This year, Cancer Council NSW is celebrating 60 years of commitment to beating cancer. Since we were first established in 1955, we have known that in order to one day beat cancer, we need to improve our knowledge about it. One of our first initiatives was to establish cancer research as a priority, and in 1957, Cancer Council NSW funded 15 research grants.

Over the last 60 years, we have had many research successes and we have used this research knowledge to grow and develop our programs. Today, we are proud to be the only cancer charity in Australia that works across the entire cancer journey and research underpins our work in:

- preventing cancer by encouraging people to lead healthy, cancer-smart lifestyles
- empowering and supporting people affected by cancer
- ensuring that governments take action to reduce cancer risk and improve access to care and treatment.

Research remains our continual focus and we are currently the largest non-government funder of cancer research in Australia, contributing $14 million each year to conducting and funding world-class research.

All of this is possible thanks to our community of supporters and volunteers. As a 97% community-funded organisation, community members raise the funds that we need to conduct and fund our research. They also help us by supporting our services and programs through volunteering; spreading the word about our work; and helping prevent cancer by making healthier choices.

We believe, like we did 60 years ago, that today’s research is tomorrow’s medical practice and this Research Highlights report is a celebration of our impact.

We also believe that together we will beat cancer and I would like to thank Cancer Council NSW’s community – our volunteers, staff, supporters and researchers – for being a part of this.

Jim L’Estrange
CEO, Cancer Council NSW

We invested $14.2 million in cancer research in 2013/14, with almost half of this dedicated to research which benefits all cancers, and the remainder invested into researching a range of particular cancer types. We invest in cancer research across all stages of the cancer journey, with research projects investigating prevention, detection, causes, treatment, survivorship and more.

In the last 60 years, researchers funded by Cancer Council NSW have made some remarkable research discoveries. Thanks to our funding, researchers have developed improved radiotherapy techniques making this treatment safer and more effective and developed a completely new way of understanding and possibly treating cancer cells by finding the source of their immortality.

Cancer Council NSW’s researchers were the first to document that Aboriginal people are 60% more likely to die from their cancer than other Australians and have conducted extensive research exploring reasons for this disparity. Our researchers have also contributed to upcoming changes to the National Cervical Screening Program, demonstrating that these changes will substantially reduce both cervical cancer rates and the number of screening tests women will undergo over their lifetime.

We have estimated that about 61,000 Australian lives have been saved by improvements in cancer prevention, screening and treatment over the past 20 years. Research has made a substantial contribution to these improved outcomes. As an evidence-based organisation, we also rely on research to ensure that the programs and services we deliver to the community have the greatest possible impact.

With 37,500 new cases of cancer expected to be diagnosed every year in NSW alone, we are committed to conducting and funding world-class research today and in the future. Further investment into research and the community’s support will ensure that we can continue making new research discoveries; this will help us achieve our vision of beating cancer.

Associate Professor Karen Canfell
Director, Cancer Research Division
Cancer Council NSW conducts and funds world-class research that reduces the impact of cancer.

Total Funding
We provided $14.2 million in funding to support research this year*

14.2m

What we funded
Researchers 215
Projects 104
Institutions 61

*2013/14 financial year, includes grants awarded to our internal researchers. **Due to the rounding of these figures, they may not add up to 100%.
International Collaborations

We have hundreds of collaborations with academics, organisations, networks and communities around the world, which enhance our research capabilities.

Top Five External Institutions We Funded

<table>
<thead>
<tr>
<th>Institution</th>
<th>Funding (AUD)</th>
</tr>
</thead>
<tbody>
<tr>
<td>The University of Sydney</td>
<td>$2,574,743</td>
</tr>
<tr>
<td>University of New South Wales</td>
<td>$2,249,369</td>
</tr>
<tr>
<td>Garvan Institute of Medical Research</td>
<td>$2,015,050</td>
</tr>
<tr>
<td>University of Newcastle</td>
<td>$559,500</td>
</tr>
<tr>
<td>Children’s Medical Research Institute</td>
<td>$450,000</td>
</tr>
</tbody>
</table>

Cancer Types Funded*

- All cancers: $6,852,458
- Pancreatic: $1,176,720
- Other cancer types: $1,069,960
- Brain: $982,369
- Breast: $928,215
- Leukaemia: $840,825
- Skin: $692,312
- Prostate: $503,824
- Anal: $401,290
- Bowel: $351,454
- Neuroblastoma: $232,432
- Stomach: $200,000
1955
Cancer Council NSW is established
We began working with just seven members, who were committed to discovering what causes cancer.

1957
First funds for cancer research
Cancer Council NSW funded 15 research grants, with an investment the equivalent of $710,000 today.

1957
First full-time researcher
The first full-time member started working in our Special Unit for Investigation and Treatment, which is now known as the Cancer Research Division.

1960
Storing biological samples for use in research
Researchers funded by Cancer Council NSW started experimenting with storing biological samples for use in research, which was the precursor of today’s biobanks.
1975
Conducting a range of research projects
By 1975, Cancer Council NSW was conducting and funding a range of research projects focusing on medical oncology, immunotherapy, molecular research, radiotherapy, the role of enzymes in cancer development, leukaemia, breast cancer, myeloma, liver cancer and skin cancer.

1986
Research focus continues to expand
Our research focus expanded to the analysis and interpretation of data on cancer risk, incidence, mortality and survival.

1991
Cervical cancer breakthrough
Past president of Cancer Council Australia, Professor Ian Frazer, and Dr Jian Zhou created a world-first human papilloma virus (HPV) vaccine. HPV vaccines are now routinely offered to young girls and boys at school.
2005

Involving the community in the research funding process

Cancer Council NSW introduced a consumer review panel, where every grant we award is assessed by patients, survivors and carers. Involving the cancer community in every funding decision ensures that we remain responsive to the priorities and needs of the community who fund us.

2006

Closing the gap in Aboriginal cancer mortality rates

Cancer Council NSW created the Aboriginal Patterns of Cancer Care (APOCC) Project, which explores why the cancer death rate for Aboriginal Australians is 60% higher than non-Aboriginal Australians and investigates the cancer journeys of Aboriginal people across NSW.

2006

Funding to fight pancreatic cancer

Cancer Council NSW provided foundational funding to a team examining pancreatic cancer. Since then, the team has leveraged a further $70 million to investigate personalised medicine for this high-mortality cancer.

2013

Our 20-year report reveals fewer cancer deaths

Our State of Cancer Control report estimated that 61,000 Australian lives have been saved by improvements in cancer prevention, screening and treatment over the past 20 years.

2013

Tobacco retailer audit

Cancer Council NSW conducted the first ever independent study of tobacco retailer compliance across NSW, finding that some retailers had not listed with the NSW Ministry of Health as required, and more than one in four failed to comply with all relevant aspects of tobacco retail legislation. This study led to the NSW Health Minister establishing an expert taskforce on tobacco retail.
Cervical cancer modelling underpinning government policy

Major changes to the National Cervical Screening Program in Australia were recommended, underpinned by work by Associate Professor Karen Canfell, now at Cancer Council NSW, and her cancer screening team. Their modelling work demonstrated the proposed changes will substantially reduce both cervical cancer rates and the number of screening tests women need to undergo over their lifetime.

Kidney cancer on the decline

Cancer Council NSW’s research indicates, for the first time, a dramatic drop in kidney cancer – particularly in Australian women – following the late 1970s ban of popular ‘pick-me-up’ medications containing phenacetin.

Researching and addressing the needs of cancer survivors

Cancer Council NSW partners with the University of Sydney to conduct the first-ever study to develop and trial the effectiveness of a personalised online resource for cancer survivors and their partners that addresses sexual wellbeing.

Healthy Star Rating set to soar

Cancer Council NSW’s study into traffic light labelling paves the way for the government’s new Health Star Rating system for food and drinks.
How We Fund Research

As the largest non-government funder of cancer research in Australia, Cancer Council NSW funds world-class research that reduces the impact of cancer. Our funding is highly sought after, with around 150 applications for Project Grants submitted each year, from which we support 10–20 successful proposals. In order to decide which research we will fund, we assess both the scientific merit of a project and its potential impact on the community.

So how does this process work?

1. Researchers submit their funding applications (‘research proposals’).
2. These proposals are assessed by panels of expert scientists. The panels assign each proposal a score, based on the quality and significance of the study and the expertise of the research team.
3. Only the top-ranked proposals are considered, which ensures that all the research we fund is of the highest scientific quality.

4. These proposals are then assessed by our Consumer Review Panel. This is a group of specially trained cancer survivors, carers and family members, who judge each proposal according to its value to the community. This panel gives each proposal a score based on its likely benefits and impact.
5. The scores assigned to each proposal by the scientific and consumer panels are combined to create a final ranking of proposals. We lead all Australian cancer charities by giving the cancer community a voice in all our research funding decisions.
6. Funding is awarded based on the final rankings, thus making sure the cancer community has a strong voice in all our funding decisions. The Cancer Research Committee, a committee of international cancer research leaders, oversees this process to ensure rigorous governance and the best use of community donations.

Why include the community?

Community members work hard all year to raise the money we use to support research. That gives them the right to a voice in deciding where it goes. Survivors and carers understand the lived experience of cancer in a way that other people may not. This is why the World Health Organization promotes community involvement in research – and also why, for close to a decade, and in collaboration with Cancer Voices NSW, we have been committed to seeking community input into our funding decisions.

Our 2014 consumer panel

In 2014, our Consumer Review Panel consisted of men and women from across metropolitan and regional NSW, representing a range of cancer experiences. The panel included survivors and carers of a range of cancers.

We are indebted to the members of our 2014 Consumer Review Panel: Mr James Butler (Chair), Ms Gillian Begbie, Ms Robyn Bransby, Mr Philip Burge, Mr Peter Coupland, Ms Louise Fletcher, Ms Kathryn Leaney, Ms Jan Mumford, Ms Ros Pesman, Mr Tony Sonneveld and Ms Joyce Yong.
“I imagine a future when all cancers can be prevented or successfully treated”

When I was first diagnosed with cancer, I tried to remain practical and asked my doctors, “All I want to know, is it curable? What are my options?” I also made my wife promise that she wouldn’t let me feel sorry for myself. Being positive, keeping fit and having a good diet helped me during and after treatment.

Cancer in my generation engendered fear. But cancer research breakthroughs in the last decades have improved survival and quality of life for a lot of people. I was diagnosed with oesophageal cancer, which has a five-year survival rate of only 8%. My own near seven-year survival is testament to the brilliant treatment and surgery I have received from my surgeon and oncologists, who took on board cutting-edge research to treat me.

After my recovery, I couldn’t wait to give something back to the community and it’s a great satisfaction and privilege for me to be involved. I was a member of Cancer Council NSW’s Consumer Review Panel for assessing research funding between 2010 and 2013, and I am currently a member of Cancer Council NSW’s Cancer Research Committee.

Research is of public interest and by involving the community, the research funding process becomes much more transparent. If researchers can describe their projects in lay terms, then their findings can raise public awareness and the community can advocate for research.

I am never going to be a token consumer. I will always speak up, because the more people become aware and speak up, the less fearful cancer becomes.
Examining Differences in Prostate Cancer Outcomes

A team of researchers from Cancer Council NSW has revealed a significant divide in cancer survival outcomes between men living in cities and those living in rural areas. This information has helped assess the impact of policies designed to reduce health inequalities in Australia and highlights the need for more detailed data, which can guide future policy interventions.

The need

Prostate cancer is the most common cancer in Australian men (apart from non-melanoma skin cancers), with about 17,000 new cases diagnosed nationally every year. Previous research confirms that patients living in rural and remote areas of NSW have poorer survival from several major cancers, including prostate cancer, than people living in cities. This project addresses the need for additional research to understand why these inequalities exist and aims to help close the survival gap, by investigating long-term trends and providing more accurate data.

Highlights

- The researchers obtained data from the NSW Central Cancer Registry on prostate cancers diagnosed in men aged 18-84 years between 1982 and 2007 in NSW.
- The research found that although the 10-year survival outlook for men diagnosed with prostate cancer has improved from 57% to 84% over the past 20 years, the gap between rural and city patients remains, with survival rates differing significantly based on where an individual lives.
- Men living in rural NSW are 32% more likely to die from prostate cancer than men from cities. If survival in regional and rural areas was the same as that for major cities, 700 fewer deaths would have occurred over the last 10 years of the study.
- The risk of dying from prostate cancer is also higher for men living in socio-economically disadvantaged areas, where patients are 40% more likely to die from prostate cancer compared to those in the least disadvantaged areas.

Impact

The research findings suggest that a combination of factors improve the survival outcomes for men living in major cities. City men are diagnosed slightly earlier and generally have better access to initial treatment and follow-up services. Reduced access to general practitioners (GPs) and specialist cancer care in regional areas may contribute to the urban-rural disparity. This highlights the importance for men who are aged over 50 and living in rural and regional areas of discussing risk factors for prostate cancer with their GPs and the significance of regular follow-up for those previously diagnosed.

The study also highlights that further research is needed to investigate geographic inequalities in the patterns of management of men diagnosed with prostate cancer and their use of health services to reduce the significant divide in survival outcomes. This will ensure that appropriate evidence guides future policy changes.

LEAD RESEARCHER
Dr Xue Qin Yu,
Cancer Council NSW

RESEARCH TEAM
Ms Qingwei Luo
Associate Professor David Smith
Professor Dianne O’Connell
Professor Peter Baade

Prostate Cancer Foundation Australia
(PCFA) funding: $309,664 (2011-2013)
New Treatments for Leukaemia

Dr Nicole Verrills and her team of researchers have investigated the potential of using a new class of anti-cancer drugs to improve the survival of patients with acute myeloid leukaemia, which is the most common adult leukaemia but has the worst survival rates compared to other types of leukaemia. The researchers have also gained a better understanding of two key proteins that play an important role not only in leukaemia but also in other cancers, such as brain, breast and lung cancers. This information will be used to design even more effective anti-cancer drugs for a wide range of cancers.

The need

Leukaemia is a cancer that affects the blood and bone marrow. It occurs when immature white blood cells grow out of control and continue to divide but never mature into normal cells. Acute myeloid leukaemia, accounts for around 30% of all leukaemia diagnoses in Australia, and has the lowest survival rate. While leukaemia affects people of all ages, the incidence of acute myeloid leukaemia greatly increases with age, so as the population ages, the number of patients diagnosed with acute myeloid leukaemia is also predicted to increase. This means that there is an urgent need to identify new ways to treat it.

Highlights

- The researchers have found that an important protein, called PP2A, whose function is to block the development of leukaemia, is disabled in acute myeloid leukaemia patients. This means that the number of leukaemia cells can increase and the cells can survive unchecked.
- The research project has shown that this protein, PP2A can be reactivated using new anti-cancer drugs. These new drugs have been tested in the lab and work especially well at blocking the development of leukaemia in combination with another class of drugs already in use for successfully treating a closely related disease, chronic myeloid leukaemia.
- In the process of testing PP2A activating drugs, the researchers have identified an important new protein that plays a key role. PP2A activating drugs work by binding to this protein to block its cancer-causing action. As normal cells do not have this protein, they are unaffected by the new drug, which means that the treatment may have fewer side effects.
- The researchers are hoping to move to the clinical trial of the new drugs with acute myeloid leukaemia patients within the next 18 months.

Impact

Current chemotherapies used to treat acute myeloid leukaemia have many harmful side effects and despite treatment, patients only have a 25% chance of survival. The understanding the researchers gained about how PP2A targeting drugs work will enable them to develop more effective anti-cancer drugs, which will kill leukaemia cells without affecting healthy cells. This will potentially translate into improved treatment outcomes for patients.

The research has also shown that since PP2A is inhibited in other cancers, including breast, colon, pancreatic, brain, ovarian and lung cancers, new PP2A activating drugs are also potentially effective for treating a range of other cancers.

LEAD RESEARCHERS
Dr Nicole Verrills, University of Newcastle, Hunter Medical Research Institute
Dr Anthony Don, University of NSW, Lowy Cancer Research Centre
Dr Anoop Enjeti, University of Newcastle, Hunter Medical Research Institute
Associate Professor Jonathan Morris, University of NSW

RESEARCH TEAM
Professor Richard Lock
Professor Adam McCluskey
Dr Patrick McElduff

Jointly funded by Cancer Council NSW and Cure Cancer Australia Foundation (CCAF): $360,000 (2012-2014)
I lost my mother to cancer in 2011, which was the catalyst for my change of attitude towards cancer and my lifestyle choices. Throughout my mother’s battle, I had used running as my way to deal with what was happening and get my thoughts together. Then I decided to use this passion to make my contribution to research and advocate for prevention.

I have run several marathons, ultra marathons and completed a few ‘unusual’ running challenges around the world, to test myself and inspire others. I have founded Outrun Cancer, a non-profit organisation which uses running to raise awareness and funds for cancer prevention. With events such as our Outrun Cancer Corporate Treadmill Marathon, we take the prevention message around Australia. We are currently funding one of Cancer Council NSW’s research projects which looks at the relationship between body mass index, physical activity, diet and cancer risk. I am extremely happy and feel privileged to be able to support Cancer Council NSW.

Research is fundamental for understanding what causes cancer and how we can prevent it and beat it. Turning research into practical and shareable knowledge also empowers people and helps support those affected.

Research, prevention and advocacy are the stones thrown in the water that creates a wave of change. However far our finish line may be from beating cancer, we will get there, one step at a time.

CASE STUDY

“I imagine a future where no-one develops a cancer preventable by lifestyle choices”
How Bowel Cancer Cells Become Resistant to Chemotherapy

Dr Beric Henderson and his research team have explored how genetic mutations in a large number of bowel cancer patients cause resistance to standard bowel cancer drugs. By examining molecular changes in cancer cells, the study, undertaken by Dr Mariana Brocardo, has investigated how drug resistance could be overcome using a combination of different drugs.

The need

Bowel cancer is the second most common cancer affecting people in Australia and it results in almost 4,000 deaths nationally each year. Many bowel cancers are the result of mutations in the APC gene. The APC gene plays a critical role in preventing the uncontrolled growth of cells that may result in cancer, and its mutations have been directly linked to the formation and development of bowel cancer. Greater understanding of this gene is key to designing more effective treatments for bowel cancer.

Highlights

• Previous research by Doctors Brocardo and Henderson has found that certain bowel cancer cells grown in the laboratory could develop resistance to the more common chemotherapy drugs. These cells that developed resistance contained APC gene mutations.

• By investigating how cancer-forming mutations in the APC gene affect its role in repairing broken DNA, the researchers discovered that APC gene mutations cause changes in cancer cells that make them more resistant to standard drug therapies. The researchers found that certain safe-guards in cancer cells with APC gene mutations were still operating after standard treatment, thus making cells more resistant. By disrupting these safe-guards with specific drugs, standard chemotherapy drugs also become more effective.

• Based on these findings, the researchers have identified a potential new approach to target chemotherapy-resistant cancer cells, by combining different types of chemotherapy drugs in treatment.

Impact

Bowel cancer affects both males and females, and approximately one in 20 Australians will develop it by the age of 75. By investigating how mutations in the APC gene affect the development of cancer and the response to different chemotherapy drugs, the researchers have identified a way to improve treatment through combined drug therapy. The study has long-term potential to improve treatment, especially for those with recurrent or difficult to treat bowel cancers.

LEAD RESEARCHERS
Dr Beric Henderson, Westmead Millennium Institute
Dr Mariana Brocardo, Westmead Millennium Institute
Dr Mark Molloy, Macquarie University

RESEARCH TEAM
Dr Brian Gabrielli

Cancer Council NSW funding:
$360,000 (2012-2014)
“I imagine a future where innovative and collaborative research has revealed successful new treatments for glioblastoma brain tumours”

Glioblastoma is a type of brain cancer that is very invasive and this makes it very hard to treat. My research aims to improve glioblastoma treatment and make this cancer less deadly by investigating the basic mechanisms of brain cancer cell migration and invasion.

I received great support from Cancer Council NSW as a Career Development Fellow between 2003 and 2008, which helped me establish my independence as a researcher. I am very lucky to have received further funding from Cancer Council NSW, including support to research glioblastoma cell invasion.

Over the last few decades, there has been an explosion of knowledge about cancer, which means that researchers increasingly need to collaborate with each other to be able to keep doing innovative research. For example, my collaboration with Professor Ben Fabry, who specialises in biophysics, ensures that we can look at glioblastoma in a new way, take advantage of advances in other fields and make new discoveries.

Despite all the advances in technology, treatment and cross-disciplinary research, there are still so many unanswered questions and there’s still so much unknown. My motivation for doing research has always been twofold. There’s the opportunity to improve survival for cancer patients and to improve quality of life for survivors. And then there’s the intellectual curiosity which drives my research forward day-to-day, to seek answers and advance cancer treatment. There’s so much to get excited and enthusiastic about every single day when I’m doing research.
The research team led by Associate Professor Geraldine O’Neill investigated the role of a specific molecule in the spread of the most deadly brain tumour, glioblastoma. The researchers have discovered that targeting and blocking this particular molecule can potentially stop glioblastoma spreading, which could make treatment more effective and improve quality of life for glioblastoma patients.

The need
Despite advances in technology, surgery and therapies over the last 20 years, there has been little improvement in survival rates for glioblastoma patients. Glioblastoma is difficult to treat because the cancer cells spread extensively throughout the surrounding brain tissue. This makes successful surgical removal of this brain cancer almost impossible, resulting in a 90% cancer recurrence rate. It is therefore essential to develop new treatments for glioblastoma, which requires a better understanding of how cancer cells spread.

Highlights
- Recent research has revealed that the stiffness of the tissue surrounding cancer cells is a major cause of cancer cell invasion. Associate Professor Geraldine O’Neill’s team has established an international collaboration with a leading biophysics expert to investigate how invading glioblastoma cells measure stiffness, in order to find ways to block the spread of cancer cells.
- The researchers found that high levels of a particular molecule, NEDD9, in glioblastoma cells make the cancer spread faster through the brain by helping glioblastoma cells grip strongly to the brain tissue. This means that it might be possible to stop glioblastoma spreading by blocking NEDD9.
- There are currently no drugs that specifically target NEDD9, so the researchers are working on designing a series of drugs to be trialled.
- NEDD9 is present in only very low amounts in the healthy adult brain so future therapies that target NEDD9 are anticipated to have minimal side effects.

Impact
This research forms an important basis for creating drugs that can target glioblastoma better and therefore increase survival rates, by blocking the spread of cancer and reducing the chance of recurrence. These findings will be relevant to the 25% of glioblastoma cases that have high amounts of NEDD9.

New targeted drugs would be part of a combined approach in glioblastoma treatment, also involving surgery and current best practice drugs. As this new treatment would have the potential to stop the spread and recurrence of glioblastoma cells, quality of life could greatly improve for patients by reducing associated brain impairments, such as loss of eyesight.

NEDD9 also plays a key role in the spread of melanoma and lung cancer to other parts of the body, so this research also has the potential to benefit research and treatment of additional cancer types.
New Treatments for Neuroblastoma

Dr Karen MacKenzie and her team have researched molecular changes in neuroblastoma cancer cells which will lead to more targeted treatments for children with this cancer. By investigating the relationship between levels of specific molecules in cancer cells, tumour growth and the effectiveness of chemotherapy, treatment will become more effective even for aggressive and advanced stage neuroblastoma. Since similar molecular changes are also observed in other cancer types, the findings also have the potential to benefit a broad spectrum of cancer patients.

The need

Neuroblastoma is a cancer that occurs in children and starts in immature nerve cells. It accounts for about 15% of deaths related to childhood cancer, and the outlook for patients in the high-risk category is particularly poor, with less than a 40% chance of long-term survival.

Previous research has shown that neuroblastoma tumours that progress to advanced stages activate an enzyme called telomerase and that high levels of a certain protein in telomerase in cancer cells could predict the outcome for children with neuroblastoma. Translating these findings into therapy that specifically targets these molecular changes will greatly benefit children with neuroblastoma.

Highlights

- The researchers demonstrated the relationship between high levels of a certain protein in telomerase and cancer outcomes for neuroblastoma patients, using tumour samples from 197 neuroblastoma patients.
- The laboratory-based experiments showed that reducing this protein to levels similar to those in normal cells slowed cancer growth and also made chemotherapy treatment more effective.
- The researchers gained an understanding of how suppressing this protein impairs cancer growth.
- Based on these findings, the researchers developed a new system to block this protein in laboratory experiments.

Impact

Despite attempts to improve outcomes for high-risk patients over the past decades, disease recurrence and the harmful side effects of chemotherapy remain a challenge in treating neuroblastoma patients.

The evidence gained through this research project will enable the application of therapies that target specific molecular changes. This will make chemotherapy treatment more effective even for aggressive cancers, enabling lower drug doses and reduced side effects. This will greatly benefit children with advanced stage neuroblastoma who do not respond well to current therapies and are at a high risk of dying from their cancer.

Since telomerase and its protein component play key roles in a range of cancer types, the findings also have a potential benefit to people affected by different cancers.
Investigating the Link Between Kidney Cancer and the Ban of Popular Painkillers

Cancer Council NSW collaborated with colleagues from the International Agency for Research in Cancer and World Health Organisation to investigate, for the first time, the long-term impact of the ban of popular painkillers on the incidence of a subgroup of kidney cancers. By analysing cancer incidence rates between 1983 and 2007, the study found a dramatic drop in the incidence of renal pelvis cancer – a type of kidney cancer.

The need

Painkillers which contained phenacetin were very popular for the relief of mild pain from the 1930s to the late 1970s. Promoted as ‘pick-me-ups,’ brands including Bex, Vincent’s APC and Veganin were heavily advertised in the mass media and were readily available over-the-counter. However, due to their disease causing properties, including an increased risk of upper urinary tract cancer and renal failure, painkillers containing phenacetin were banned internationally in the late 1960–1980s and following medical campaigning, were banned from Australian shelves in the late 1970s.

To date, only one study focusing on NSW has investigated upper-urinary tract cancer trends following the ban. The study reported a slight decrease in cancer rates between 1985 and 1995. This new research aimed to confirm these observations and to determine the long-term impact of the phenacetin ban on the population.

Highlights

- The researchers evaluated incidence rates of the two types of upper-urinary tract cancers, renal pelvis cancer and ureteral cancer, in five Australian states over a 25-year period (1983–2007) after the ban. Data were obtained from the cancer registries of the five states, covering about 95% of the Australian population.
  - Over the 25-year study period, renal pelvis cancer rates decreased significantly, by 52% in women and 39% in men.
  - Phenacetin-containing painkillers were specifically marketed to and used by women, which explains the higher rates of reduction in the incidence of renal pelvis cancer among women compared to men. The decline of renal pelvis cancer incidence was stronger in states where the use of products containing phenacetin had been the most widespread, particularly in NSW and Queensland.
- Rates for cancers in other parts of the kidney like the ureter have remained about the same over the study period, which could indicate that phenacetin is not associated with ureteral cancer.

Impact

The findings of this research study confirm that regular use of phenacetin-containing painkillers led to the high incidence of renal pelvis cancer in Australia in the early 1980s, especially in women. The study highlights the beneficial public health impact of the ban of these painkillers, illustrating how a prevention policy may alleviate a public health problem. The study also shows the important role of public cancer registries in not only monitoring cancer incidence but also in evaluating the impact of public health prevention measures on cancer control.
"I imagine a world where cancer is diagnosed easily and early and treatment is always successful"

I was diagnosed with pancreatic cancer in 2010. Given the odds of survival from this cancer, it is doubtful if anyone knows exactly why I am a survivor. But without the extraordinary skill of my surgeon, the professionalism of all my doctors, the research that underpinned my treatment – radiation as well as chemotherapy – and the care and compassion I received from all the staff in the hospitals and treatment centres, I certainly would not have made it.

Throughout my treatment and recovery period, what was important to me was that I not be defined by my cancer. And for an academic, I was remarkably uninterested in the details of my disease. I engaged in no web surfing. I believed in my medical teams and left it to them.

My survival has led to my becoming involved with the cancer community and since 2013 I have been a member of Cancer Council NSW’s Consumer Review Panel. My experience there has been both heartening and chastening, so many excellent research projects and not enough resources to fund all that are promising.

Cancer is a highly complex disease – or more accurately many diseases. This means that multiple approaches have to be backed: molecular biology, diagnostic radiology and radiation treatment, surgery, and across all forms of cancer. My wish is that my survival is no longer exceptional and that the research can be undertaken so that sooner, rather than later, my experience is the norm.
New research from Cancer Council NSW’s Aboriginal Patterns of Cancer Care (APOCC) Project has investigated disparities in breast cancer survival between Aboriginal and non-Aboriginal women. The study has revealed that Aboriginal women are significantly more likely to die from their breast cancer compared to non-Aboriginal women. The project has also investigated a number of factors contributing to this disparity, including surgical treatment rates, the existence of other chronic conditions and access to health care services.

**The need**

Cancer is the second highest cause of death for Aboriginal people, who are also 60% more likely to die from cancer than non-Aboriginal people. Breast cancer is the most commonly diagnosed cancer for Aboriginal women, accounting for 25% of all cancer cases.

Previous studies in other states of Australia have reported that breast cancer survival was lower for Aboriginal women than for non-Aboriginal women, however, the causes of this disparity are complex and have not yet been fully explained. In order to better understand these disparities and help improve cancer outcomes, this research study analysed surgical treatment patterns and survival for Aboriginal women compared to non-Aboriginal women in NSW.

**Highlights**

- The study found that Aboriginal women were 30% more likely to die from their breast cancer than non-Aboriginal women.
- Aboriginal women diagnosed with breast cancer were younger and at a more advanced stage and were significantly less likely to receive surgical treatment. The existence of other chronic conditions, such as diabetes or heart disease and access to culturally appropriate health care had a significant impact on treatment provision.
- As part of our APOCC Project, interviews with Aboriginal people have also revealed a number of practical barriers that can hinder appropriate cancer care for Aboriginal people, such as lack of transport and accommodation services, mistrust of the health care system and the perception that cancer is a ‘death sentence’. Moreover, interviews with health professionals found that it is essential that health care workers recognise and respond to cultural differences, in order to promote a more inclusive and culturally safe culture in cancer care.

**Impact**

This is the first study investigating the links between treatment, survival and chronic conditions for Aboriginal women with breast cancer in NSW. The state has the largest number of Aboriginal residents, representing almost 30% of Australia’s Aboriginal population. The findings suggest that by increasing rates of surgical treatment, preventing chronic conditions and improving access to culturally appropriate health care services, disparities in breast cancer survival between Aboriginal and non-Aboriginal women could be reduced.

**LEAD RESEARCHER**

Professor Dianne O’Connell, Cancer Council NSW

**RESEARCH TEAM**

Mr Rajah Supramaniam
Ms Alison Gibberd
Dr Anthony Dillon
Mr David Goldsbury

National Health and Medical Research Council (NHMRC) funding: $1,580,755 (2007-2015)
Assisting GPs to Talk About Alcohol and Cancer with their Patients

This research project, conducted by Cancer Council NSW in collaboration with Cancer Council SA, investigated the perspectives of general practitioners (GPs) on the link between alcohol and cancer, and their recommendations to patients relating to alcohol. The research found that GPs were often not aware of the strong link between alcohol consumption and cancer. Informed by these research findings, Cancer Council NSW has started developing resources to raise awareness among GPs of the issue of alcohol-related cancer, which has the potential to reduce the number of people drinking at levels that are harmful to long-term health.

The need

Up to 5.8%, or 6,620 new cancer cases per year in Australia can be attributed to long-term alcohol consumption. Alcohol consumption is linked to mouth, throat, oesophagus, bowel and breast (in women) cancers and weight gain – a further cancer risk. Although alcohol is a well-established risk factor for cancer, the NSW community’s knowledge of the link between alcohol consumption and cancer is low.

GPs are one of the most trusted sources of information about improving health and preventing disease, and are one avenue for the public to learn about cancer risk factors. As there is often confusion by the general public about the benefits and harms of alcohol consumption, and its link to cancer, it is important to explore GPs’ views and recommendations relating to alcohol.

Highlights

- The research team conducted 27 in-depth telephone interviews with GPs across metropolitan, regional and rural NSW and South Australia. GPs were asked about their knowledge and practice when discussing alcohol, lifestyle and cancer with their patients.
- Through these interviews, the researchers found that alcohol is not usually top of mind for GPs, unless their patients have abnormal liver function tests or for those seen to have alcohol dependency or addiction issues. Moreover, GPs were often not aware that alcohol consumption is a risk factor for cancer, and wanted more information.
- Some GPs felt the government drinking guidelines were unreasonable, stating that drinking at levels up to three times higher than the daily drinking guidelines would not harm health.
- Cancer Council NSW collaborated with partners from Cancer Council SA to start developing information resources and a communications strategy aimed at GPs.

Impact

The research project showed that GPs need more information on the link between alcohol consumption and cancer. The resources that are being developed by Cancer Council NSW and Cancer Council SA are informed by the research findings, and aim to raise awareness of the issue of alcohol-related cancer, assist GPs in discussing alcohol and cancer with their patients, and help reduce cancer risk.

LEAD RESEARCHER
Ms Lyndal Wellard,
Cancer Council NSW

RESEARCH TEAM
Ms Clare Hughes
Dr Nadia Corsini

Jointly funded by Cancer Council Australia, Cancer Council NSW and Cancer Council SA: $27,000 (2014)
Helping the Immune System Fight Lymphoma

Professor Stuart Tangye and his team of researchers are investigating the relationship between immune diseases, genetic mutations and the development of lymphoma. By researching how the immune system responds to cancer cells, the team has laid the foundations for developing targeted therapies to treat lymphoma and potentially other types of cancers.

The need
Lymphoma is the most common type of blood cancer, with over 5,200 people diagnosed in Australia each year. Lymphoma arises when lymphocytes (a type of white blood cell) become damaged, growing abnormally and multiplying uncontrollably. As the abnormal lymphocytes replace normal ones, the immune system becomes less effective. This research project addresses the need to further investigate the link between immune diseases and lymphoma in order to find ways to boost the ability of the immune system to control lymphoma development.

Highlights
- Researchers have found a crucial way that the immune system recognises and responds to lymphoma cells in the blood. This discovery was made by studying the workings of X-linked lymphoproliferative disease (XLP), which is an often fatal inherited deficiency within the immune system. People with XLP are much more likely to develop severe disease following infection with Epstein-Barr virus (EBV). While EBV infection of most healthy individuals is relatively harmless, it is a cancer-causing virus, inducing lymphoma in a significant proportion of XLP patients.

- The research has identified that signalling pathways through a particular lymphocyte ensure that the immune system is activated and can respond to malignant lymphoma cells. If this pathway is compromised because of gene mutations (for example in XLP patients), the immune system will not be able to control the development of lymphoma.

- Targeting this pathway to repair or enhance it could be an effective approach to boosting the ability of the immune system to attack malignant cancer cells.

- The team is also investigating other human immune deficiencies. The findings suggest that although these immune deficiencies have distinct molecular causes, there is a common mechanism that determines infection with EBV and the subsequent development of lymphoma.

Impact
This research project has led to important findings about the link between immune system deficiencies, EBV and the development of lymphoma. By investigating XLP and other immune deficiencies, the researchers have discovered genetic mutations that can lead to severe EBV-induced disease and lymphoma. This will enable the development of targeted therapies to activate the immune system. Moreover, the research has a potentially broader impact, as although EBV in healthy individuals is mostly harmless, it is associated with the development of at least seven different types of cancer.

LEAD RESEARCHERS
Dr Stuart Tangye,
Garvan Institute of Medical Research
Dr Umaimainthan Palendira,
Garvan Institute of Medical Research

RESEARCH TEAM
Professor Alan Rickinson

Cancer Council NSW funding:
$357,140 (2012-2014)
“I imagine life where cancer is not a scary word but one that can be beaten every time”

I was 17, about to start the last year of high school, when I was diagnosed with Hodgkin’s lymphoma. My family was a great support network, and we also received a lot of help from the local community. The chemotherapy and radiotherapy treatments fortunately worked, the cancer went into remission and I could go off to uni the next year.

Since then, I haven’t thought too much about cancer, I have been enjoying life and working in the UK and Australia. One day a few months ago I heard about a new research study that the University of Western Sydney and Cancer Council NSW were conducting, investigating cancer survivors’ experiences about fertility after cancer. I jumped on board and as the study progressed I started learning more and more about the topic of fertility. I don’t recall that fertility was ever mentioned when I was going through treatment, even though it is really important to discuss. Without the research study, I wouldn’t have started thinking about my own fertility and wouldn’t be able to take precautionary measures.

There is so much that people affected by cancer have to deal with during and after treatment. Through research, the negative side effects of cancer and its treatment can be minimised. And I am so excited about the new opportunities research is creating for improved diagnosis, treatment and support every day. Without research, all the improvements that I have seen – even just in the last 10 years – wouldn’t have been possible.
In partnership with Cancer Council NSW, a team of researchers from the University of Western Sydney investigated an important aspect of cancer treatment that is rarely spoken about, fertility after cancer. The project examined the experience of fertility after cancer from the perspective of people with cancer, their partners and health professionals. Informed by the research findings, Cancer Council NSW developed a new information resource.

**The need**

Improved cancer treatments in recent decades have resulted in more long-term cancer survivors, and a better understanding of their needs. Changes to fertility can be one of the most difficult long-term effects of cancer and infertility after cancer can be devastating, causing distress, fear and a ‘broken hearted’ feeling.

Although infertility after cancer affects up to 60% of cancer survivors, fertility is rarely addressed by health professionals. According to a previous study, just 20% of cancer patients discuss the issue of fertility after cancer with their treatment team and, of these, only one-third are satisfied with the discussion. Assisting all cancer patients and their partners to deal with fertility concerns is vital to ensuring their quality of life after cancer.

**Highlights**

- The researchers collected data on the perspectives of cancer patients, their partners and health professionals through questionnaires and in-depth interviews. The survey and interview data are currently being analysed more in-depth, but the preliminary findings confirm that patients need more information on cancer and fertility to be able to make informed treatment choices and have a better quality of life after treatment.

- Cancer Council NSW’s Information and Support team used these findings to develop the *Fertility and Cancer* resource. Cancer Council has distributed nearly 4,000 copies of the booklet across Australia and the resource is also available online.

- The resource is currently being evaluated to determine how helpful it is in terms of teaching cancer patients, survivors and health professionals about fertility after cancer, helping them to adapt to their changed circumstances, and assisting them in managing their depression and anxiety.

**Impact**

Health professionals, patients and partners must talk about fertility throughout the cancer journey – from the time of diagnosis right through to after treatment. Discussing fertility concerns in an informative, supportive and non-judgemental way is key to enhancing the quality of life of people affected by cancer. The data the researchers collected through the questionnaires and interviews and the much-needed educational resource Cancer Council NSW developed for cancer patients, survivors, their partners and health professionals will ensure that fertility after cancer is openly discussed and better managed in the future.

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**Let’s Talk About Fertility and Cancer**

Infertility affects up to 60% of cancer survivors

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**LEAD RESEARCHER**

Professor Jane Ussher, University of Western Sydney

**RESEARCH TEAM**

- Associate Professor Janette Perz
- Dr Emilee Gilbert
- Ms Gillian Batt
- Dr Kendra Sundquist
- Ms Annie Miller
- Dr Alison Butt
- Dr Pandora Patterson
- Dr Gerard Wain
- Ms Kim Hobbs
- Dr Cathy Mason
- Dr Laura Kirsten
- Dr Edith Weisberg
- Dr Tim Wong
- Ms Kathryn Nattress

**Australian Research Council funding:** $489,824 (2011-2014)
<table>
<thead>
<tr>
<th>Research team</th>
<th>Project</th>
<th>Funding body</th>
<th>Funding period and amount</th>
</tr>
</thead>
<tbody>
<tr>
<td>B Positive Program</td>
<td>HcToR-West: HCC Outcome improvements through translational research in Western Sydney</td>
<td>Cancer Institute NSW – Sydney West Translation Cancer Research Centre</td>
<td>2014–2017 $675,000</td>
</tr>
<tr>
<td>Cancer Support Unit</td>
<td>Enhancing community knowledge and engagement with law at the end of life</td>
<td>ARC Linkage Grant with Queensland University of Technology</td>
<td>2014–2017 $422,027</td>
</tr>
<tr>
<td>Cancer Support Unit</td>
<td>Healthy Living after Cancer – A Partnership Project between the NSW, VIC, WA and SA Cancer Councils and the Cancer Prevention Research Centre, University of Queensland</td>
<td>NHMRC Partnership Grant with University of Queensland**</td>
<td>2014–2018 $1,442,110</td>
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<tr>
<td>Cancer Support Unit</td>
<td>Who decides and at what cost? Comparing patient, surrogate and oncologist perspectives on end of life care</td>
<td>NHMRC Project Grant with University of Newcastle**</td>
<td>2014–2016 $377,956</td>
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<tr>
<td>Luo Q</td>
<td>Postgraduate Research Support Scheme (PRSS)</td>
<td>The University of Sydney Travel Grant</td>
<td>2014 $1,200</td>
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<tr>
<td>Nutrition Unit</td>
<td>Applying a logic model to link unhealthy food promotion to childhood obesity</td>
<td>ARC Linkage Grant with University of Wollongong**</td>
<td>2014–2015 $250,935</td>
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<tr>
<td>Nutrition Unit</td>
<td>The independent and combined effects of front-of-pack food labelling systems and health claims on consumers’ food-related beliefs and behaviours</td>
<td>AR Research Grant with Curtin University**</td>
<td>2014–2016 $373,513</td>
</tr>
<tr>
<td>Nutrition Unit</td>
<td>Understanding how to engage and support GPs to address alcohol and cancer risk</td>
<td>Cancer Council Australia Research Grant through Nutrition and Physical Activity Committee</td>
<td>2014 $27,000</td>
</tr>
<tr>
<td>O’Connell D, Canfell K, Smith D, Caruana M</td>
<td>Testing and Treatment for Prostate Cancer in Australia: Epidemiology and Modelling</td>
<td>Prostate Cancer Foundation Australia Project Grant</td>
<td>2014–2015 $496,655</td>
</tr>
<tr>
<td>Skin Cancer Prevention Unit</td>
<td>Increasing shade availability in recreational settings, specifically within local NSW surf life saving clubs</td>
<td>Cancer Institute NSW Evidence to Practice Grant</td>
<td>2014–2015 $28,704</td>
</tr>
<tr>
<td>Skin Cancer Prevention Unit</td>
<td>Skin Cancer Prevention Strategy targeting men aged 40 and above</td>
<td>Cancer Institute NSW Partnership Grant</td>
<td>2014–2015 $273,000</td>
</tr>
<tr>
<td>Tobacco Control Unit</td>
<td>Cost effectiveness of a systems change intervention for smoking cessation in drug and alcohol treatment centres</td>
<td>NHMRC Project Grant with University of Newcastle**</td>
<td>2014–2017 $1,060,523</td>
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</table>

### Continuing grants

<table>
<thead>
<tr>
<th>Research team</th>
<th>Project</th>
<th>Funding body</th>
<th>Funding period and amount</th>
</tr>
</thead>
<tbody>
<tr>
<td>B Positive Program</td>
<td>Developing multimedia resources on hepatitis B for general practitioners and at-risk communities</td>
<td>NSW Ministry of Health</td>
<td>2013–2014 $29,260</td>
</tr>
<tr>
<td>B Positive Program</td>
<td>Hepatitis B building blocks: multimedia resources on hepatitis B for primary and secondary schools</td>
<td>Cancer Institute NSW</td>
<td>2013–2014 $10,000</td>
</tr>
<tr>
<td>B Positive Program</td>
<td>Supporting people with cancer initiative 2012: Developing multimedia support program for people with liver cancer</td>
<td>Cancer Australia</td>
<td>2012–2014 $88,000</td>
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<tr>
<td>B Positive Program</td>
<td>Supporting primary care providers to identify and optimally manage patients with chronic hepatitis B to prevent liver cancer</td>
<td>NSW Ministry of Health</td>
<td>2012–2014 $183,400</td>
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<tr>
<td>Cancer Support Unit</td>
<td>An RCT of online versus telephone-based information and support: Can electronic platforms deliver effective care for lung cancer patients?</td>
<td>NHMRC Project Grant with University of Newcastle**</td>
<td>2013–2016 $496,250</td>
</tr>
<tr>
<td>Cancer Support Unit</td>
<td>Caring at End of Life: Understanding the nature and effect of informal community care networks for people dying at home</td>
<td>ARC Linkage Grant with University of Western Sydney**</td>
<td>2011–2014 $243,043</td>
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## Grants Awarded By Cancer Council NSW
### Continuing Strategic Research Partnership (STREP) grants

<table>
<thead>
<tr>
<th>Lead researcher</th>
<th>Institute</th>
<th>Cancer type</th>
<th>Funding period and amount</th>
<th>Study</th>
</tr>
</thead>
<tbody>
<tr>
<td>Prof Andrew Biankin</td>
<td>Garvan Institute of Medical Research</td>
<td>Pancreatic cancer</td>
<td>2011–2015 $1,500,000</td>
<td>Using genetics to find existing drugs that might help fight pancreatic cancer</td>
</tr>
<tr>
<td>A/Prof Gail Garvey</td>
<td>Menzies School of Health Research</td>
<td>All cancers</td>
<td>2013–2017 $1,934,430</td>
<td>Making the health system work better for Indigenous patients</td>
</tr>
<tr>
<td>Prof Andrew Grulich</td>
<td>University of New South Wales</td>
<td>Anal cancer</td>
<td>2013–2017 $1,982,544</td>
<td>Researching if anal cancer screening will reduce illness and death cost-effectively</td>
</tr>
<tr>
<td>Dr Gillian Mitchell</td>
<td>The University of Melbourne</td>
<td>All cancers</td>
<td>2013–2017 $1,959,761</td>
<td>Investigating the genetic changes that lead to high risk of getting cancer</td>
</tr>
<tr>
<td>Prof Robert Sanson-Fisher</td>
<td>University of Newcastle</td>
<td>All cancers</td>
<td>2011–2015 $1,200,000</td>
<td>How to prevent people from getting cancer (less tobacco etc) and provide care to cancer patient that takes into account their needs and values</td>
</tr>
</tbody>
</table>

### Continuing Program Grants

<table>
<thead>
<tr>
<th>Lead researcher</th>
<th>Institute</th>
<th>Cancer type</th>
<th>Funding period and amount</th>
<th>Study</th>
</tr>
</thead>
<tbody>
<tr>
<td>Dr Andrew Biankin</td>
<td>Garvan Institute of Medical Research</td>
<td>Pancreatic cancer</td>
<td>2010–2014 $2,500,000</td>
<td>Studying all the genes in pancreatic cancers to help us understand them better</td>
</tr>
<tr>
<td>Prof Philip Hogg</td>
<td>University of New South Wales</td>
<td>Pancreatic cancer, brain cancer</td>
<td>2011–2015 $2,250,000</td>
<td>Created brand new treatments for brain and pancreatic cancer that target the power supply of tumours</td>
</tr>
<tr>
<td>Dr Lisa Horvath</td>
<td>Garvan Institute of Medical Research</td>
<td>All cancers</td>
<td>2010–2014 $1,498,686</td>
<td>Looking at how different patients respond to cancer drugs, leading to better, more personalised treatments</td>
</tr>
<tr>
<td>Prof Murray Norris</td>
<td>University of New South Wales</td>
<td>Leukaemia</td>
<td>2011–2015 $2,250,000</td>
<td>Improving childhood leukaemia survival through better treatments and identifying if there’s any disease left in children that have been treated</td>
</tr>
<tr>
<td>A/Prof Christopher Ormandy</td>
<td>Garvan Institute of Medical Research</td>
<td>Breast cancer</td>
<td>2011–2015 $2,249,976</td>
<td>Looking at the genes that turn ordinary breast cells into cancers</td>
</tr>
<tr>
<td>Prof Roger Reddel</td>
<td>Children’s Medical Research Institute</td>
<td>All cancers, brain cancer, bone cancer, lung cancer</td>
<td>2011–2015 $2,250,000</td>
<td>Understanding why cancer cells become immortal and how they can be stopped</td>
</tr>
</tbody>
</table>

* 2014 calendar year
** Cancer Council NSW was not the sole recipient of the grant

NHMRC: National Health and Medical Research Council
### New Project Grants

<table>
<thead>
<tr>
<th>Lead researcher</th>
<th>Institute</th>
<th>Cancer type</th>
<th>Funding period and amount</th>
<th>Study</th>
</tr>
</thead>
<tbody>
<tr>
<td>Dr Scott Byrne</td>
<td>The University of Sydney</td>
<td>Skin cancer, melanoma</td>
<td>2014–2016 $360,000</td>
<td>How a single type of cell helps sunlight to cause skin cancer</td>
</tr>
<tr>
<td>Dr Megan Chircop</td>
<td>The University of Sydney</td>
<td>Brain cancer</td>
<td>2014–2016 $360,000</td>
<td>Creating new treatments for brain cancers</td>
</tr>
<tr>
<td>Prof Peter Croucher</td>
<td>Garvan Institute of Medical Research</td>
<td>Myeloma</td>
<td>2014–2016 $360,000</td>
<td>Developing a new imaging technique allowing myeloma cancer cells to be observed in living bone</td>
</tr>
<tr>
<td>Dr Lionel Hebbard</td>
<td>The University of Sydney</td>
<td>Liver cancer</td>
<td>2014–2016 $360,000</td>
<td>How obesity affects liver cancer</td>
</tr>
<tr>
<td>Prof Michael Henderson</td>
<td>The University of Sydney</td>
<td>Skin cancer, melanoma</td>
<td>2014–2016 $120,000</td>
<td>Trial of exactly how much extra skin needs to be cut away when removing a melanoma</td>
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<tr>
<td>Dr Jeremy Henson</td>
<td>University of New South Wales</td>
<td>All cancers, bone cancer</td>
<td>2014–2016 $348,447</td>
<td>New diagnostic tool for a wide range of cancers including children’s cancer</td>
</tr>
<tr>
<td>Prof Christopher Liddle</td>
<td>The University of Sydney</td>
<td>Liver cancer</td>
<td>2014–2016 $359,956</td>
<td>Targeting cancer stem cells in liver cancer to help tackle resistance to treatment</td>
</tr>
<tr>
<td>Prof Jacqui Matthews</td>
<td>The University of Sydney</td>
<td>Breast cancer</td>
<td>2014–2016 $357,111</td>
<td>New treatments for breast cancer by testing if a protein can be used as a drug target</td>
</tr>
<tr>
<td>Prof John Mattick</td>
<td>Garvan Institute of Medical Research</td>
<td>Breast cancer</td>
<td>2014–2016 $353,157</td>
<td>Examining the DNA of breast cancers</td>
</tr>
<tr>
<td>Dr Hilda Pickett</td>
<td>The University of Sydney</td>
<td>All cancers</td>
<td>2014–2016 $318,447</td>
<td>How cancer cells stay immortal by maintaining their telomeres</td>
</tr>
<tr>
<td>Prof John Rasko</td>
<td>The University of Sydney</td>
<td>Uterine cancer</td>
<td>2014–2016 $357,111</td>
<td>How does one gene drive uterine cancer, and can it be used to create new treatments</td>
</tr>
<tr>
<td>Prof John Rasko</td>
<td>The University of Sydney</td>
<td>Leukaemia</td>
<td>2014–2016 $359,697</td>
<td>Testing whether a particular gene is important in acute lymphoblastic leukaemia</td>
</tr>
<tr>
<td>Dr Glen Reid</td>
<td>Asbestos Diseases Research Institute</td>
<td>Lung cancer</td>
<td>2014–2016 $346,140</td>
<td>Developing a microRNA-based drug as a new treatment option for mesothelioma</td>
</tr>
<tr>
<td>Prof Michael Rogers</td>
<td>Garvan Institute of Medical Research</td>
<td>Breast cancer, bone cancer</td>
<td>2014–2016 $359,167</td>
<td>Testing whether a particular gene is important in acute lymphoblastic leukaemia</td>
</tr>
<tr>
<td>Prof David Thwaites</td>
<td>The University of Sydney</td>
<td>All cancers</td>
<td>2014–2016 $358,653</td>
<td>Improving radiotherapy by better understanding the limitations of each type of therapy</td>
</tr>
<tr>
<td>Dr Paul Timpson</td>
<td>Garvan Institute of Medical Research</td>
<td>All cancers, pancreatic cancer</td>
<td>2014–2016 $357,111</td>
<td>How to target areas of tumours that have poor drug delivery</td>
</tr>
</tbody>
</table>

### Continuing Project Grants

<table>
<thead>
<tr>
<th>Lead researcher</th>
<th>Institute</th>
<th>Cancer type</th>
<th>Funding period and amount</th>
<th>Study</th>
</tr>
</thead>
<tbody>
<tr>
<td>Prof Minoti Apte</td>
<td>University of New South Wales</td>
<td>Pancreatic cancer</td>
<td>2013–2015 $360,000</td>
<td>How pancreatic cancer cells use the healthy cells around them to help them spread throughout the body</td>
</tr>
<tr>
<td>Dr Linda Bendall</td>
<td>The University of Sydney</td>
<td>Leukaemia</td>
<td>2013–2015 $358,653</td>
<td>How important is one protein in the development of leukaemia, and can it be targeted by drugs</td>
</tr>
<tr>
<td>Prof Samuel Brett</td>
<td>St Vincent’s Hospital</td>
<td>All cancers</td>
<td>2012–2014 $359,524</td>
<td>Investigating one gene that greatly increases the risk of cancer spreading</td>
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<tr>
<td>A/Prof Tracy Bryan</td>
<td>The University of Sydney</td>
<td>All cancers</td>
<td>2012–2014 $359,524</td>
<td>How do tumour cells allow cancer cells to be immortal</td>
</tr>
<tr>
<td>Prof Christine Clarke</td>
<td>The University of Sydney</td>
<td>Breast cancer</td>
<td>2013–2015 $360,000</td>
<td>Creating better forms of HRT that don’t cause breast cancer</td>
</tr>
<tr>
<td>Dr Scott Cohen</td>
<td>The University of Sydney</td>
<td>All cancers</td>
<td>2012–2014 $360,000</td>
<td>Determine the 3-D structure of human telomerase, the protein that allows cancer cells to be immortal</td>
</tr>
<tr>
<td>Dr Sue Firth</td>
<td>The University of Sydney</td>
<td>Breast cancer</td>
<td>2012–2014 $360,000</td>
<td>Looking at how two proteins help breast cancer cells survive stress</td>
</tr>
</tbody>
</table>
Dr Nikolas Haass  The University of Sydney  Melanoma  2013-2015  $359,673  Using a new microscope to test if targeting a part of melanoma cells is an effective treatment

Prof Edna Hardeman  University of New South Wales  All cancers  2013-2015  $360,000  Understanding why two-thirds of childhood cancer survivors have metabolic problems (like diabetes) in adulthood

Dr Beric Henderson  The University of Sydney  Bowel cancer, melanoma  2012-2014  $360,000  How does an increase in the concentration of a single protein lead to bowel cancer

A/Prof Lisa Horvath  Garvan Institute of Medical Research  Prostate cancer  2013-2015  $360,000  New drug targets to help overcome resistance to chemotherapy

Dr Tao Liu  University of New South Wales  Neuroblastoma  2013-2015  $355,653  Investigating a gene that helps neuroblastomas grow blood vessels and spread throughout the body

A/Prof Deborah Marsh  The University of Sydney  Ovarian cancer  2013-2015  $309,673  What causes ovarian cancers to develop

Prof Graham Mann  Melanoma Institute Australia  Melanoma, skin cancer  2012-2014  $479,428  Documenting the genetic codes from 500 different melanomas to help identify the genetic faults that caused them

Dr Kerrie McDonald  University of New South Wales  Brain cancer  2012-2014  $311,175  How a DNA repair enzyme seems to cause drug resistance even when it appears inactive.

Dr Kerrie McDonald  University of New South Wales  Brain cancer  2012-2014  $486,175  Identifying patients that will respond better to chemotherapy

Dr Kerrie McDonald  University of New South Wales  Brain cancer  2013-2015  $352,266  Investigating why a new brain cancer drug works in some patients but not others

Dr Anna Nowak  The University of Sydney  Brain cancer  2012-2014  $369,000 total (from funding partners)  Does adding a particular chemotherapy drug to radiotherapy help those with brain cancer

A/Prof Geraldine O’Neill  The University of Sydney  Brain cancer  2012-2014  $326,169  How brain tumour cells spread through healthy brain tissue

Dr Lorraine O’Reilly  The Walter and Eliza Hall Institute of Medical Research  Stomach cancer  2013-2015  $590,888  A new model for stomach cancer

Prof Markus Seibel  The University of Sydney  Bone cancer  2013-2015  $359,673  How does Vitamin D help to prevent cancers spreading to the bone

A/Prof Gianluca Severi  Cancer Council Victoria  Brain cancer  2012-2014  $155,956 with CCA  Recruiting 800 brain cancer patients to better understand the causes of this cancer

Dr Elena Shklovskaya  The University of Sydney  Melanoma, all cancers  2013-2015  $357,183  New ways to alter the memory of the immune system to help it fight cancer

Dr Stuart G Tangye  Garvan Institute of Medical Research  Lymphoma  2012-2014  $357,140  The link between immune deficiency, the Epstein-Barr virus, and lymphoma

A/Prof Janette Vardy  The University of Sydney  All cancers  2013-2015  $357,140  Giving cancer survivors a tool that helps them recover mentally and have less anxiety, fatigue and stress.

Dr Nicole Verrills  University of Newcastle  Leukaemia  2012-2014  $360,000 with CCAF  Targeting a new protein for leukaemia treatments

Prof Robyn Ward  University of New South Wales  Bowel cancer, uterine cancer  2013-2015  $324,673  Discovering a new cause of familial bowel cancer

A/Prof Xu Dong Zhang  University of Newcastle  Melanoma  2013-2015  $359,250  Targeting a gene that drives uncontrolled growth and resistance to treatment in melanoma

A/Prof Xu Dong Zhang  University of Newcastle  Melanoma  2013-2015  $359,250  Targeting a different pathway to create a new personalised drug for melanoma

Infrastructure Grants

<table>
<thead>
<tr>
<th>Lead researcher</th>
<th>Institute</th>
<th>Cancer type</th>
<th>Funding period and amount</th>
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<tbody>
<tr>
<td>Prof Sally Redman</td>
<td>The Sax Institute</td>
<td>All cancers</td>
<td>2010-2019 $3,500,000</td>
<td>The largest cohort study in the Southern Hemisphere, looking at the health and lifestyle of people over 45</td>
</tr>
</tbody>
</table>
Publications 2014


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* 2014 calendar year