Perkins

Magazine of the Harry Perkins Institute of Medical Research

"one day...

My mum rang and told me my father had prostate cancer. She said I'd love to tell you it's not serious but...."

Liz

"one day...

We're going to make cancer a non-lethal disease. I am absolutely certain of that."

Professor Peter Leedman

Bringing Tomorrow Closer.

"one day... We must end prostate cancer

From the Director

This year it is estimated that 16,665 Australian men will be diagnosed with prostate cancer, and a further 3,452 will die from their cancer. As a scientist, as a doctor, and as a father I find these statistics alarming.

It's true that prostate cancer is one of the most common cancers diagnosed in Australians, but thanks to relentless research into improved treatments, diagnostics and screening, the five-year survival rate for prostate cancer has improved by more than 30 per cent.

Medical research has also uncovered the risk factors that we should be wary of – age, race, family history and lifestyle. With two sons myself, I worry about the genetic risk factors in our family.

My dad and my father-in-law both died from widespread prostate cancer, and we now know that men are twice as likely to get prostate cancer if they have two or more first-degree relatives with the disease.

My family, my friends and my patients motivate me to continue searching for better solutions to end prostate cancer. Researchers in the Laboratory for Cancer Medicine, which I lead, are busy investigating new ways to treat prostate cancer, such as by cutting off the key pathways driving cancer growth. My team is also examining the use of tumour suppressor microRNAs, which offer great promise in cancer biology as a new avenue for diagnostics and treatments.

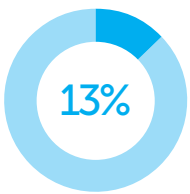
I can't tell you exactly when we'll achieve our ambitious goal to defeat prostate cancer, but I can tell you that one day we're going to find a way to cure this disease so that families like mine no longer have to live with the worry.

Commit to making a big impact against prostate cancer by registering for the MACA Ride to Conquer Cancer or by donating to a rider. Raise funds, get fit and make a difference in 2017.

Professor Peter Leedman
Director, Harry Perkins Institute of Medical Research

PROSTATE CANCER IS THE MOST COMMONLY DIAGNOSED CANCER IN AUSTRALIAN MEN*

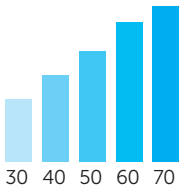
In 2017, it is estimated 16,665 new cases of prostate cancer will be diagnosed, accounting for 23.1% of all new male cancer cases.



Prostate cancer was responsible for 13% of all cancer deaths in Australia in 2014.

94,114

More than 94,000 men were living with prostate cancer at the end of 2012.



Risk of being diagnosed with prostate cancer increases with age.

*excluding non-melanoma skin cancers. Source: www.cancer.org.au/about-cancer/faq.html

one day... that changed my world

One phone call changed Liz Shave's world. Her mum rang with the terrible news - her father had been diagnosed with aggressive prostate cancer.

"We'd love to tell you it's not serious", she said, "but it is. It looks like it's travelled and it's going to be terminal."

"I asked my mum if I could talk to him and she told me he didn't want to speak to anyone, he didn't have the words."

"I was living in Melbourne at the time, but I told my dad that I would come back to Perth. I knew they wouldn't have called me if it weren't terminal and I needed to be home with them," Liz said.

"It's horrible and it's not fair. He didn't deserve that, and nor did our family to watch it."

Tragically, one in six Australian men will be diagnosed with prostate cancer in their lifetime.

Like Liz, the Director of the Perkins Professor Peter Leedman, has experienced the pain of losing a family member to prostate cancer.

"Both my father and my wife's father died of widespread prostate cancer," Peter said.

"I've got three beautiful children but I've got two boys and I hope they never have to hear the news that my father gave me in November of 1988."

"The only way to make sure that no other families have to experience this tragedy is through high-quality medical research, to find new and innovative solutions to defeat prostate cancer," Peter said.

"Our teams at the Perkins are making discoveries that can be translated into clinical trials and new medicines as soon as possible."

Liz Shave

Liz and her father

Liz and Peter tell their moving stories in a new video.
Watch the video now at perkins.org.au

Personalised treatment closer thanks to multi-million dollar grant

Perkins researcher, Professor Alistair Forrest, is set to lead a new single-cell sequencing centre, which has the potential to transform cancer research in Western Australia.

CANCER RESEARCH TRUST

The Cancer Research Trust awarded $6.75 million to establish the centre and acquire the specialist technology, which could deliver major insights into tumour biology, cancer progression, methods for earlier detection and innovative new ways to kill cancer cells.

The facility will generate a molecular atlas of hundreds of cancer samples donated by patients - a resource which will help researchers uncover which genes are switched on and off in every cell within a tumour.

"Traditionally a pathologist would take a piece of tumour and classify it as a type of liver cancer or a type of prostate cancer and based on that they'd recommend a set of drugs," Professor Forrest said.

"The problem is that tumours evolve and as they grow the tumour cells will accumulate new mutations each time, making them more resilient."

With so many different cell types in each tumour, 95% of the cancerous cells might be killed by a particular drug but the remaining 5% might survive and they could grow back to form a drug resistant tumour.

Single cell technology allows researchers to analyse separate individual cell types to determine which combination of drugs is required to kill them all.

Professor Alistair Forrest

Promising trial results from Perkins spinout

> "Protein in the urine damages the kidneys, leading to further protein leakage. If our treatment can reduce this and slow further kidney deterioration, we will have made a meaningful advancement in treatment options for patients over the current highest standard of care."

Positive results from a clinical trial investigating the safety and efficacy of a new treatment for Chronic Kidney Disease (CKD) have just been released.

Dimerix Limited, a company founded on technology developed by Perkins researchers, found that its flagship treatment was effective at controlling protein leakage from the kidneys, a common and harmful symptom of CKD.

Chronic Kidney Disease is an illness that affects 1.7 million Australians each year and can lead to kidney failure, cardiovascular disease and premature death.

Perkins laboratory head and Chief Scientific Advisor of Dimerix, Associate Professor Kevin Pfleger, said CKD is considered a 'progressive disease', meaning that without appropriate treatment a patient can experience a downward spiral of worsening kidney function.

Pre-pregnancy carrier screening – what is it and should potential parents consider it?

The American College of Obstetricians and Gynaecologists recently recommended obstetricians, gynaecologists and other related health care providers offer pre-pregnancy carrier screening for genetic diseases to all patients.

Pre-pregnancy carrier screening involves testing healthy adults for gene mutations that cause recessive disease. A carrier has a disease-causing gene without having an active disease, but if both parents carry the same recessive disease, the disease could affect their children.

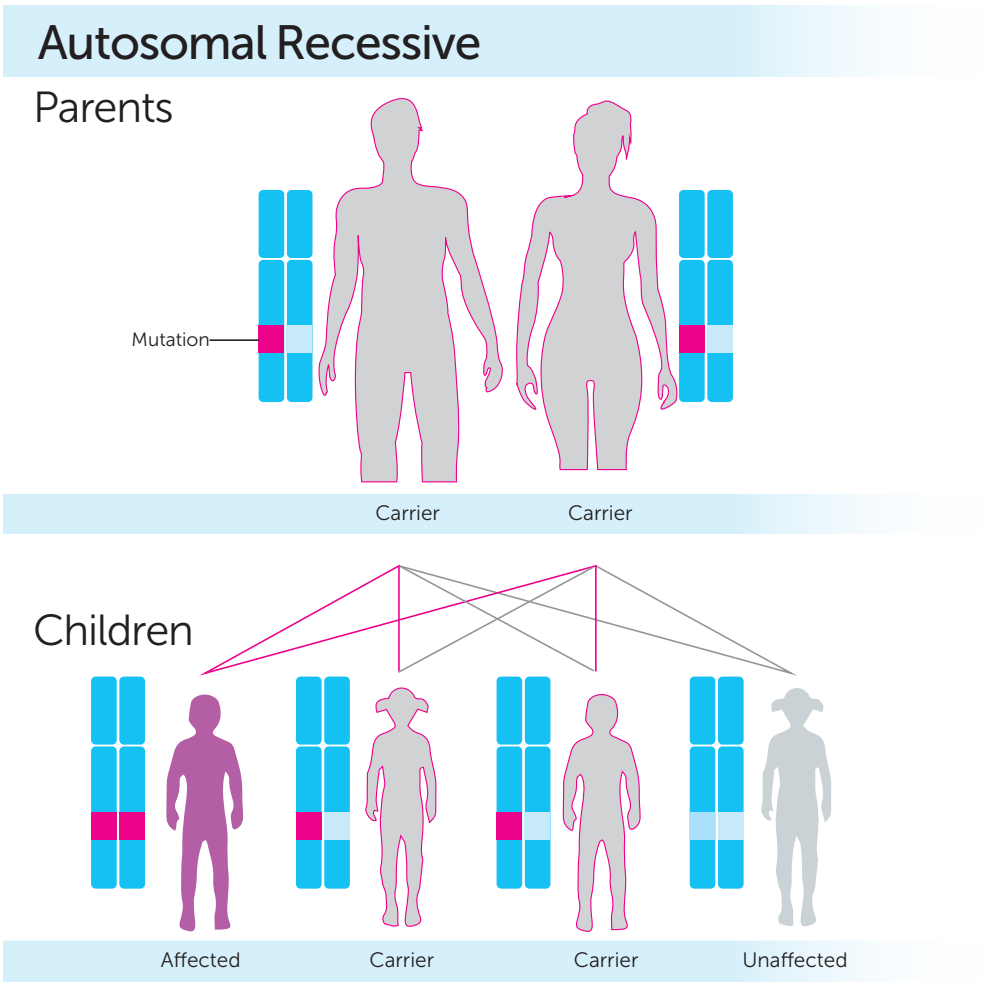
If both partners in a couple carry the same recessive disease, then the couple have a one in four chance of a child with that disease. Carrier couples could therefore have many affected children.

Some recessive diseases are relatively mild but others are severe, including many that cause death at or shortly after birth.

It has been estimated that each of us is a carrier of three to five lethal recessive mutations, which could mean that we're all carrying diseases that we're unaware of unless we have an affected child.

Historically, pre-pregnancy carrier screening programs have been tailored for specific population groups who are more likely to have a recessive disease. For example, the recessive brain condition Tay-Sachs disease, which is usually fatal in early childhood, has a high incidence in the Ashkenazi-Jewish community.

Testing for Tay-Sachs started after it was discovered, in 1969, that the loss of a particular enzyme causes the disease. The first pre-pregnancy carrier screening programs in the Ashkenazi population followed in the 1970s. Since then the incidence of Tay-Sachs disease has reduced by more than 90%.



Reference: U.S. National Library of Medicine

Pre-pregnancy carrier screening programs reduce death and disease associated with the screened diseases. Each recessive disease is rare but there are hundreds of recessive diseases and collectively they have wide-ranging impacts. A study of 50 severe recessive diseases found their collective incidence to be greater than that of Down syndrome (one in 600 compared to one in 1,100).

Pre-pregnancy carrier screening increases the knowledge of genetic risk for couples and could be an approach to reducing the impact of many devastating inherited diseases.

Professor Nigel Laing AO, Dr Gina Ravenscroft and Royston Ong from the Perkins Neurogenetic Diseases Laboratory were recently asked to provide a summary of the American College of Obstetricians and Gynaecologists recommendations to "The Conversation". This is adapted from their article.

Professor Laing's team is researching the design and implementation of a pilot pre-pregnancy carrier screening program in WA and the attitudes of Western Australians towards pre-pregnancy carrier screening.

Cracking the cycling code

The Crack Cycling team, powered by heartfelt experiences, has become one of the most successful teams in the MACA Ride to Conquer Cancer.

Tim Nielsen

> "It's not a race, while we enjoy riding, our main reason for coming together is to raise money to benefit the Harry Perkins Institute of Medical Research and support the important work they do, because we all know too many people who have been affected by cancer."

Crack Cycling is gearing up for their sixth year in the MACA Ride to Conquer Cancer, and their second year as the leading community team.

Crack Cycling team captain, Tim Nielsen said he was proud of the impact the team has made, having raised more than $321,000 since 2012 for the Harry Perkins Institute of Medical Research.

"There were two of us in 2012, me and my brother-in-law, and we raised $9,932. I was hooked from then on."

This year the team has grown to 25 members and Tim is hoping to personally raise at least $15,000. He's well on his way, having raised more than $10,000 so far.

Tim said he was inspired to join the Ride after seeing so many of the people he loved touched by cancer.

"I'm riding for my wife who is doing well after recently completing treatment for breast cancer," Tim said.

"Every rider has their own personal reason for participating, we all know people who have been diagnosed with cancer and my list includes my father, my mother-in-law, aunts, uncles, cousins, team mates and work colleagues. Far too many people suffer from this truly horrible disease."

In 2016 the team joined forces with Sue Hurt and her team Living Well with CML, another highly productive community fundraising group.

"Living Well with CML has raised over $120,000 in support of cancer research at the Perkins, and combined we hope to have a really successful 2017 Ride to Conquer Cancer."

"Being in a growing team has helped me meet a lot of fantastic people. One of our riders, Zoe, is from Katherine in the Northern Territory and will be flying in shortly before the ride."

For anyone thinking about joining the Ride, Tim assures the fence sitters that his team is made up of individuals with a range of riding abilities and anyone can do it.

"It's not a race, while we enjoy riding, our main reason for coming together is to raise money to benefit the Harry Perkins Institute of Medical Research and support the important work they do, because we all know too many people who have been affected by cancer."

Make a difference in 2017 by registering for the MACA Ride to Conquer Cancer at conquercancer.org.au

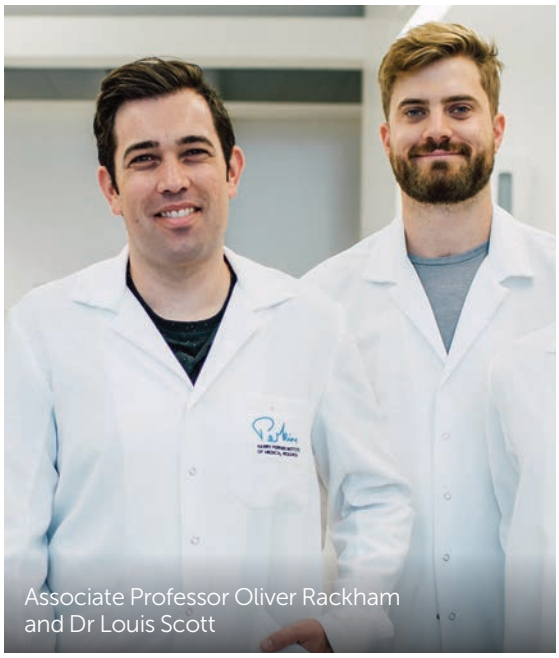
Reverse engineering a solution to 'superbugs'

Researchers from the Perkins Synthetic Biology and Drug Discovery laboratory are approaching the challenge of antibiotic resistance by looking at the problem in reverse.

Working with an ancient yeast that was used for brewing beer as early as 3000 BC, they have developed a strain that is effectively addicted to antibiotics. They have transplanted genes required to make antibiotics into this yeast and the aim is to now grow the yeast in the presence of antibiotic resistance proteins, so that the yeast will be forced to make new antibiotics to survive.

Perkins researcher, Dr Louis Scott, is building a library of millions of antibiotic-addicted yeast, which he is screening to discover new antibiotics, developed by the surviving yeast, which will no longer be destroyed by resistance mechanisms.

"It's effectively the reverse of what is happening with antibiotic resistance" said laboratory head Associate Professor Oliver Rackham.



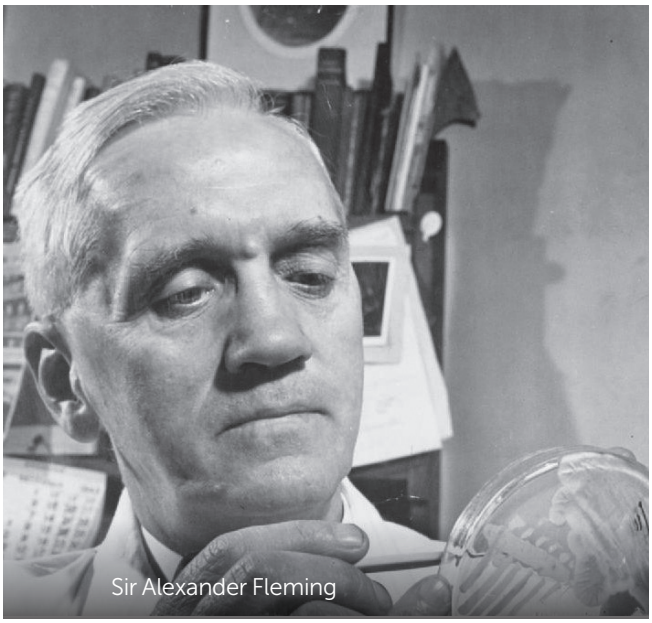
Associate Professor Oliver Rackham and Dr Louis Scott

About antibiotic resistance

Recently, the World Health Organization declared antibiotic resistance a serious threat to global public health, stating that without effective response to antibiotics the success of major surgery, including organ transplants, would be compromised.

Australia has one of the highest rates of antibiotic use in the world and recent estimates suggest that if we do not take action, by 2050 drug resistant infections could kill more than 10 million people worldwide each year.

The beginnings of modern medicine



Sir Alexander Fleming

When Alexander Fleming discovered penicillin back in 1928, it changed the face of medicine. Antibiotics such as penicillin have saved millions of lives and modern healthcare depends on antibiotics for cancer treatments, operations and to prevent the most simple of infections from becoming fatal.

Antibiotic resistance occurs when an antibiotic loses its ability to stop bacterial growth. The overuse and misuse of certain drugs has allowed previously manageable bacteria to mutate and evolve, becoming resistant to the drugs we are most reliant on. This has led to the creation of 'superbugs' that can be completely untreatable.

Open Day exhibit: the dawn of antibiotics.
Come and see an original sample of penicillin mould signed by Alexander Fleming at the
Perkins Open Day
Saturday 26 August, 10am – 3.30pm.

Walking in honour of my Mum

Melinda Bryenton-Rochard said supporting an important cause and staying active were great reasons to sign up for the Hawaiian Walk for Women's Cancer, but her real motivation came from losing her beloved mother.

"I walk in memory of my Mum, who for over 12 years battled four different types of cancer including breast and ovarian. I was 18 when she finally lost her battle."


Melinda Bryenton-Rochard

Mel said that now at age 47, she is the same age that her mum was when she passed away, so this year is particularly important for her.

"I've signed up to walk again, not just in honour of my Mum but for every Mum, Nan, sister, daughter, aunt, cousin and friend. If my contribution can help to save even one of them from the torment of cancer, then the sweat, blisters and exhaustion will be more than worth it."

"In 2018 I will be walking again alongside my lovely team Mel's Belles, including Michelle whom I met at a Perkins Open Day a few years ago!"

Join Mel in the Hawaiian Walk for Women's Cancer on Saturday 5 May 2018.

Learn more at www.walkforwomenscancer.org.au

hawaiian WALK FOR WOMEN'S CANCER Perkins

Add these dates to your calendar!

Learn more at perkins.org.au/events

Perkins Open Day
– Saturday 26 August 2017

MACA Ride to Conquer Cancer
– Saturday / Sunday
21-22 October 2017

Wesfarmers' Harry Perkins Oration
– Tuesday 28 November 2017

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