer medicines that will reduce the side effects of chemotherapy by delivering the treatment directly to the cancer site. Anabel's new nanoparticle treatment will help women with aggressive forms of breast cancer that don't respond well to conventional medicines.

Early research has shown promising results, indicating that her nanoparticles can help to destroy cancer cells while leaving healthy cells unharmed.

Photo credit: SkyWorks WA



Thank you.



As a registered charity, we rely entirely on gifts, donations and research grants to fund our critical research. Thank you to everyone who contributes to our important work.

Major Supporters



Ashok and Renu Kumar and family



Stan Perron Charitable Trust



McCusker Charitable Foundation



Add these dates to your calendar!

Learn more at perkins.org.au/events

At the Perkins

Community Tour and Tea
Wednesday 12 December 2018

Community Q&A: Breast Cancer
Tuesday 12 March 2019

Out and about

Hawaiian Walk for Women's Cancer
Saturday 4 May 2019

MACA Cancer 200 Ride
Sat 26 & Sun 27 October 2019



6 Verdun Street, Nedlands,
Western Australia 6009
PO Box 7214, Shenton Park,
Western Australia 6008

Phone: +61 8 6151 0700
Fax: +61 8 6151 0701
info@perkins.org.au
perkins.org.au

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All contributions to the Perkins go directly to advancing medical research. If you would like to support a specific area of research, please tell us.

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- Please send me information about helping the Harry Perkins Institute of Medical Research through my will.
Donations over \$2 are tax deductible and a receipt will be issued.
- Please tick the box if you do not wish to receive information from us.

There are 3 ways you can donate:

1. perkins.org.au (click "Donate Here") or
2. Phone (08) 6151 0772 or
3. Post this form to the Harry Perkins Institute of Medical Research
PO Box 7214, Shenton Park, WA 6008

I would like to make a donation today of: \$ _____

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CHEQUE

Cheque or money orders – Please make payable to the **Harry Perkins Institute of Medical Research** and post to the PO Box listed above.
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