Why genomics is in Garvan’s DNA

Spotlight on pancreatic cancer

The Rizzo family puts the fun in fundraising
From the CEO

Dear friends,

The year may be drawing to a close but, here at Garvan, we have been busier than ever.

On 20 October, World Osteoporosis Day, Garvan was proud to be an integral part of an alliance of interest groups which launched a new Osteoporosis National Action Plan. The plan presents a joint vision to address this major health issue as a matter of urgency. Overall, it aims to increase awareness of bone health, improve bone health and improve outcomes for people with osteoporosis. The plan includes recommendations that focus on prevention, treatment, impact and cure. It calls for a national strategy for research into curing osteoporosis.

Supported by our partner, Ridley, Garvan also marked World Osteoporosis Day with an event in Tamworth called ‘Healthy Bones for a Healthy Community’. Dr Paul Baldock from Garvan’s Bone Biology Division addressed the audience about bone health, fracture prevention and the latest in medical research.

We also recently hosted a Parkinson’s disease research roundtable, which brought together, for the first time, some of the leaders in Parkinson’s disease research from Australia. We were also delighted to welcome international guests representing The Michael J. Fox Foundation and Cure Parkinson’s UK. This roundtable addressed the research priorities outlined in Parkinson’s Australia’s recent Make Parkinson’s a Priority: Action Framework report. The meeting saw the group agree to work with local and international Parkinson’s interest groups to scope and plan a potential clinical trials program in Australia.

Finally, I would like to take this opportunity to acknowledge your role in supporting Garvan’s breakthrough medical research. We couldn’t do it without your support.

On behalf of my team at the Garvan Research Foundation, I sincerely thank you for recognising the importance of medical research. I look forward to sharing more of Garvan’s exciting breakthroughs with you in 2017.

Happy holidays.

Andrew Giles, Chief Executive Officer, Garvan Research Foundation.

Making news

Epigenetics enters the arena of personalised medicine

Professor Susan Clark and international collaborators have shown that DNA methylation analysis is a mature technology that is ready for clinical use. The researchers’ study heralds an era in which epigenetics will be used in clinical diagnostics and personalised medicine.

In many diseases, including cancer, the epigenetic control of the genome is heavily distorted. By measuring these alterations, a detailed picture of disease-specific changes emerges which can help distinguish disease sub-types or identify suitable treatments. To date, however, little epigenetic testing has been carried out in the clinic.

Forgotten molecule takes centre stage in cancer gene silencing

When a normal cell turns cancerous, its three billion DNA base pairs undergo a massive epigenetic shift – a series of large-scale changes in methylation. These changes often switch off key anti-cancer genes.

Researchers from Garvan’s Genomics and Epigenetics Division have furthered understanding on how cancer genes are silenced. The findings reveal how DNA becomes methylated at key sites across the genome in cancer cells, leading to gene silencing, and shows that the protein MBD2 plays a direct role in determining the location of these sites.

For more on genomics and epigenetics, see page 6.

Why artificial sweeteners can increase appetite

A recent study has shed light on how artificial sweeteners affect the brain in regulating appetite and altering taste perceptions. Researchers from Garvan and the University of Sydney’s Charles Perkins Centre have identified a new system in the brain that senses and integrates the sweetness and energy content of food.

After chronic exposure to a diet containing artificial sweetener sucralose, researchers saw that animals began eating a lot more. They discovered that when sweetness versus energy is out of balance for a period of time, the brain recalibrates and increases total calories consumed.
Fundraising is in the genes

For the Rizzo family, the serious business of curing breast cancer is the best excuse for a party.

When the Rizzo family – sisters Marina, Santina and Grace, and Grace’s daughter Yasmina – decided to hold a small fundraiser for breast cancer six years ago, they never imagined how successful they would be. Marina says, “We started in 2010 on the back verandah with a group of family and friends. We were thrilled when we raised $2000.”

Two years later, the next fundraiser attracted 170 people and raised $10,000. Needless to say, these sisters were blown away by the generosity of their community and motivated to outdo themselves next time around. However, preparations for the 2014 event were tarnished by news that their cousin Aurora had been diagnosed with a rare form of breast cancer. Then, only months later, the family was rocked with more devastating news when Grace too was diagnosed. “Suddenly, these events took on a whole new meaning. It was now very real to us,” says Marina.

This prompted the Rizzos to focus their efforts on medical research, and they decided to donate proceeds from their 2016 event to Garvan’s breast cancer researchers. Demanding of their guests “bring your dancing shoes and your wallet”, their ‘Let’s Find a Cure!’ fundraiser in October included two events at lunch and dinner, where the Rizzos flourished their partying expertise in support of this great cause. An impressive 500 people attended, raising $43,000 to go towards the Connie Johnson lab, headed by Associate Professor Elgene Lim.

To all those who attended and contributed – from the flowers to the photography and prizes – and especially to Marina, Santina, Grace and Yasmina – thank you!
Making news

Grandpa’s obesity can affect the health of his grandchildren

Scientists at Garvan and the Victor Chang Cardiac Research Institute have discovered that male mice who are obese when they conceive are putting their children and grandchildren at significant risk of developing metabolic disease – long before they are even born. The study could have immediate ramifications for public health.

Importantly, this predisposition was shown to be transmitted to grandsons even if their fathers ate well and were metabolically well at the time of conception.

These findings highlight the importance of good diet and lifestyle choices to avoid a lasting legacy of a poor diet on future generations. There is good news. Researchers also observed that in the great-grandsons’, metabolic health improved significantly.

Beyond single-gene thinking

New findings relating to cancer risk have been uncovered by the Australian-led International Sarcoma Kindred Study, which is exploring the genetic basis of sarcoma and is the largest study ever conducted in this disease.

Researchers have uncovered numerous new genetic risk factors for the cancer and, in a world first for any cancer type, have shown that carrying two or more of these rare mutations increases an individual’s cancer risk.

Previously, it’s not been possible to identify at-risk individuals and their families. These findings mean risk can be better managed and appropriate care can be given when it is needed.

Genetic immunodeficiencies

In a series of recent studies, researchers from Garvan’s Immunology Division have shed light on the underlying biology of disease in people who suffer from primary immunodeficiencies. These findings have implications for patients with rare and severe conditions as well as for those suffering more common infectious diseases.

“We can look in molecular detail at what has gone wrong in that individual’s immune system and link it to the underlying genetic mutation that has caused the immunodeficiency,” said Professor Stuart Tangye.

The insights have yielded a number of promising clinical targets for further investigation, as well as greater understanding into how the immune system reacts to viral infections or food allergens, and the roles of different immune cells.

A new era in genetic disease diagnosis

Garvan’s Kinghorn Centre for Clinical Genomics recently launched Genome.One – Australia’s first clinical whole-genome sequencing service. Owned by and based at Garvan, this new service could triple the diagnosis rates for Australians living with rare and genetic conditions. Garvan’s Executive Director, Professor John Mattick AO FAA said that the launch marked a turning point in disease diagnosis and health care in Australia.

“This new service extends cutting edge genomic technology beyond the research lab. We now have the ability to provide answers to many of the hundreds of thousands of Australians affected by genetic disease. “The more we understand about the whole genome, the greater our ability is to make life-changing diagnoses for genetic conditions and help patients receive the right treatment faster,” Professor Mattick said.

This whole-genome sequencing service is the result of a two-and-a-half year development at the Garvan Institute’s Kinghorn Centre for Clinical Genomics, in conjunction with NSW Health Pathology, the country’s largest provider of public pathology services. The service will ultimately help hundreds of thousands of Australians living with a genetic condition, many of which are rare and challenging to diagnose. It will increase the diagnosis rates of these conditions from around 20 per cent to 40–60 per cent.

Associate Professor Marcel Dinger, Head of the Kinghorn Centre for Clinical Genomics, said, “For families, receiving an accurate and timely diagnosis could result in access to new treatments and therapies as well as a clearer understanding of the journey ahead. The value the test provides is not confined to benefits to the patient. It will have economic benefits to the health care system as well.” Families who are currently searching for a diagnosis of a genetic disease should speak to their genetic specialist about whether Genome.One’s new test is appropriate for them.

“We now have the ability to provide answers to many of the hundreds of thousands of Australians affected by genetic disease.
Pancreatic cancer is in many ways a mystery, with little knowledge among the public and few options among clinicians. While Garvan interrogates this disease in the labs to find better treatments, the responses from a recent survey highlighted the urgency for greater awareness.

Q1 What do you wish you had known about the pancreas when you, or your loved one, were diagnosed?

A: How can you know anything when you’re diagnosed? I didn’t even know where the pancreas was. One doesn’t think about all these issues until it happens.

Nobody wants to hear “cancer” but “pancreatic cancer” may be even more dreaded. Or rather, it would be if more people knew more about it, as highlighted by a recent Galaxy poll which revealed only 15 per cent of Australians are aware of this disease. With ill-defined symptoms and affecting a relatively obscure organ, it is difficult to detect before it wreaks irreversible damage to the body. As medical research endeavours to change this, pancreatic cancer demands a greater presence in the public consciousness.

Q2 What do you wish you had known about the symptoms of pancreatic cancer before you, or your loved one, were diagnosed?

A: I wish we had known that no two sets of symptoms are the same and that a lot of medical professionals don’t think to check the pancreas in the first instance.

A recent Pancreatic Cancer Alliance survey, hosted by Garvan, solicited the experiences of people affected by this disease and underscored the need for perseverance in researching and understanding it. The participants’ responses show how little they knew prior to the diagnosis, as well as a sense of despondency as they are met with few options for treatment.

Q3 What do you wish you had known about treatment for pancreatic cancer when you, or your loved one, were diagnosed?

A: We wish we’d known how critical it was to identify the cancer earlier.

Pancreatic cancer has the dubious distinction of being the cancer with the poorest five-year survival rate in Australia: just 6.8 per cent, compared to 67 per cent for all cancers combined. The Australian Institute of Health and Welfare predicts it will become Australia’s fifth most common cause of death among cancers in 2016 – up from sixth place in 2014.

Q4 What do you wish you had known about available resources and support when you, or your loved one, were diagnosed?

A: There needs to be more positive stories. The statistics are dire but there are some miraculous cases that need to be highlighted because without hope you have nothing.

While ongoing research refuses to accept such a dismal state of affairs, networks such as Pancare provide support and information. In November Garvan observed National Pancreatic Cancer Awareness Month and on the 17th marked World Pancreatic Cancer Day with the hashtag #InItTogether and a twibbon (think Twitter + ribbon), which added the purple ribbon to social media profiles.

Most importantly we took the chance to emphasise that medical research hasn’t given up on this disease or the people it affects.

Symptoms of pancreatic cancer include:

- Jaundice (including yellowing of the skin and eyes, dark urine, itchy skin)
- Abdominal or back pain
- Digestive complaints such as nausea, vomiting, loss of appetite, pale and/or greasy stools
- Fatigue

Many conditions can cause these symptoms, not just pancreatic cancer. This information does not constitute medical advice. If you are concerned about your health, please see your doctor.

All quotes sourced from Pancreatic Cancer Alliance Survey 2016, hosted by Garvan: Tell Us About Your, or a Loved One’s Experience with Pancreatic Cancer.
Genomics and beyond: on the threshold of transforming medicine

Image by Dr Kate Patterson. Representation of DNA wrapped around proteins.
DNA underpins all the body’s activities and processes, just as it does for Garvan’s research.

It was the most fateful meeting of your life. An ovum, a sperm, with one thing leading to another, a nucleus fuses and a wholly unique string of DNA comes into being: your genome. Your first cell becomes two, four, eight, sixteen, and with each division your genome gets closer to putting feet on the ends of legs, colouring eyes and developing an aptitude for drawing.

Genetic characteristics are not limited to how you look and, to an extent, how you think. Genes also carry susceptibility to disease, and thus a perversely capacity to disrupt or end the life of the organism that bears them. Sometimes these faulty genes are inherited and sometimes they mutate spontaneously. Sometimes disease arises from a single malfunctioning gene, sometimes it arises from a subtle layering of multiple genes and environmental influences. Sometimes, we simply don’t know what causes a disease, but that doesn’t stop us trying to find out.

Such discoveries seem tantalisingly close as advances in technology enable comprehensive study of the genome and propel medicine into a wholly different future.

“There’s no doubt in my mind that genomics will transform medicine. It will convert it from being the art of crisis management, based on limited information and with a one-size-fits-all approach, to the science of good health,” says Professor John Mattick, Garvan’s Executive Director.

Upon assuming his position in January 2012, Mattick established genomics as the keystone of Garvan’s research program. This ambition crystallised in 2014 when Garvan was among the first to acquire the Illumina HiSeq X Ten sequencing platform, which decodes a DNA sample – all three billion of its base pairs – at high volume and low cost. Then in 2015 the Genomics and Epigenetics Division was established to signal Garvan’s leadership in this area and to provide a home for broad-spectrum research with the potential to inform the other, disease-based divisions.

So why sequence the whole genome, given that conventional protein-producing genes only occupy about two per cent? “Why would you just rip out the coloured pages from the book?” counters Mattick. “It might be cheaper to look at just the coloured pages, and there’s a high value there for traditional genetic disease, but if you’re thinking about the future of clinical diagnoses then you want to have all of the information because you want to be able to explore its dimensions and understand it in full. Indeed the genetic factors underpinning complex diseases, which are the major health problems, lie mainly outside of the protein-coding genes.”

A complete account of genomic information, moreover, is not limited to DNA alone. Enter the field of epigenetics, where the Greek prefix “epi” indicates “upon”, “above”, or “in addition to”. The epigenome is an essential additional layer of chemical information that orchestrates which parts of the genome are active in different cell types. It accounts for why one cell might manufacture keratin to build fingernails, while another cell with identical DNA creates haemoglobin so that red blood cells can transport oxygen.

Professor Susan Clark, who heads Garvan’s Genomics and Epigenetics Division, elaborates on Mattick’s book analogy. “Imagine a book with three billion letters, but there are no chapters, no paragraphs and no grammar to aid the reader to interpret the story,” she says. “Epigenetic information provides the grammar to allow our DNA to be read in context to ensure that all our fingers and toes end up in the right places.” Alongside its role in development, epigenetics also tweaks gene expression according to environmental signals. Consider a pair of identical twins, who have the same DNA but distinct appearances and personalities due to their individual life experiences.

As with the genome, the epigenome is susceptible to faults, whether inborn or acquired, such as the myriad health impacts of smoking or exposure to toxins. Though problematic, such a situation does have an upside. “Unlike genetic mistakes, epigenetic mistakes have the potential to be reversed,” says Clark. “In the future we aim to generate sequence maps of both our genome and our epigenome to provide a new toolbox of diagnostic tests and therapies to treat disease.”

With technology having advanced so quickly, genomics and epigenetics can finally start improving and extending lives. “The cost of DNA sequencing has plummeted by a million-fold over the past 15 years, which means that the ability to analyse genomes moves out of the pure research and into the clinical sphere,” says Mattick.

“It’s ready for prime time out there in the real world.”

The first step is tackling genetic disease, particularly in children who are born with a previously undiagnosable physical or intellectual disability (see Alan’s story, page 11). The other initial target is cancer, where genome analysis can guide drug choice through uncovering a tumour’s specific mutation, and where epigenetic therapies are showing promising results. Though remarkable, such achievements represent only the beginning of the beginning. Ultimately, as genomics and epigenetics affect every part of human biology, it stands to reason that they should affect every part of medicine too.
How long have you been at Garvan?
What did you do before?
I started at Garvan in January of this year. Before that I was at the Peter MacCallum Cancer Centre for seven years.

What are you currently working on?
Currently I’m working on a number of projects. My focus overall is on heritable cancer risk. My work in this area began with the International Sarcoma Kindred Study (ISKS). We initiated the project in Australia in 2009 and since then it has spread to over 20 recruitment sites across seven countries and includes about 1800 families. Recently we also began recruitment to the Genetic Cancer Risk in the Young Study. We are aiming to recruit 1000 people aged 16-40 years diagnosed with cancer, and perform whole genome sequencing to try to understand the heritable genetic drivers of cancer.

What drew you to researching Li-Fraumeni Syndrome in particular?
What’s interesting about it from a research perspective?
My work with the ISKS was the impetus to do some further research with Li Fraumeni families, which carry a germ-line TP53 mutation. Mainly because this population has a very high risk of cancer and there were no proven methods of surveillance or risk management, the clinical community has had quite a pessimistic attitude to TP53 mutation testing and clinical management. We wanted to have something to offer these people that would inform clinical practice, so we initiated a research surveillance protocol that utilises whole-body MRI.

More than 30 people are enrolled in the study and to date we’ve detected three asymptomatic new primary cancers that have been treated curatively. I feel privileged to be able to work with these families who often show amazing resilience and are happy to take part in research not just for their own benefit but in the hope that it will also help others.

Outside of work, do you have any hobbies or interests?
I really enjoy food so I love to cook and share it with my loved ones. I like to exercise, read books and watch movies.
There’s no denying the satisfaction in witnessing the fruits of one’s philanthropy. One of Garvan’s generous donors, however, has taken the step to ensure its generosity supports innovation in health long into the future.

Garvan is honoured to have wonderful support from many generous donors but this year a private ancillary fund won our particular appreciation when its founders, Dr Thomas and Ingeborg Girgensohn, advised that the Girgensohn Foundation would be leaving a legacy to Garvan as a Partner for the Future. Our Partners for the Future program acknowledges those who plan to remember Garvan in their wills, and we are grateful for the opportunity to thank them during their lifetimes. The Girgensohn Foundation’s bequest will continue its support of Garvan’s cancer research as it explores the seemingly limitless potential of personalised medicine.

In committing to the ongoing viability of Garvan and its work, a sense of higher purpose underpins the Girgensohn Foundation’s giving. ‘Improving the quality of life is one of society’s big tasks,’ say Thomas and Ingeborg. ‘Garvan has assembled a team of world-class researchers and bought leading-edge equipment to tackle the big issues in medicine. This puts Garvan in a great position to achieve important results.’

As the Girgensohns acknowledge, beating cancer will be a long and incremental process that may continue for generations to come. Their support through the Girgensohn Foundation as a Partner for the Future, however, will ensure researchers can continue this pursuit and make discoveries that will outlive us all.

The dream would obviously be to beat all cancers in all people. It seems utopian but the philosophy of personalised medicine at Garvan makes sense to us. We hope our contribution will help Garvan along this path.

Staying a step ahead of cancer

The Girgensohn Foundation is a generous philanthropic investor in Dr Arcadi Cipponi’s research, which aims to uncover the molecular mechanisms cancer cells use to ‘out smart’ targeted anti-cancer therapies and develop drug resistance. Dr Cipponi and his team have established that cancer cells evade the effects of treatment through introducing mutations in their own genetic material. While such mechanisms have been characterised in microorganisms (such as bacteria and yeast), no studies have been conducted in human cancer cells. Findings will inform new treatment options to improve the efficacy of these targeted anti-cancer therapies.

Now and forever

Thomas and Ingeborg Girgensohn.
Remembering Florrie

Although Garvan lost a valued friend when Florrie Fernihough passed away, she lives on in our memories and through her ongoing generosity.

Long ago, Florence “Florrie” Fernihough was convinced of the importance of medical research. In her early 30s, Florrie and her sister Roma agreed to donate their bodies to Body Donor Programme of the University of Sydney. It was the first step on a journey that led Florrie to become a Garvan Partner for the Future, when she decided to leave a bequest to Garvan in her will.

Sadly, Florrie recently passed away at the age of 93. According to her much-loved niece Janelle Lord, Florrie was heavily involved in her community until her final days. Janelle says, “Florrie lived in Maroubra and Randwick in Sydney all her life. She worked for the Forestry Commission for most of her working life as a stenographer. From all reports, she was a very efficient and accurate one. At the end of World War II, Florrie spent a year in Samoa, volunteering for the American Red Cross. Her community spirit was obviously with her early on.”

When she retired, Florrie became heavily involved in a number of community organisations and found a great deal of enjoyment in being active. Even in her 90s, Florrie believed that she was not too old to go into the city once a week. She also loved to travel and took many holidays around Australia, as well as to North America, Japan, England and the Pacific Islands.

Florrie was very engaged with Garvan’s work, attending many of our public events. She was a popular visitor and often arrived wearing her trademark sneakers and tennis hat.

“She was an incredibly independent woman. Florrie refused to go into an aged care facility or even a retirement home. In the end, she passed from a stroke while in hospital preparing herself for a procedure. She received the best care possible but passed two weeks later. In true Florrie style, she had walked herself to the hospital,” says Janelle.

We remember Florrie fondly, and thank her and all those who have remembered Garvan in their will.
Alan’s story

Alan is a bright, affectionate seven-year-old boy with expressive brown eyes, but not long ago he was very sick indeed. Aged three, during a check-up due to severe diarrhoea, doctors noticed red dots on his skin. He was rushed to hospital when it was discovered he had dangerously low platelet levels. Alan’s immune system was aiming its arsenal at normal parts of his body. But why?

Six months later Alan was back in hospital with low white blood cells, and then his red blood cells came under fire. Alan’s physicians suspected his perplexing disease was genetic, but pinpointing the smoking gun was difficult since many genes were unavailable for testing.

Alan was nominated for a study to read whole genomes of children with immune disease, funded by the Bill and Patricia Ritchie Foundation and led by Garvan’s Prof Chris Goodnow, tapping expertise from Garvan’s Kinghorn Centre for Clinical Genomics and Sydney Children’s Hospital, Randwick.

As Alan was admitted into intensive care, Garvan’s clinical genomicist Dr Tony Roscioli dropped everything to scrutinise the results. Within a couple of hours, he had pinpointed a gene called LRBA. Each of Alan’s parents were silent carriers of a disease-causing variant of this gene, and Alan had unfortunately inherited it from both sides.

Alan’s medical team fast-tracked approval at Sydney Children’s Hospital, Randwick, to use a drug called Abatacept, which was the subject of a recent publication in relation to LRBA cases. The treatment transformed Alan, who is now an active, happy child. His medical saga is not yet over, but the improvement in his condition is immense.

Cases like Alan’s enable researchers to better understand how the immune system works and why some treatments are effective. This knowledge can then be applied to other disorders, potentially helping millions of people in Australia and around the world.

To read more about how genomic medicine helped Alan, visit garvan.org.au/alan

The Kimberley Bracelet: the gift that gives back

Garvan is proud to have the support of iconic Australian pearler, Paspaley, with the launch of the Kimberley Bracelet. Paspaley will donate 25 per cent from the sale of each bracelet to the cancer division at Garvan, with purchasers choosing which type of cancer research they wish to support from bowel, breast, lung, ovarian, pancreatic, prostate or sarcoma.

Each unisex Kimberley Bracelet is comprised of natural elements unique to the Kimberley region – beautiful sandalwood from the Kununurra and a hand-selected Paspaley Australian South Sea pearl.

Purchase in store or online, and visit Paspaley.com to explore the full collection. Prices start from $680.

Help solve four new cancers while you sleep

The types of cancer you help can solve in your sleep has now expanded to brain, sarcoma, melanoma and lung, which join breast, prostate, ovarian and pancreatic cancer on the multi-award-winning app DreamLab. Built in partnership with The Vodafone Foundation, DreamLab taps your Android smartphone’s unused crunch power to speed up cancer research. It’s as easy as download, plug in and nod off.

You can find DreamLab on Google Play and more info at garvan.org.au/dreamlab.

Downloading DreamLab uses data. DreamLab can be used when your device is charging and has mobile network or WiFi connectivity. Mobile data to use DreamLab is free for Vodafone Australia customers on the Vodafone Australia network. Roaming incurs international rates.

Give a Garvan card this season

This year leave the knick-knacks on the shelf and instead, give a gift of good health with a Garvan card. Giving to Garvan means you’ll be helping to find cures for many diseases that could affect you or someone you love.

To make a donation in lieu of a gift, call 1300 73 66 77. For gifts $10 or more, we’ll send you a card you can personalise and send to your loved one.

Get a question? Ask us anything!

Garvan’s experts are standing by to answer selected questions in the next issue of breakthrough, so pop yours in the post to:
Garvan Research Foundation
Reply Paid 68939, Darlinghurst NSW 2010
Alternatively, email your question to breakthrough@garvan.org.au.
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What stories do you like reading in breakthrough?

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Donations of $2 and above are tax deductible.
Please complete this coupon and mail it to:
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Call: 1300 73 66 77 (9am to 5pm)
Fax: (02) 9295 8507 (you can use this coupon)
Online: garvan.org.au/donate

In memoriam
Between July and October 2016, donations were made in memory of:

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John Wright
Barbara J Young
Rena Young
Marion Zuzek

In celebration
A big happy birthday to Sue Morris!
Thank you for sending the goodwill to Garvan with a donation to mark the occasion.

Coming up
Don’t miss Garvan’s first public seminar of 2017, which will present the latest information and trends in Parkinson’s disease research. Meet the people behind the research and see first-hand how your donations are changing the future of medicine.

Topic: Parkinson’s disease
Date: Tuesday 11 April
Time: 10am to 12pm
This seminar is free of charge, but space is limited and bookings are essential. Seminars are held at the Garvan Institute of Medical Research, 384 Victoria Street, Darlinghurst, Sydney.

To reserve your place, call 1300 73 66 77 or visit garvan.org.au.

Clinical studies
Ovarian cancer study
We are looking for volunteers with NO personal history of cancer to donate approximately 50-80 mL of blood to be used to optimise experimental protocols and/ or biobanked for future use in cancer versus controls comparisons. This work is part of a project aimed at developing a blood-based test for early ovarian cancer.

To volunteer, or for more information, contact:
Dr Kristina Warton 0438 649 073 or email k.warton@garvan.org.au
(St Vincent’s HREC Ref SVH14/257).

Brown fat and blood pressure study
Brown fat is a special kind of fat which burns fat in the body. We are looking for volunteers who have high blood pressure to participate in a trial investigating the effect of a medication on brown fat. Participants must be aged 18 to 45 years and currently on one blood pressure medication.

For further information please contact:
Dr Paul Lee (02) 9295 8416 or email p.lee@garvan.org.au
(St Vincent’s HREC Ref 14/SVH/105).