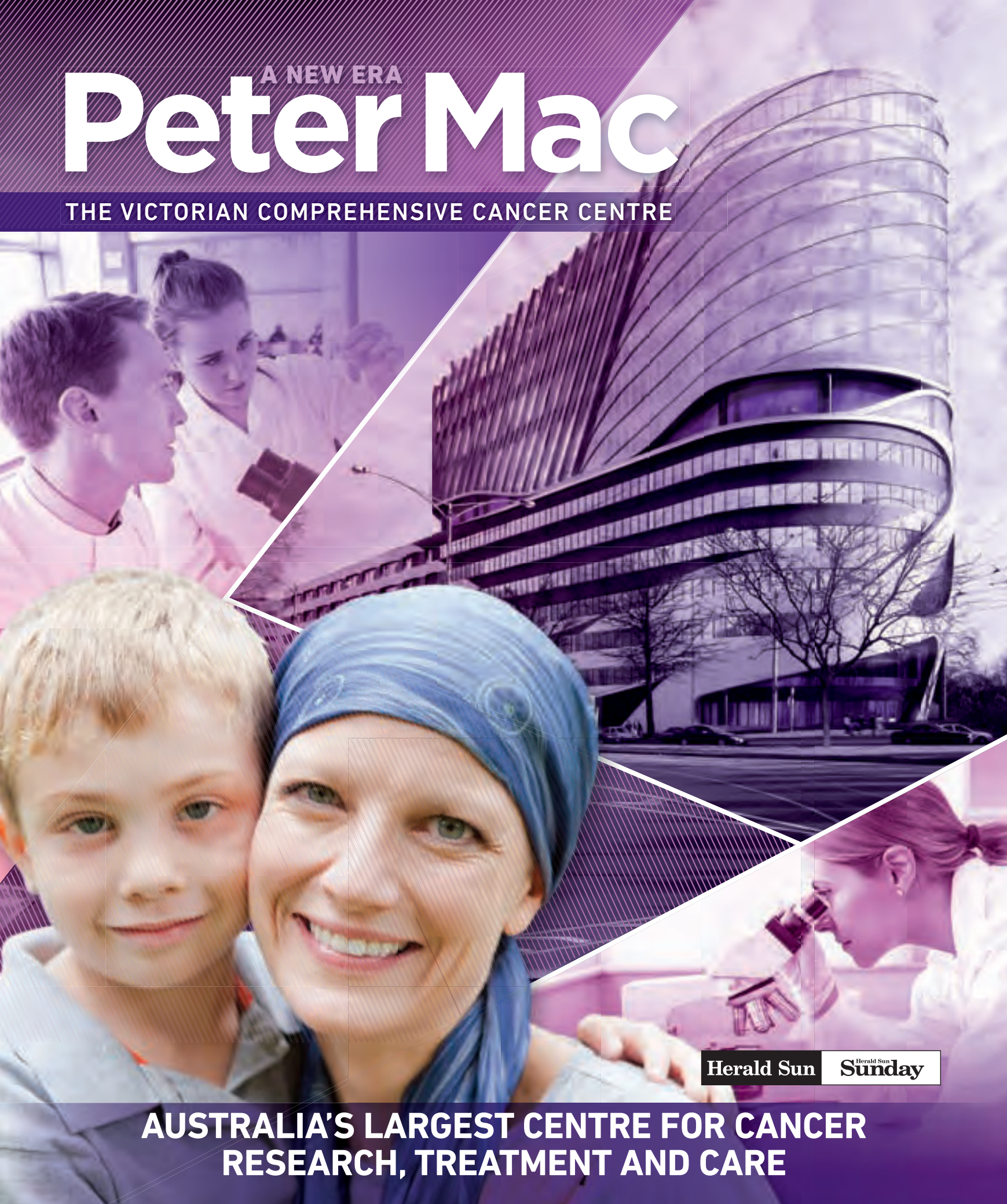
A NEW ERA

Peter Mac

THE VICTORIAN COMPREHENSIVE CANCER CENTRE



Herald Sun | Herald Sun Sunday

AUSTRALIA'S LARGEST CENTRE FOR CANCER RESEARCH, TREATMENT AND CARE

CONTENTS

MESSAGES OF SUPPORT

THE HON. DANIEL ANDREWS //
PREMIER OF VICTORIA

I was proud to be the Health Minister when the Victorian Comprehensive Cancer Centre (VCCC) project commenced and I'm pleased to be Premier upon its completion.

Nothing makes me more proud than seeing the VCCC come to life — serving people across our state who, despite living with cancer, can be granted the hope, trust, confidence and convenience for which our public health system is renowned.

Peter Mac will now be located within our state-of-the-art VCCC building, working to help deliver better treatments, the very best in care and cures for all Victorians affected by cancer.

I believe that everyone has the right to access the best cancer treatment and technology. With Peter Mac's relocation to the VCCC, we now have some of our best clinicians, researchers, nurses and scientists working together in one precinct to guarantee just that.

DALE FISHER //
CHIEF EXECUTIVE

THE. HON MAXINE MORAND //
CHAIR

Peter MacCallum Cancer Centre exists to provide the very best in care, better treatments and cures for all people affected by cancer.

We thank the people of Victoria and Australia for their support for our work, and belief in the vision for the Victorian Comprehensive Cancer Centre, brought to life in this wonderful new building that is now Peter Mac's home.

It represents the very best of humanity — where care and compassion combine with research, innovation and discovery, driven by a singular goal to improve lives.

We look forward to caring for our patients, their families and our community here for many years to come.

CREDITS

Peter Mac
Peter MacCallum Cancer Centre
Victoria Australia

EDITOR // Fiona Welsh
CREATIVE // Jacki Moloney
PRODUCTION // Sashi Thapa, Claire Burke
WRITERS // Sarah Marinos, Dani Wright

PARTNERSHIPS & MAGAZINES VICTORIA
HEAD OF CONTENT // Ondrej Foltin
Partnerships & Magazines Victoria is a division of the Herald & Weekly Times Pty Ltd
PUBLISHED BY // The Herald & Weekly Times Pty Ltd 40 City Rd, Southbank Vic 3006
ABN // 49 004 113 937
PRINTED BY // IPMG Group
COMMERCIAL PRINT MANAGER // Andrew Davies

WORLD'S BEST CARE IS HERE

With a world-leading new cancer centre and the promise of breakthrough treatments on the horizon, Victoria's cancer patients are on the threshold of a new generation of care.

The state-of-the-art Victorian Comprehensive Cancer Centre is also the new home for the renowned Peter MacCallum Cancer Centre.

Open for Peter Mac patients from June 24, the centre is expected to greatly advance the integration of clinical treatments and research, enabling Victorian patients to gain unprecedented access to the latest breakthroughs.

Immunotherapy drugs, which have radically advanced melanoma treatments in the past 18 months, could rewrite the book on treating cancer in the same way radiotherapy and then chemotherapy have done in the past.

One of only a handful of cancer centres in the world that fully integrates bedside care with a comprehensive clinical and laboratory research program, Peter Mac expects advances and patient outcomes to vastly improve through even closer relationships with the Royal Melbourne, Royal Women's and Royal Children's hospitals, as well as the University of Melbourne.

Peter Mac chair Maxine Morand says it is well-placed to lead the way in better care, better treatments and potential cures for cancer.

"Peter Mac is already making discoveries and advances in treatments that are globally significant, but that is going to be enhanced by the power of the collaboration within the precinct and among VCCC members," Ms Morand says.

GRANT McARTHUR //
HERALD SUN HEALTH EDITOR

Every element of Peter Mac's new home — from the gardens, hospitality and wellbeing areas for families and carers to the natural light available in rooms and via the massive atrium – is designed to benefit the more than 30,000 patients who will be treated in the centre each year.

The seven-storey Peter Mac hospital within the building includes 96 overnight beds — each with an ensuite and entertainment system, with larger rooms for friends or family — and is connected to the Royal Melbourne Hospital by bridges.

"Our hope is that we can provide an even better standard of care by offering our patients the very best facilities and equipment in a space built with care and compassion for all people affected by cancer," Ms Morand says.

"Most Victorians and many Australians know of Peter Mac. But I am not sure they know that Peter Mac and its people are known around the world for their advances in cancer research, treatment and care.

"We are really at the forefront of collaboration and discovery to find cancer cures and the new centre will only improve treatment options for patients in Victoria. That is what drives the people who work at Peter Mac every day.

"Outcomes are so much better than they used to be, but there is still a long way to go and still way too many people that we lose each year to cancer." //

Peter Mac
Peter MacCallum Cancer Foundation

Help discover cancer cures.

Become a Peter Mac Discovery Partner today.

Visit petermac.org/discovery
1800 111 440

BETTER TREATMENTS, BETTER CARE AND CURES FOR CANCER.

INNOVATION GIVES HOPE

PROFESSOR GRANT McARTHUR //
CO-CHAIR OF MELANOMA AND SKIN SERVICE,
HEAD OF THE MOLECULAR ONCOLOGY LABORATORY
AND HEAD OF THE TRANSLATIONAL RESEARCH LABORATORY

Prof McArthur is internationally renowned as a leader in the treatment of melanoma, but he began his career in that research field at Peter Mac almost by accident. Since then he has studied how to turn off the genes that allow the cancer to grow and survive, while at the same time enhancing a patient's immune system to reject melanoma.

"When I was recruited to Peter Mac in 1998 the clinician looking after melanoma oncology was leaving and the position was offered to me, even though I'd not worked in melanoma previously. I was interested in understanding the basic biology of cancer and translating that into better outcomes for patients and I had also developed an interest in turning off oncogenes — the genes that get changed in cancer and make cancers grow and survive.

If you can identify that gene and turn it off, you can get dramatic responses. In 2002 there was a discovery in the UK of a gene called BRAF and it was quite frequently changed in melanoma. I tested the idea that we could turn off BRAF to treat melanoma, and that led to a wave of success and treatment.

We've had a wealth of advancements in understanding the basic science behind melanoma and what makes it behave as a cancer. In more recent times, colleagues here made a fundamental discovery that a single melanoma cell can form a tumour, so we now know that every cell in a melanoma has a potential to form a tumour and grow. We are also interested in an important protein called CDK4 that makes melanoma cells grow and divide.

We now have a wonderful opportunity between turning off these genes that make the melanoma grow, coupled with new immune treatments for melanoma, to enhance a patient's immune system to reject the disease.

Recently I was part of a special conference at the Vatican that was supported by patients, families, scientists, US vice-president Joe Biden and the Pope. It brought together all the elements needed to get better health outcomes for cancer patients from new technologies.

'I'VE SET MYSELF A PERSONAL GOAL ... OF SEEING 50 PER CENT OF PATIENTS WITH END STAGE MELANOMA BEING CURED.'

I highlighted the need for innovation to cure cancer and the real issues for patients in accessing new technology developments because of the costs.

There was strong support for creating greater access to the kinds of medical breakthroughs we've had in cancer.

I've set myself a personal goal before I retire of seeing 50 per cent of patients with end stage melanoma being cured."//

MEETING THE NEEDS OF SURVIVORS

When advance practice nurse and researcher Donna Milne began working at Peter Mac some 14 years ago, the prognosis for advanced melanoma was often bleak.

Thankfully, advances in research and treatment are changing this and she is studying how these are affecting patients and their families.

"Because of the advances in immune oncology therapies, for example, and the fact that these treatments are relatively new, we don't have a clear picture of how they are impacting patients' lives in ways other than those directly related to their disease status," Ms Milne says.

"A sub-group of patients that respond to these treatments are living longer so they have to think about survivorship issues that we never contemplated previously. My research looks at what life is like for patients, particularly those with advanced stage melanoma. What are their unmet needs and how can we check that we are doing the right thing for them?

"Patients need the right treatment for their disease but they also need the right people in the right place at the right time to support them," she says. //

RESEARCH GENES IN THE FAMILY

Husband and wife researchers Professor Mark Dawson and Associate Professor Sarah-Jane Dawson returned to Australia and to Peter Mac in 2014 after they had spent seven years in research at the University of Cambridge.

Prof Dawson's specialty is harnessing cancer epigenetics to help manage acute myeloid leukaemia, which has a five-year survival rate of just 25 per cent. Assoc Prof Dawson's research has centred on the study of circulating cell free tumour DNA and the development of personalised cancer biomarkers to improve clinical care and outcomes for patients.

ASSOCIATE PROFESSOR SARAH-JANE DAWSON //

"Clinically I work with and treat patients with breast cancer, but my research interests span several malignancies where I am interested in developing improved biomarkers or tools that we can use in the clinic to improve our management of cancer patients.

I'm particularly interested in developing blood-based or non-invasive biomarkers. At the moment, patients often need invasive tissue biopsies during their cancer treatment, and doing these repeatedly is difficult and not always possible. Obtaining information about the cancer from a simple blood test is far less invasive and can be repeated more frequently during an individual's treatment, allowing us to obtain important genetic information about the cancer.

A key area of my work is in the application of circulating tumour DNA. We know all cancers can shed small amounts of DNA into the bloodstream and through improvements in technology we are now able to measure this small amount of tumour DNA in the blood and study it to understand more about the cancer.

It provides information about whether patients are responding to treatment or not. We can also follow genetic changes of someone's cancer over time and gain information about why a patient may not be responding to therapy. We are now very close to seeing the clinical applications of this technology.

When I started working in this area I was at the University of Cambridge and I did some pioneering work developing the role of circulating tumour DNA in breast cancer. In 2013 my work was published in the *New England Journal of Medicine* and was the first publication to show the application of circulating tumour DNA as a biomarker in metastatic breast cancer.

Cambridge was an inspiring environment and I was able to work alongside world leaders in their field. Mark and I decided we were passionate about cancer research and we wanted to go overseas to get more scientific training.

We immersed ourselves there to improve our skills and bring them back to Australia. The VCCC will closely emulate the environment in Cambridge. It is both a world-leading facility for patients and on the research front it will help accelerate the discoveries we make.

A major reason for wanting to come to Peter Mac was the opportunity to conduct my research alongside patient care.

Patients make a large contribution to the research and help us understand how these tests can develop. My research could not be done without the participation of our patients." //

‘TO CARE FOR PEOPLE AT SUCH A DIFFICULT TIME IN THEIR LIFE IS A GREAT PRIVILEGE AND THE MOST REWARDING ASPECT OF MY WORK.’

– PROF MARK DAWSON

PROFESSOR MARK DAWSON //

“The thing I got most out of my time in Cambridge was the mentality. Everyone feels there is nothing too hard to address and I’ve brought back that approach. We have to aim incredibly high, to ask hard questions, to invest time and to go for things that will completely change the way we treat these diseases.

My wife and I had our children in England but we wanted to bring them up here with our families in Melbourne. So we had to find a place where we could continue to achieve as we did in Cambridge and, for us, there was only one place — Peter Mac’s new home within the VCCC.

It’s much more than a state-of-the-art facility. It’s in the middle of an intellectual hub and a collaborative environment that allows you to think big.

My work is in epigenetics and the most common example I give of this is how a caterpillar becomes a butterfly.

The DNA sequence or instruction manual for the caterpillar is identical to the butterfly and the entire DNA content is identical. But they look remarkably different because the genes that are turned on in the caterpillar are different to the genes turned on in a butterfly.

So epigenetics is the study of how our DNA is read, interpreted, replicated, repaired and transmitted.

Why is this important to cancer? Because cancer is a disease driven by mutations of the DNA and we can potentially manipulate cancer cells to shut off the genes that have been mutated. My lab studies this specifically for acute myeloid leukaemia. The way we treat this disease today is the same way we treated it in the mid-’70s and it’s a disease in urgent clinical need of something transformative.

We’ve developed new epigenetic therapies for the treatment of AML. They’re not a panacea, but they offer new territory to try and treat this disease.

They force cells to make certain decisions and if you can drive cancer cells to make the decisions you want them to make, you can arm yourself to counter those decisions.

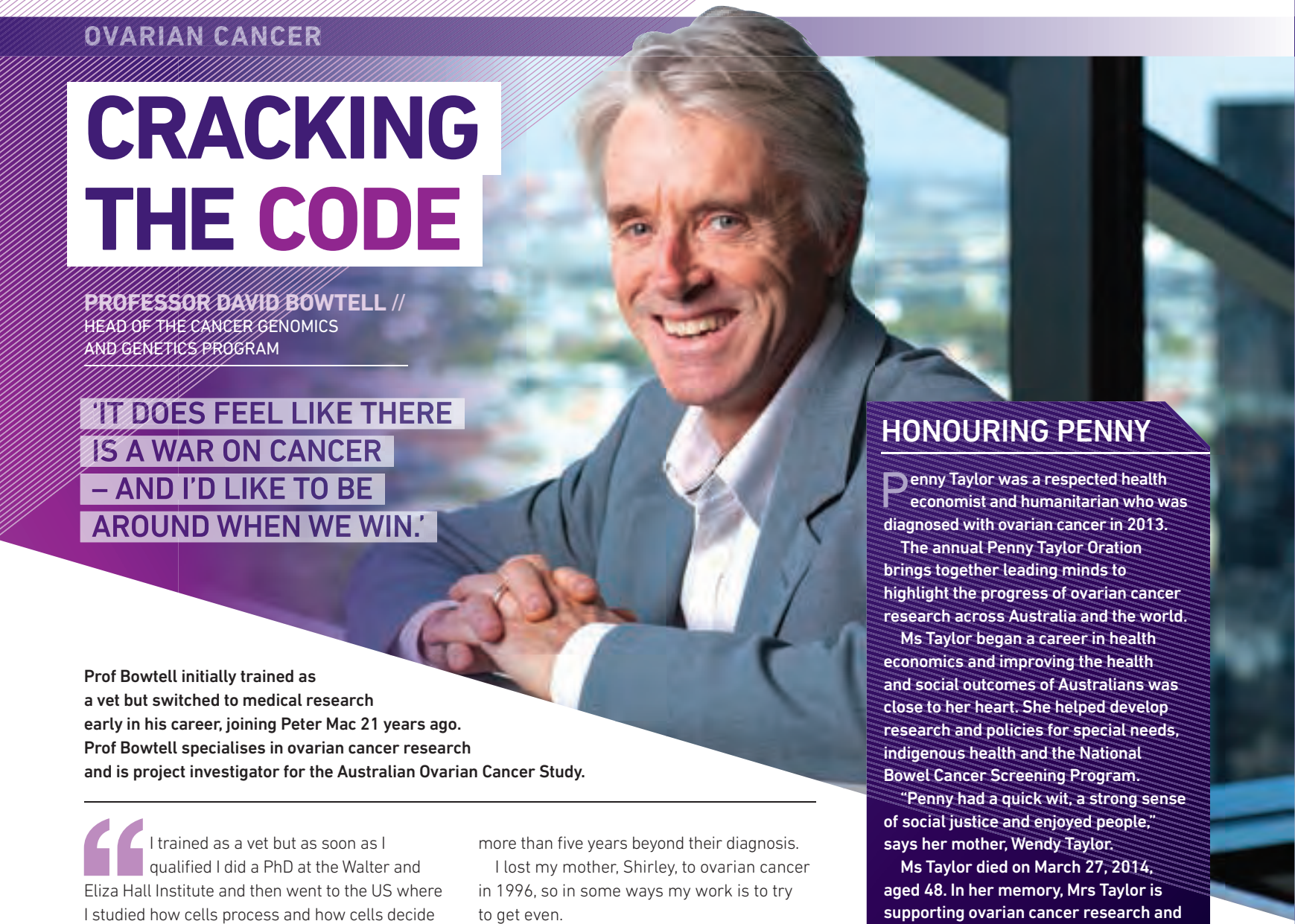
This is combination therapy — using one therapy to force the cell to make a certain decision and then exploiting that frailty. Over the next five years we hope to come up with new options that corner the cancer cells in a way we haven’t been able to do before.

I also work with patients as a haematologist. To care for people at such a difficult time in their life, help them understand their illness and support them through their treatment is a great privilege and the most rewarding aspect of my work.

When I leave for work each morning I never know what will happen — but I know what is possible.” //

CRACKING THE CODE

PROFESSOR DAVID BOWTELL //
HEAD OF THE CANCER GENOMICS AND GENETICS PROGRAM



'IT DOES FEEL LIKE THERE IS A WAR ON CANCER – AND I'D LIKE TO BE AROUND WHEN WE WIN.'

Prof Bowtell initially trained as a vet but switched to medical research early in his career, joining Peter Mac 21 years ago. Prof Bowtell specialises in ovarian cancer research and is project investigator for the Australian Ovarian Cancer Study.

"I trained as a vet but as soon as I qualified I did a PhD at the Walter and Eliza Hall Institute and then went to the US where I studied how cells process and how cells decide what to become. The genes discovered there turned out to be fundamental to the way the cells in us communicate.

Cancer ultimately is a software problem — each of our cells has a software code written in DNA. That code is extensive. If you wrote out the genome embedded in any single cell in your body in seven-point font it would cover the floor of the MCG. In cancer, it's like someone mows backwards and forwards across the field and then you have to try and read that text, to understand what is happening and to use that information to improve a patient's therapy to potentially cure them.

I decided to work in ovarian cancer research because I could see there was an opportunity to make a difference. It's the fourth most common cause of cancer deaths in women in western countries but hasn't always received the attention it deserves. Around 1500 Australian women are diagnosed each year and less than half survive more than five years beyond their diagnosis.

I lost my mother, Shirley, to ovarian cancer in 1996, so in some ways my work is to try to get even.

Ovarian cancer is actually a misnomer — it's many different diseases, often not arising in the ovary, and so to study it you need the involvement of thousands of women. That's why the Australian Ovarian Cancer Study was established in 2001. Last year we published a major study that showed the mechanisms by which cancer becomes resistant to treatment. We believe that has given us new therapeutic approaches to make the disease sensitive to chemotherapy again. We're also studying patients who weren't expected to live more than a few years and who are alive 10 years later — we want to understand how they do that.

There's good reason to be hopeful things will improve with ovarian cancer. The clouds have parted and we understand more clearly what we're up against. It does feel like there is a war on cancer — and I'd like to be around when we win." //

HONOURING PENNY

Penny Taylor was a respected health economist and humanitarian who was diagnosed with ovarian cancer in 2013.

The annual Penny Taylor Oration brings together leading minds to highlight the progress of ovarian cancer research across Australia and the world.

Ms Taylor began a career in health economics and improving the health and social outcomes of Australians was close to her heart. She helped develop research and policies for special needs, indigenous health and the National Bowel Cancer Screening Program.

"Penny had a quick wit, a strong sense of social justice and enjoyed people," says her mother, Wendy Taylor.

Ms Taylor died on March 27, 2014, aged 48. In her memory, Mrs Taylor is supporting ovarian cancer research and the Penny Taylor Oration. The first event will be held at the VCCC in September.

"David Bowtell's forward vision and skills and those of his research team are an inspiration," says Mrs Taylor. "Every small step gets closer to that wonderful day in the near future when we will have quicker diagnosis and better outcomes for those women who are diagnosed with ovarian cancer."

NEW WAVE IN TREATMENT

After many decades of painstaking research, immune therapies are now yielding new treatments and much-needed hope for cancer patients and their families. Peter Mac researchers are at the forefront of these possibilities.

For decades, cancer treatment has relied on three key pillars — firstly surgery to remove cancer cells and later the development of radiation therapy and chemotherapy. While these three treatments are still a mainstay of cancer treatment, a newer "fourth" pillar is emerging — immune-based therapies — that harness the power of a patient's own immune system.

"Surgery has been around for millennia — Egyptian mummies have been found that had clearly undergone breast surgery prior to death. Radiation therapy began about 100 years ago and chemotherapy started in the mid-20th century and has undergone much refinement since," Professor Joe Trapani says.

"There hasn't been anything radically new for a long time, so this development is very exciting. Another promise for the future is that we will be able to combine new immune therapies with existing therapies so that they can complement and augment each other."

Prof Trapani has spent 30 years researching these potentially game-changing immune therapies. His work is focused on a protein called perforin and the turn-key role it plays in allowing the immune system's killer cells to attack cancerous cells.

"The name perforin comes from perforate because it punches holes in the surface of cancer cells and allows other toxins made by the immune system to penetrate into the cells and kill them. Without perforin, the cancer cell survives," Prof Trapani says.

A high-profile recent example of the power of immune therapies is the case of former Australian Grand Prix chairman and Melbourne Lord Mayor, Ron Walker.

Some years ago, Mr Walker was diagnosed with advanced melanoma and was referred by Peter Mac to collaborators in the US for a trial of a new antibody-based treatment (called checkpoint blockade) that can greatly amplify the extent to which a patient's immune response will kill their cancer cells via perforin. The treatment, which Mr Walker credits with saving his life, was last year listed on the PBS in Australia.

"Ron Walker had melanoma that had spread right throughout his body, and his recovery has been remarkable," Prof Trapani says. "There are now many hundreds of patients who were apparently within weeks or months of dying and for 30 per cent of patients facing that prognosis the disease can be brought under long-term control or even completely wiped out."

Professor Grant McArthur, who treated Mr Walker, says what's special about immune-based therapies is — unlike other means of treating cancer — the responses are often very durable.

"Because the immune system has an inbuilt capacity for memory, it remembers something that is foreign and keeps attacking it," Prof McArthur says. "This really is a revolution in our way of thinking about treating cancer."

But perforin and the killer cells that make it can be a two-edged sword. "In most situations perforin is a trusted friend, but in bone marrow transplants, where a patient receives bone marrow stem cells from someone with a foreign tissue type, perforin can attack the marrow and cause it to be rejected," Prof Trapani says.

Prof Trapani and his team are developing drugs that would temporarily block perforin and could be used to stop people who need a bone marrow transplant from having the life-saving bone marrow stem cells rejected.

A world-first clinical trial is planned, thanks to a major grant from the Wellcome Trust UK, assuming Prof Trapani's research goals are met over the next 18 months. //

Professor Grant McArthur and Ron Walker

'THIS REALLY IS A REVOLUTION IN OUR WAY OF THINKING ABOUT TREATING CANCER.'

PROFESSOR JOSEPH TRAPANI //
EXECUTIVE DIRECTOR OF CANCER RESEARCH AND HEAD OF THE CANCER IMMUNOLOGY PROGRAM

ASSOCIATE PROFESSOR SHERENE LOI//

Assoc Prof Loi is a world leader in immunotherapies and combinations of targeted therapies in breast cancer, incorporating genomic and immune testing into clinical care. She leads international clinical trials in immunotherapy that give Victorian women with cancer access to cutting-edge treatments and the latest in personalised cancer medicine.

THE BEST IN CANCER CARE, ACCELERATING DISCOVERY, TRANSLATING TO CURES

ASSOC PROF BOON CHUA//

Assoc Prof Chua is leading an international clinical trial investigating whether radiation therapy is necessary for women with low-risk, early breast cancer. The study examines the tumour genetic profile of individual patients to better predict their risk of recurrence and tailor treatment accordingly. The aim is to avoid unnecessary treatment and the side-effects in a "one-size-fits-all" practice.

LISA DEVEREUX//

Ms Devereux is manager of the Lifepool Project, one of the world's largest population studies into breast cancer and other women's health issues. The project gathers lifestyle and clinical data, mammogram images and biological specimens from more than 50,000 Victorian women and now women nationally. It aims to help answer complex questions about risk factors, how best to screen and how best to treat different types of breast cancer.

DR NICOLE HAYNES//

Dr Haynes's research focuses on how drugs that regulate the immune system can be used alongside radiotherapy in a two-pronged attack on cancer. Her team showed that when combined, not only did radiotherapy kill the cancerous cells, it attracted and hyper-stimulated immune cell activity against the cancer for effective elimination of all cancer cells within the irradiated field, helping to protect against the disease returning. This is a previously unrecognised new direction for cancer treatment.

ASSOC PROF SARAH-JANE DAWSON//

Assoc Prof Dawson is developing a new type of blood test that can detect DNA shed into the blood stream by different types of cancer. The "liquid biopsy" test is a less invasive way to assess treatment responses and detect tumour relapses, and could become standard for monitoring many cancer patients.

HEATHER THORNE OAM//

Ms Thorne is the national manager of the Kathleen Cuningham Foundation Consortium for Research into Familial Breast Cancer (kConFab). kConFab provides a centralised resource of genetic, epidemiological, medical and psycho-social data, which is available to researchers to investigate the causes and consequences of familial predisposition to breast cancer. kConFab supplies these resources to more than 150 research projects worldwide. Ms Thorne is also a major driver of CASCADE, a research program that aims to improve understanding of how cancer progresses from primary stage to metastatic treatment resistant disease.

ASSOC PROF PRUE FRANCIS//

Assoc Prof Francis's research focuses on treatments in women with hormone responsive breast cancer. Women under age 35 and women who do not enter menopause after chemotherapy are at a higher risk of breast cancer relapse. She led a 2014 clinical trial, which found relapse risk could be reduced if these women receive hormone treatment and oestrogen suppression, a discovery that has changed the course of treatment globally.

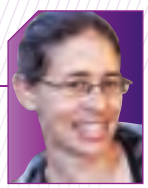
DR KARA BRITT //

Dr Britt is studying why mothers have a reduced risk of developing breast cancer compared with women who do not bear children. This has been observed as far back as the 18th century where nuns exhibited higher rates of breast cancer. Dr Britt aims to find a way to replicate the protective effect of motherhood to benefit all women.

FOR WOMEN BY WOMEN

PETER MAC HAS AN AMAZING GROUP OF DOCTORS AND RESEARCHERS DEDICATED TO PREVENTING, TREATING AND CURING WOMEN'S CANCERS

DR KYLIE GORRINGE //



Dr Gorringe analyses tumours at the genetic level for insights into ways to improve treatment of breast and gynaecological cancers. She is involved in a study of mucinous ovarian cancer, which is known to not respond well to standard ovarian cancer treatment. This study will resolve whether mucinous ovarian cancer should be treated like mucinous cancers that can occur elsewhere in the body.

ASSOC PROF LINDA MILESHKIN //

Assoc Prof Mileshkin has made significant progress in the development and initiation of an international co-operative group phase III clinical trial testing the role of adjuvant chemotherapy for locally-advanced cervical cancer following chemoradiation. As well as focusing on the care of patients with gynaecological and lung cancers, she runs the only clinic in Australia specifically for people affected by cancer of unknown primary (CUP) and genealogical cancers.

DR PEARLY KHAW //

Dr Khaw is a radiation oncologist and clinical researcher who specialises in the management of gynaecological malignancies. She is involved in several major clinical trials at Peter Mac.

Through her leadership and advocacy, she has played a pivotal role in the establishment of an expert national group of radiation oncologists tasked with developing standards and improving outcomes for patients with gynaecological malignancies in Australia and New Zealand.

PROFESSOR KELLY-ANNE PHILLIPS //

Prof Phillips leads research efforts to optimise use of cancer preventative strategies. Her research has shown that women with BRCA1 or BRCA2 gene mutations underutilise prevention. These mutations result in up to an 80 per cent lifetime risk of breast cancer, and up to a 60 per cent lifetime risk of ovarian cancer. A recent study she led found women with BRCA1 mutations have fewer eggs, a factor to inform family planning decisions for women with hereditary cancer risk. //

FACTS & FIGURES

96
OVERNIGHT PATIENT BEDS

110
CHEMOTHERAPY, MEDICAL AND SAME-DAY BEDS AND CHAIRS

42
BED CAPACITY INTENSIVE CARE UNIT
(provided on the facility's north side by the Royal Melbourne Hospital)

24
TREATMENT PLACES IN A DEDICATED CLINICAL TRIALS UNIT

16
PATIENT APARTMENTS

25,000 SQM
OF DEDICATED CANCER RESEARCH SPACE

6
OPERATING THEATRES AND TWO PROCEDURE ROOMS

8
RADIATION THERAPY BUNKERS

6
LINEAR ACCELERATORS

47
SEMINAR AND MEETING SPACES AND A LARGE LECTURE THEATRE

For the first time in its 65-plus year history, Peter Mac has purpose-built facilities to match the care it provides to patients, their families and supporters

OUR NEW

HOME

‘WE SIMPLY COULDN’T PROVIDE THE SAME LEVEL OF CARE WITHOUT OUR COMMUNITY. THANK YOU TO ALL VICTORIANS FOR YOUR SUPPORT FOR PETER MAC.’

– DR DAVID SPEAKMAN// CHIEF MEDICAL OFFICER

HISTORY IN THE MAKING

From modest beginnings to a renowned cancer treatment and research institution

1949 GETTING STARTED

The Cancer Institute is established with a budget of 30,000 pounds and one room at the former Queen Victoria Hospital on William Street, Melbourne. The clinical arm opens 12 months later and is called the Peter MacCallum Clinic.

1950 DAILY CARE

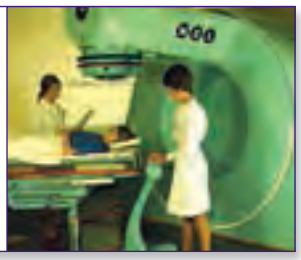
Visiting Nurses Service started, enabling cancer patients to remain at home and be cared for daily by a nurse. By the mid-1970s nearly 800 visits were made each week.

1952 REACH EXTENDS FAR

Cancer services extend to country Victoria and beyond, with clinics in Geelong, Bendigo, Hobart and Launceston.

1956 CUTTING EDGE

The hospital's 4 million volt linear accelerator is introduced — one of the first of its kind in Australia. It offers a major advancement in the treatment of tumours lying deep within the body.



1980 ADVANCES IN CHEMOTHERAPY

The chemotherapy day ward is established bringing together specially trained staff to administer chemotherapy to out-patients.

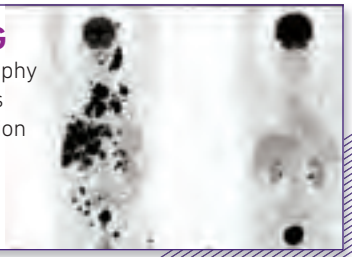
1994 NEW HOME FOR ALL

Peter Mac moves to St Andrews Place. Professor Joseph Sambrook recruited as director of research; Professor Lester Peters heads up department of radiation oncology.

'NOTHING BUT THE BEST IS GOOD ENOUGH IN THE TREATMENT OF CANCER.' – SIR PETER MacCALLUM

1996 NUCLEAR SCANNING

A positron emission tomography (PET) scanner, which enables monitoring of the multiplication of cells and their response to radiation for treatment, is commissioned.



2001 COMPREHENSIVE CARE

Peter Mac's multi-disciplinary approach to care is formalised in the establishment of specialised teams centred on caring for people with specific types of cancer.

2010 ROBOT BREAKTHROUGH

Robotic-assisted surgery introduced — the first of its kind available to public patients in Victoria. The new technology further enhances the most advanced keyhole surgery theatres in Australia.

2016 ON THE MOVE

Peter Mac relocates from East Melbourne to the $1 billion Victorian Comprehensive Cancer Centre building.

CANCER BREAKTHROUGHS

Groundbreaking discoveries led by Peter Mac researchers are having global ramifications

2010
Landmark research led by Professors Lester Peters and Danny Rischin demonstrates the critical impact of radiotherapy quality on survival of head and neck cancer patients, and that better outcomes are achieved in centres treating a higher number of patients.

OCTOBER 2012
Familial cancer researchers, led by Professor Paul James, identify common variants in DNA from women with a strong personal and family history of breast cancer. In the process, they develop a world-first hierarchy of susceptibility to the disease. The findings significantly advance efforts to understand how a person's genetic make-up can result in a high risk of breast cancer.

APRIL 2013
Using live microscope imaging, a team led by Professor Joe Trapani, develops a world-first technique for visualising the precise moment a T cell delivers a killer blow to cancer cells, enabling them to define the stages of the kill at which things can go wrong.

SEPTEMBER 2014
Professor Grant McArthur releases findings of a breakthrough international clinical trial for people with advanced melanoma. The study shows a combination of two drugs targeting different proteins inside the melanoma works better than alone in stopping the growth of the disease.

DECEMBER 2014
Associate Professor Ben Solomon leads a global clinical trial showing that a new precision medicine, crizotinib, controls advanced lung cancer for twice as long as chemotherapy. The research changes treatment practice for people with a genetic subset of the disease who have newly-diagnosed lung cancer.

JANUARY 2015
Associate Professor Prue Francis leads an international clinical trial that finds oestrogen suppression is a key weapon in helping to keep very young women disease-free following chemotherapy and surgery for hormone-responsive breast cancer. The results of the trial have changed treatment practice globally.

MAY 2015
Professor David Bowtell leads international research providing the largest complete DNA analysis of ovarian cancer in the world. The work offers unprecedented insight into the genetic twists and turns a deadly form of the disease takes to outsmart chemotherapy, potentially changing treatment approaches for women globally.

JULY 2015
An international clinical trial co-led by Associate Professor Boon Chua shows radiation treatment of the lymph nodes — in addition to the breast — after breast cancer surgery can prolong the time women remain cancer-free.

SEPTEMBER 2015
Professor Mark Dawson's cancer epigenetics team discovers how acute myeloid leukaemia fights back against a groundbreaking treatment. As part of the research — and for the first time — the team grows and maintains leukaemia stem cells in a laboratory dish, making it easier and faster to test new treatments, with the potential to eradicate the disease.

JANUARY 2016
In a world-first clinical trial, Professor John Seymour and Royal Melbourne Hospital and Walter and Eliza Hall Institute colleagues show patients with an advanced form of leukaemia can achieve complete remission with a new anti-cancer drug, venetoclax. The new therapy is proving effective in killing cancer cells in people with advanced forms of chronic lymphocytic leukaemia. Results from the trial led to the approval of the drug in the US and submissions are planned in Europe and Australia.

OUR EUREKA MOMENT

Among the hundreds of ground-breaking projects under way in Peter Mac's laboratories right now, it's the "homegrown" research initiatives that get Professor Ricky Johnstone most excited.

Prof Johnstone says there are two major streams of translational research at Peter Mac.

One typically involves a partnership with a pharmaceutical or biotech company to co-develop a potential drug they had identified or conducting a clinical a trial in collaboration.

"Then there's this second model where the research is much more homegrown, where you start at the very beginning with a basic finding or an idea that comes from your own lab," he says.

"It is real science and how discoveries have traditionally been made. If you think about Newton and the apple falling out of the tree, it's that sort of stuff."

One of these eureka moments in basic science occurred in Prof Johnstone's own lab in 2010.

His team discovered, quite by accident, a common solvent, which has many household, medical and industrial applications, including as paint stripper, had potent anti-cancer properties.

The solvent known as NMP (N-methyl-2-pyrrolidone) was used as a carrier for an experimental blood cancer drug that was undergoing lab testing.

Remarkably, NMP itself was shown to have activity in laboratory models of the blood cell cancer called multiple myeloma.

Prof Johnstone credits NMP's discovery to then PhD student Dr Jake Shortt who performed a series of meticulously-controlled laboratory experiments without which the reactivity of NMP would not have stood out.

"You can never assume that your solvent does nothing," Prof Johnstone says. "What we found is the solvent did something — and it was responsible for a lot of the activity (against multiple myeloma cells) that we were seeing."

'WE DON'T ACCEPT JUST BEING GOOD IN MELBOURNE OR JUST BEING GOOD IN AUSTRALIA. WE'VE GOT TO BE EXCELLENT INTERNATIONALLY.'

Exhaustive tests were done to confirm the initially baffling results, and NMP is now being developed as a blood cancer drug in its own right.

A molecular analysis found NMP has a similar activity to another emerging class of compounds — called BET Inhibitors — also recognised as having high potential as next-generation cancer treatments and which were being independently investigated at Peter Mac.

ABOVE: Professor Ricky Johnstone

Research has also shown NMP both triggers the immune system and changes the way cancer genes are regulated — two powerful levers when it comes to tackling cancer.

"NMP is used to remove paint and graffiti but we're repurposing it for multiple myeloma," Prof Johnstone says.

"We made the observation in 2010, and then it took us three years to work out exactly what's happening, then we published it and the next step is the trial."

Patients are now being recruited for a clinical trial that will test a NMP-based drug in patients with multiple myeloma. Results are expected within two years.

He says NMP is a prime example of basic science at Peter Mac leading to discoveries that help to drive advances in cancer treatment and care.

Others include the drug CX5461 — also in clinical trials in multiple myeloma — and a process which uses the immune system to fight cancer (CAR T cells).

Prof Johnstone attributes Peter Mac's focus on basic science to Professor Joseph Sambrook who was director of research from 1995 to 1999.

"He changed the culture of research ... We don't accept just being good in Melbourne or just being good in Australia. We've got to be excellent internationally," Prof Johnstone says. //

CLARE PUTS TRUST IN TRIALS

'KNOWING THAT WHATEVER HAPPENS, I WILL BE IN THE BEST PLACE, WITH THE BEST PEOPLE AND THE BEST RESEARCH, GIVES ME ENORMOUS HOPE AND COURAGE.'

After graduating from university with a masters in social work, Clare Halloran thought she had the world at her feet.

But in a cruel twist of fate, the then 28-year-old was diagnosed with Hodgkin's lymphoma, a cancer of the lymphatic system.

"All those feelings (of hope and the future) were taken away from me and all I could see was life and death," recalls Ms Halloran.

She felt her initial treatment was also focused purely on life or death, rather than working out a treatment plan that would allow her to live a full life after beating the disease.

"I knew the treatment had pretty good success rates, but the long-term risks were serious, including heart damage, lung damage and infertility," Ms Halloran says. "I was young, so these risks worried me."

Having grown up in Melbourne, the Canberra resident knew the Peter MacCallum Cancer Centre was regarded highly, so moved back to start treatment with them, hoping for care that was more tailored to her goals.

"It's where I got better," Ms Halloran says. "It's a really positive place and doctors supported me to delay treatment to freeze eggs, but (in earlier advice) I was told there wasn't time to do that."

She was also offered access to a drug that was undergoing clinical trials. It was hoped it could protect her ovaries from damage caused by chemotherapy. Halfway through taking the drug, she switched on the news to hear the clinical trials were promising.

"It was very exciting," she says, grateful of the opportunity to be offered the drug. "If I had been diagnosed two years earlier, I would never have had the chance to take the medicine. In 10, 20, even 30 years, the outlook will hopefully be a lot different for cancer patients, because of such medical advances."

To mark exactly 12 months since the day she had her final treatment and coinciding with her 30th birthday, she completed the 2015 Melbourne Marathon in October, raising more than $3000 for Peter Mac.

She's just passed another milestone: two years in remission. But, even though the prognosis is good, she still lives with the anxiety and fear the cancer will return.

"When I drive past the shiny new Peter Mac building it offers me a lot of hope," she says. "Knowing that whatever happens, I will be in the best place, with the best people and the best research, gives me enormous hope and reassurance. There's so much uncertainty on the road ahead, but life just goes on ... it's great!" //

PETER MAC

CARE FOR YOU, CLOSE TO HOME

Peter Mac's main centre is located within the brand new Victorian Comprehensive Cancer Centre Building.

We provide comprehensive cancer care, supported by the expertise of our internationally-renowned cancer clinicians and researchers.

Our Radiation Therapy Services are also available closer to your home, with centres in Box Hill, Moorabbin, Sunshine and Bendigo.

To access Peter Mac as part of your cancer care talk to your doctor or specialist.

Your support for Peter Mac inspires our work to provide better care, better treatments and potential cures for cancer.

"NOTHING BUT THE BEST IS GOOD ENOUGH IN THE TREATMENT OF CANCER."

– SIR PETER MACCALLUM

Thank you to all Victorians.

Peter Mac
Peter MacCallum Cancer Centre
Victoria Australia

RADIATION THERAPY SERVICES CLOSE TO YOU

Peter Mac at Box Hill
Epworth Eastern Medical Centre
1 Arnold Street, Box Hill
Tel: 03 9895 7662

Peter Mac at Monash Cancer Centre
823-865 Centre Road, East Bentleigh
Tel: 03 9928 8923

Sunshine Hospital Radiation Therapy Centre
176 Furlong Road, St Albans
Tel: 03 8395 9999

Peter Mac at Bendigo Hospital
Stewart Street, Bendigo
Tel: 03 5454 9234

Peter MacCallum Cancer Centre
305 Grattan Street, Melbourne
Tel: 03 8559 5000
(From late June 2016)

Referring your patients to Peter MacCallum Cancer Centre
Tel: 03 8559 5000
Fax: 03 8559 7371

petermac.org

JESSE'S FIGHTING SPIRIT

Jesse Vinci didn't need to star in his own movie to feel like a superhero.

The brave cancer battler, who celebrated his sixth birthday on June 25, always had special powers.

"When he was first diagnosed, he was obsessed with Ben10 and Superman and Spider-Man," mum Anna says. "Some days he'd sit in the hospital in his pyjamas, some days he'd sit as Spider-Man. His way of dealing with it all was that every time he wore one of his superhero costumes he had the power to beat leukaemia."

So when a new program run by Peter MacCallum Cancer Centre radiotherapist Caroline Ngo helped Jesse turn his ordeal into an action film, he was very excited to show off his skills.

"When he found out about it he said, 'But I'm always a superhero'," Anna says with a smile. "This was just a bonus for him."

The Paediatric Film Production initiative sees patients aged three to 18 star in their own feature film; a documentary-style keepsake that gives family and friends a glimpse behind the hospital curtain.

"Once a week we do filming for kids," Ms Ngo says. "It's about creating a little mini movie for the children that they get to bring home and share.

"It can be hard for family and friends of patients to understand what's going on, so when they get to see a video it gives them the whole picture. They get to feel what the family is going through as well."

Jesse was diagnosed with lymphoblastic leukaemia in June 2013, just weeks before his third birthday. After 18 months of intense chemotherapy and radiation, he was given the all-clear.

But an unusual relapse last January saw him endure another 10 gruelling months of treatment before he went into remission in November. Starring in his own movie helped to lighten the mood and give him the strength to face his final leg of treatment.

Ms Ngo says the video also gives kids something positive to take out of their experience. "It helps make it a cool thing," she says. "Especially for kids whose hair might fall out, so they might get bullied at school. It helps others to understand them and helps them fit in more easily."

Being able to share his story with friends is something Jesse, who this year started prep, has relished.

"He is very proud of it and shows everyone," says Anna. "He told his story to the class — about where he'd been and what he'd been through — and asked his friends to be careful around him. Everyone was so impressed."

And though life for Jesse — younger brother of Jasmine, 12, and Jake, 10 — is still far from normal, Anna says he loves feeling like a regular kid after three years in hospital.

"For him, it's been really nice to be able to go to school or have dinner at a restaurant," she says. "They might seem simple, but it's those little things families do that he is really enjoying." //

'IT'S ABOUT CREATING A LITTLE MINI MOVIE FOR THE CHILDREN THAT THEY GET TO BRING HOME AND SHARE.' – CAROLINE NGO

TAKING THE LEAD IN LUNG CANCER

World-best imaging techniques and advances in genomics are making significant inroads into the treatment of lung cancer

In the 1920s, researchers discovered that cancer cells in the body use more glucose than normal cells to grow.

Today, that finding has led to cutting-edge technology that is making a real difference to patients diagnosed with a range of cancers, including lung cancer.

One of those technologies is positron emission tomography (PET) — an imaging procedure that shows the chemical function of an organ or tissue and is sensitive to detecting the early stages of disease. Peter Mac began using PET in 1996 and installed Australia's first PET scanner in 2001.

"One of the first applications of PET scanning in oncology was for the evaluation of lung cancer. We and others demonstrated that this was a much more accurate technique for detecting not only the primary lung cancer, but its spread through the body," says Professor Rod Hicks, director of cancer imaging at Peter Mac.

"As you poison tumours with toxins, such as radiation or chemotherapy, the use of glucose by the cancer cells is reduced or turned off. PET shows us how well that is working, often before we can detect any shrinkage of the tumour. So we can tell very quickly after starting targeted therapies whether they are working or not."

Combined with PET are advances in genomics that identify the specific genes within a cancer cell and allows clinicians to better tailor treatments for patients.

"We know specific genes or tumour types are important so we perform a targeted test for these — currently testing a panel of 20 genes. We then match therapies to mutated genes and monitor the impacts of those therapies using PET," says director of pathology Professor Stephen Fox.

BELOW FROM LEFT TO RIGHT Professor Rod Hicks, Associate Professor Ben Solomon, Professor Stephen Fox

Research at Peter Mac has identified one gene, ALK, that is present in about 4 per cent of lung cancers. The ALK gene allows cancer cells to grow and spread. Peter Mac research was instrumental in assisting the development of a new drug, crizotinib, which switches off the ALK gene and shrinks tumours, but even before that happens, turns off lung cancer cells' use of glucose.

"We did the first trial in the world with crizotinib and were able to show that patients did very well with this tablet that specifically targets their tumour," medical oncologist Associate Professor Ben Solomon says.

'PETER MAC IS AN INCUBATOR. MANY THINGS ARE DEVELOPED HERE THAT ARE THEN ROLLED OUT ACROSS THE REST OF THE COUNTRY AND THE WORLD.'
– PROF STEPHEN FOX

"If you can identify the genes present in cancer and match the genes with a personalised or targeted treatment patients get much better outcomes than if they just received chemotherapy."

Looking ahead, Peter Mac is researching the development of liquid biopsies — blood tests that will identify circulating tumour DNA shed by cancer cells in the body. As well as avoiding uncomfortable tissue biopsies, the procedure more quickly identifies genes involved in a cancer.

"We are also developing more specific tracers that will demonstrate the expression of a receptor or a protein on the surface of cancer cells that can provide a therapeutic target," Prof Hicks says.

For Assoc Prof Solomon, the goals are to forge ahead with precision medicine and the introduction of liquid biopsies. He also sees immune therapies becoming increasingly important.

"Over the next two to three years I think we will see that becoming part of the way we treat every lung cancer patient," he says.

One of Prof Fox's goals is to broaden the panel of genes tested as part of a cancer diagnosis.

"We want to get as much information out of an individual tumour as possible so we can enhance the drugs we use," he says.

"Peter Mac is an incubator. Many things are developed here that are then rolled out across the rest of the country and the world." //

TOUGH DRAW IN LIFE'S LOTTERY

Annette Aquilina, 51, (above, with husband Mario and grandson Hayden) was diagnosed with lung cancer in July 2015. A non-smoker, Peter Mac researchers discovered Annette's tumour had two EGFR gene mutations, including the T790M mutation. This led Annette to become the first Australian outside of a clinical trial to rely on a new drug to fight her cancer.

"I had a bit of a wheeze in my chest and a little blood in my saliva so I saw my GP who sent me for a chest X-ray. After that my whole life changed. Within 90 minutes my doctor called and said there was a tumour in my left lung and it could be cancer. So I went to Peter Mac and met Dr Ben Solomon.

Genetic testing found I had two different mutations to the EGFR gene — and my lung cancer was stage 4 — the most advanced stage. I had a tumour of nearly 8cm. I can't describe what it was like to get that news.

In March that year my own mother had also been diagnosed with lung cancer.

She was also a non-smoker and had a different genetic mutation. We've been told that we've had a higher chance of winning the lottery than of having two people in the same family have the same kind of cancer that is in no way linked genetically, and that isn't caused by smoking either. It's just one of those freak things.

But, like my mum, as a non-smoker I was told I had a better chance of getting a better result from treatment. It wouldn't be a cure but it would prolong my life and make the cancer more manageable.

I had two rounds of chemotherapy and then Dr Solomon said I was a perfect candidate for a new drug that was in the final stage of clinical trials. He arranged for me to have that medication — it's one tablet a day — and within six weeks it shrank my tumour by almost half.

Now my tumour is around 2cm and stable — it isn't growing or spreading. I'm improving all the time and each time Dr Solomon sees me he's thrilled because every time I feel a little better.

I have a grandchild and two grandchildren on the way. I've been married for nearly 30 years and have three children.

I hope God gives me the strength to keep improving so I can enjoy the time ahead with my family.

Thanks to the work being done at Peter Mac people diagnosed with cancer have more options. Things will only get better as time goes on and more research is done. There is a brighter outlook now." //

Peter Mac
Peter MacCallum Cancer Foundation

Help Peter Mac researchers including Dr Kara Britt discover cancer cures

DONATE NOW

petermac.org/OneTeam
1800 111 440

BETTER TREATMENTS, BETTER CARE AND CURES FOR CANCER.

GETTING TO PETER MAC

Peter Mac
Peter MacCallum Cancer Centre
Victoria Australia

Peter Mac's main centre in Melbourne is located at the intersection of Grattan Street, Elizabeth Street and Flemington Road, near the edge of the city centre.

Our patients and visitors can select from many transport options.

Public transport

Peter Mac is on tram routes 19, 55, and 59. It is also on bus route 401 which travels regularly from North Melbourne Train Station. Bus route 402 from Footscray Train Station also stops close to Peter Mac. Information about public transport options available from and around Melbourne's CBD is provided on the next page.

Car parking

The visitor car park is located underground on levels B3 and B4 and is open seven days a week from 6:00 am to 9:00 pm. It has spaces for over 330 cars and 50 motorcycles. Access to the car park is from Flemington Road, when travelling towards the city. See the table and map over the page for further information on how to access the car park.

Patient and visitor drop off and pick up

There are several short term patient drop off and pick up spaces for vehicles and taxis along Grattan Street in front of our main entrance. Patients can also be dropped off and picked up in front of the building lift lobbies in the visitor car park on levels B3 and B4 (entry from Flemington Road). There is no charge for using the car park for less than 30 minutes.

For all parking enquiries, please contact our car park operator.
Honeywell Helpdesk Phone: 03 8559 9000

For public transport information download the PTV mobile app on your iPhone or Android device.

For more public transport information, please contact Public Transport Victoria.
Phone: 1800 800 007
Website: www.ptv.vic.gov.au

Address
Peter MacCallum
Cancer Centre
305 Grattan Street
Melbourne, Victoria, 3000

Phone
03 8559 5000
Monday to Friday
8:30am to 4:30pm

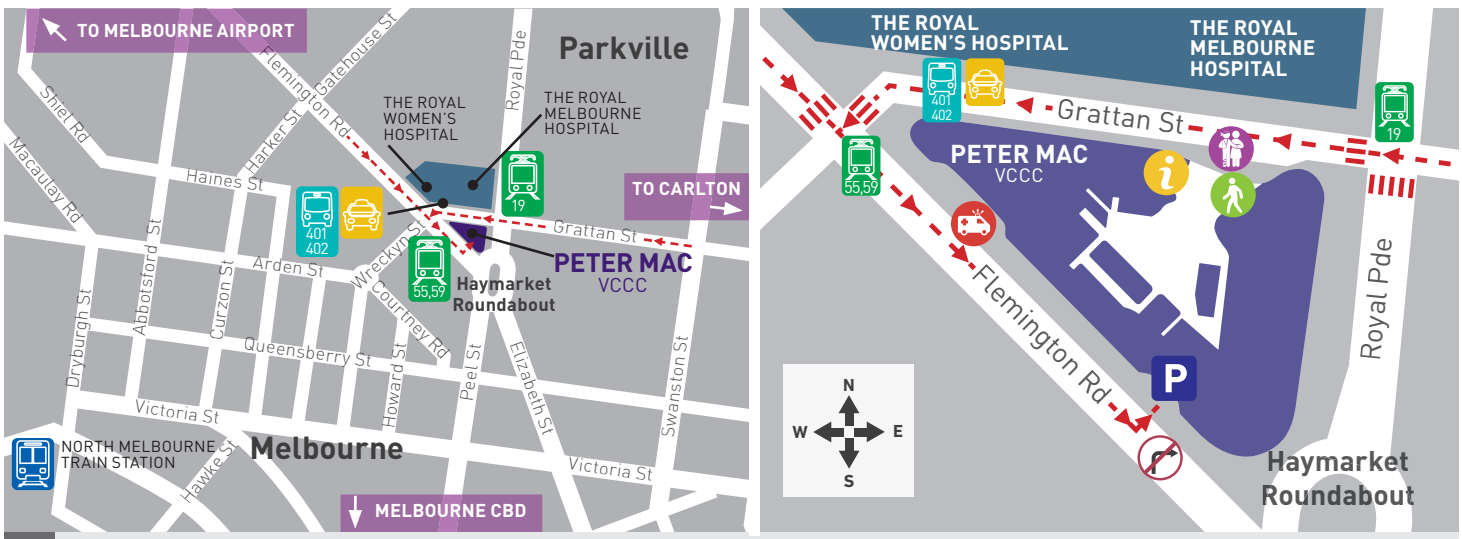
Email
patient.liaison@petermac.org

Hours of operation
Ground level public entrance:
6:30am to 8:30pm, daily

Visiting hours
11:00am to 8:00pm, daily

Website
For more information go to
www.petermac.org

Please note that you can only access our car park from Flemington Road, travelling towards the city.



ICON INDEX

- Bus stop
- Taxi rank
- Suggested vehicle approach
- No right-hand turn into car park
- Patient drop off and pick up
- Ambulance bay
- Tram stop
- Train Station
- Traffic light pedestrian crossing
- Main entrance
- Car and motorcycle parking entrance
- Touch screen information kiosks

Thank you to all Victorians for your support for Peter Mac. We simply couldn't do what we do without you.

Peter Mac
Peter MacCallum Cancer Centre
Victoria Australia

Peter Mac is now located within the Victorian Comprehensive Cancer Centre building.

Peter Mac will always be about people, but our new home will be more comfortable for patients and their families, with some of the very latest equipment and facilities to match the care we have provided Victorians for 65+ years.

NEW ADDRESS:

Peter MacCallum Cancer Centre
305 Grattan Street, Melbourne 3000
Just opposite The Women's and Royal Melbourne Hospitals.

Tel: 03 8559 5000
petermac.org