



breakthrough



Dr Shane Grey and PhD student Eliana Mariño

PhD student Eliana Mariño and Dr Shane Grey may have found a preventative therapy for type 1 diabetes. It makes the body's killer immune cells tolerate the insulin-producing cells they would normally attack and destroy. Working with mice that spontaneously develop type 1 diabetes, they found that by blocking BAFF (a hormone that controls survival of B cells), none of the mice developed diabetes. The molecule used to inhibit BAFF is known as BCMA, and is already in clinical trials for other autoimmune diseases including Sjogren's syndrome, lupus and rheumatoid arthritis.

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making news

➤ Garvan researchers have made a discovery that may one day remove the need for a lifetime of toxic immunosuppressive drugs after organ transplants. They have successfully tested a method, in experimental mice, of adjusting the immune system for just long enough to receive a tissue transplant and accept it as 'self'. At no stage, during or after the procedure, is there a need for immunosuppressive drugs.

➤ A joint Australian-Vietnamese study looking at the impact of vegetarian diets on bone health, led by Prof Tuan Nguyen in the Bone Program, found that people

on vegetarian diets have bone mineral density roughly 5% lower than non-vegetarians.

➤ Neuroscience researchers Drs Bryce Vissel and Andrea Abdipranoto have shown that nerve cells in the brain produce an anti-inflammatory molecule that allows the brain to repair itself. This new finding may change the way we think about treating chronic neurodegenerative diseases like Parkinson's and Alzheimer's.

➤ PhD student Emily Colvin has received the prestigious \$10,000 Premier's Award for Outstanding Cancer Research Scholar

from the Cancer Institute NSW for her research into pancreatic cancer. To read more about Emily's work see her profile on page 3.

➤ Garvan's Prof Andrew Biankin is one of two leaders for Australia's representation in the International Cancer Genome Consortium, a major project bringing together the world's leading scientists, through 11 funding organisations in 8 countries, aiming to catalogue the genetic changes of the 50 most common cancer types. Australia's contribution will be in the area of pancreatic cancer.

opinion



We were very pleased with the exciting news in this year's Federal Budget that the Garvan received a \$70m capital grant towards construction and fit-out of our joint Cancer Centre with St Vincents & Mater Health, Sydney. Together with the philanthropic support achieved to date (including the Nuns' Run), this means that the dream has now become a reality. The Nuns' Run raised over \$175,000 for the Centre, which was a wonderful effort.

Now, it is all systems go on the project. A project application was lodged with the Department of Planning in June. Assuming all outcomes are positive, demolition at the site will start in the latter part of this year; concrete should be poured in mid 2010; and the superstructure should be in place early in 2011 with occupation of the building targeted for early 2012.

We are looking forward to sharing the various stages of development with you, and inviting our supporters to 'hard hat' tours once this becomes feasible.

One of the directions we feel strongly must be pursued in the new Centre is the establishment of a number of translational research Fellowships. We need to make it much easier than it is at present for talented individuals to manage dual careers as both scientists and clinicians. If this is an area you might like to support with a major gift, please don't hesitate to let us know!

Professor John Shine AO FAA
Executive Director

QuickQuiz

1. The human body is made up of how many cells?
2. Which two scientists discovered the double helical nature of DNA's structure in 1953? One of whom visited Garvan as the 1998 International Fellow on his 70 birthday!

Answers: 1. 100 trillion (100,000,000,000,000) cells

2. Francis Crick and James Watson (James Watson was Garvan's International Fellow in 1998)

Researcher Profile: Professor Herbert Herzog



What are some of the recent findings from your work?

Changes in body weight need to be matched by changes in bone strength; for example larger body mass requires stronger bones. We recently identified that under starving conditions NPY is high in the brain stimulating appetite and blocking bone growth to conserve energy. Under obese conditions NPY is low in the brain and this leads to reduced appetite but also the brake is taken off bone growth. Most importantly, however, we found that under chronic stress conditions NPY helps to protect the body from excess bone loss.

What is the biggest challenge in your area of research?

Our major scientific challenge is to identify the different networks in the brain that control and coordinate feeding behaviour, which not only includes hunger but also aggression, anxiety and reward behaviours. The NPY system seems to play a critical role and is a good starting point to eventually find new treatment options or cures for eating disorders leading to obesity, anorexia nervosa or cancer cachexia. I have a great team and also highly productive collaborations with others in the Garvan, so some of these goals should be within reach.

What do you enjoy doing away from the research lab?

Sometimes I enjoy just doing nothing. Then I like to cook and drink good wine. And if I feel really energetic, I hit the dance floor.

What is the current focus of your research?

My group studies the brain's role in the regulation of appetite, satiety, energy distribution and energy storage and what goes wrong in conditions such as obesity or the other extreme anorexia nervosa. A particular focus is also how stress influences these processes, what are the mechanisms behind it and how can we identify the critical steps to protecting us from the negative aspects of stress. A key component of this complex system is a molecule made by the brain called neuropeptide Y (NPY) and learning about its functions is our major aim.



Kennedys support hearing loss research



Trevor and Christina Kennedy

Trevor and Christina Kennedy have been involved with the Garvan for a long time – in Christina’s case, since its very inception. Her father, Sir Douglas Miller, was a famous neurosurgeon at St Vincent’s and made the case together with the renowned Sister Bernice for the use of the Hospital’s centenary appeal funds to set up the Garvan.

Trevor and Christina see continuing research as fundamental to advance a range of clinical treatments not just for diseases like heart disease and cancer, but also for distressing chronic conditions which impact the daily lives of a wide range of people – such as hearing loss. That’s why on two occasions they have chosen to support this area of research, once in 1999 funding a specific study on Meunier’s disease, and again in 2007 with a major gift of \$1 million.

Among other things, this most generous recent gift has enabled the hearing loss group to recruit the skills of an ear, nose and throat surgeon to transplant mouse olfactory and tongue stem cells into the tiny cochlea of noise-deafened mice to test this as a potential method of restoring hearing. Christina says: “Personally I cannot wait to get a stem cell transplant to enable some effective hearing! However, being realistic I am happy to think that in the future the one in six Australians affected with hearing loss may have access to such treatment.”

The Kennedys enjoy coming in to the Garvan to visit with the research team: “We are shown great welcome and respect. The scientists take time to explain the stages and the wins on the board and it is exciting to feel involved in such an incredible challenge”.

askGARVAN

How do Garvan scientists ensure they collaborate and don’t duplicate?

By definition, the scientific process of discovery must involve collaboration. When a researcher develops a hypothesis (such as, we believe protein x may play a key role in a pathway that leads to pre-diabetes or that a mutation in gene Y leads to breast cancer), they then establish a process of experiments and validation of the data that must be completed before publication of a scientific paper. Often, the research team will have collaborators within Garvan and/or in other organisations around the world who contribute to the collation of the initial data set. Validation often involves collaboration with another research team with complementary expertise before the outcomes are regarded as sound enough for publication. Publication in peer reviewed journals is highly competitive and experiments which are duplicating others are not accepted. Following publication, there is often a third stage of collaboration where other international scientists read about the discovery and make contact with Garvan to pursue further inquiry together. Collaboration, nationally and internationally, is critical for success in a very competitive environment. Medical research, therefore, is a very efficient process and offers donors real reassurance that their funds have been put to good use.

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feature story:

The 'Silent Thief' Strikes Men Too

Traditionally thought of as a women's disease, there has been little attention paid to male osteoporosis and yet current statistics show that 1 in 3 men over 60 will sustain an osteoporotic fracture. An even greater concern is that men have a higher risk of premature mortality after a fracture. Garvan's Dubbo Osteoporosis Epidemiology Study (DOES) is providing world renowned data on osteoporosis and uncovering more about its impact on men and the results suggest men should watch their step.

Osteoporosis is a disease characterised by low bone mass and lower bone strength, leaving bones more fragile and more susceptible to fracture. The progressive thinning of bones occurs when our bones lose minerals like calcium and protein structure faster than the body can replace them. This results in net bone loss and deterioration of bone structure (including bone mass and density). The most common 'fragility' fractures include those of the wrist, arm, leg, ribs, hips and spine. However any fracture that occurs after a relatively minor trauma is probably a fragility fracture. Often the only time someone realises they have a problem is when they break a bone, giving rise to the description of osteoporosis as the 'silent thief'. Bone loss is gradual and invisible and takes place without symptoms - the first sign being a fracture after a relatively minor strain, fall or bump. These fractures can drastically affect a person's quality of life with diminished mobility and independence, loss of confidence and depression.

The cost of osteoporosis

Aside from the personal costs osteoporosis comes at a huge cost to the community. In Australia, with over 2 million people affected by the disease, the direct costs are estimated at \$2 billion per year. The total cost, which includes factors such as carers and lost income, is estimated at \$7 billion per year or \$20 million every day, which equals \$1 per day for every man, woman and child. By the time you have finished reading this article about \$500,000 will have been spent on osteoporosis in Australia.

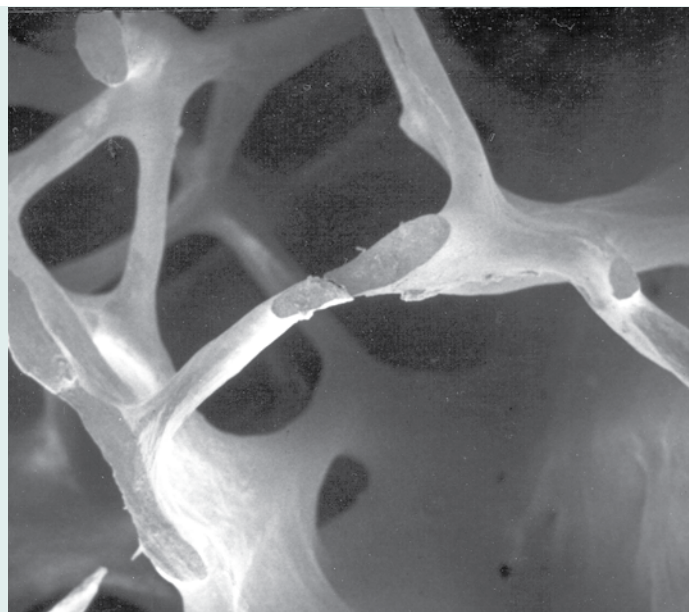
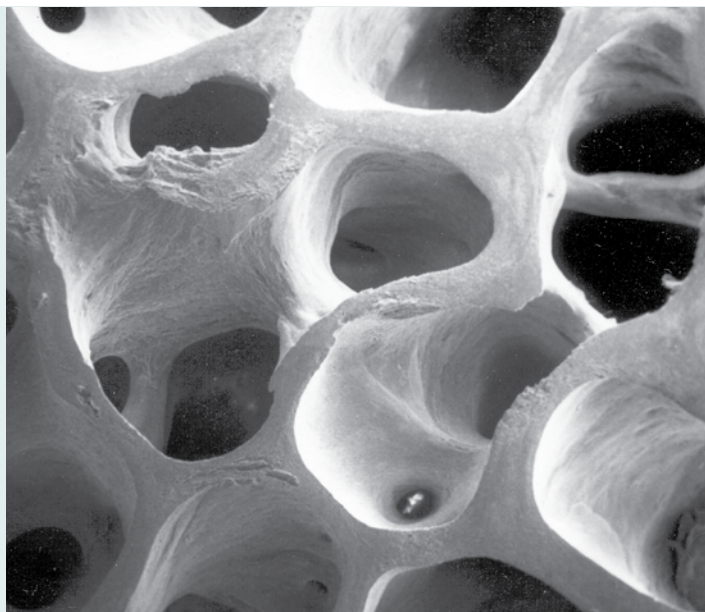
Osteoporosis and men

Garvan researchers have shown that osteoporosis can also cost lives. A study released earlier this year showed that osteoporotic fractures increase a person's risk of dying, even after a relatively minor fracture for an elderly person. In the case of hip fractures, there is double the risk of death for women and three times the risk for men. The premature mortality risk lasts for about 5 years after the fracture. However, for hip fracture it lasts for around 10 years.

These findings show worrying trends for men and bone health. Not only do men have a 3.2-fold increased risk of death after a fracture (compared to a 2.2-fold greater risk for women), Garvan researchers have shown that their chances of sustaining a second fracture is four times greater, which is equal to that in women (even though women are initially twice as likely as men to have a fracture). Therefore the protective effects of being male disappear after the first fracture occurs.

Another warning about the impact of male osteoporosis was released recently when Garvan researchers found a link between osteoporosis and prostate cancer. Analysis of data from Garvan's Dubbo Study suggests that men with prostate cancer face a 50 per cent higher risk of fracture, which increases to nearly double the risk if they are receiving treatment. The other key finding from this study was that ADT (androgen deprivation therapy) doubled the risk of fracture. The mechanisms causing the link are not clear at this stage, but are probably similar to the greater risk in women after menopause. The message coming out of this study is clearly that men with prostate cancer should consider seeking evaluation for osteoporosis, particularly if they are being treated with ADT.

By the time you have finished reading this article about \$500,000 will have been spent on osteoporosis in Australia.



Normal Bone

Osteoporosis

Reproduced from J Bone Miner Res 1986;1; 15-21 with permission of the American Society for Bone and Mineral Research

In another significant finding for men, Garvan researchers showed that low levels of testosterone in men doubled their risk of bone fracture. The study found that approximately a quarter of all fractures in elderly men were associated with low levels of testosterone.

Unfortunately when fractures occur many people do not seek the long-term care they need to reduce their risk of future fractures. Less than 20 per cent of people who fracture a bone will receive treatment to prevent a further fracture. And in the case of men, up to 90 per cent will not receive treatment. The most effective way to detect osteoporosis is through a bone density test. If osteoporosis is diagnosed treatments can be administered to increase and maintain bone density. Current treatments include hormone therapy, bisphosphonates, selective oestrogen receptor modulators (SERMs), strontium ranelate and vitamin D supplements. Of these bisphosphonates are the most commonly used in Australia and worldwide.

Lifestyle choices also play a big part in ensuring bone health and osteoporosis prevention. A balanced diet rich in calcium is recommended along with regular exercise

(weight bearing exercise three times a week is preferable eg walking, light weights, exercise classes) and adequate sunlight exposure (or supplements) to ensure sufficient Vitamin D levels. At the same time decreased consumption of alcohol and stopping smoking will give your bones the best chance of a fracture-free life.

Is it in the genes?

The risk of fracture due to osteoporosis is higher in people with a family history of fracture. In a search to identify the genes linked to osteoporosis Garvan researchers have collaborated with Icelandic genetics company deCode to examine the entire human genome. The study looked at 1,500 women from the Dubbo Study and 12,000 women from Iceland and Denmark, and found five regions of interest in the DNA code linked to bone mineral density and fractures that warrant further investigation.

This extension of Garvan's leading genetic studies in bone may eventually help clinicians identify people with a high risk of fracture who would benefit from early treatment.

Want to know your risk of bone fracture?

It's easy - just visit www.fractureriskcalculator.com. Using data from the Dubbo Study, Garvan has developed this easy to use web-based tool enabling anybody over 60 to calculate their individual fracture risk.

Each person has a unique risk profile depending on six key factors including sex, age, weight, history of prior fracture, number of falls in the past 12 months and bone mineral density. Using this tool to determine your actual risk of having an osteoporotic fracture will enable you to make informed judgements about what steps you may wish to take to reduce that risk.

Unfortunately, when fractures occur many people do not seek the long-term care they need to reduce their risk of future fractures.

Researcher Profile: Emily Colvin



What is the current focus of your research?

I'm investigating the role of several molecules as potential biomarkers of prognosis and response to therapy in pancreatic cancer.

What are some of the recent findings from your work?

We have recently identified and validated a gene that predicts response to surgery for pancreatic cancer. Currently, surgery is the only effective treatment for pancreatic cancer and offers the only potential for cure. However, evidence suggests that selection of patients for surgery is not ideal. We believe that if a patient expresses this gene or biomarker, they are unlikely to benefit from pancreatic surgery, a procedure that carries a high risk of complications. However, if the patient does not express this marker then a more aggressive approach may be undertaken to achieve a cure. We have also validated a molecule that can predict response to gemcitabine, the main chemotherapeutic agent used in pancreatic cancer treatment. This molecule is involved in transportation of the drug gemcitabine into cancer cells where it can exert its action. Therefore, for patients that do not have this molecule, the drug is less effective and they may gain more benefit from other forms of chemotherapeutic agents.

What is the biggest challenge in your area of research?

The biggest challenge in our area of research is translating our exciting findings into clinical practice and ultimately patient benefits. This is a process that traditionally takes between 10 and 20 years. However, we hope to expedite this process. In a way this is already happening because the pancreatic cancer research group involves both scientists and clinicians working closely together. In the future we aim to take this further by increasing collaborations with both research groups and clinicians.

What do you enjoy doing away from the research lab?

Away from the lab I enjoy spending time with my friends and family, walking my dog and reading anything that isn't a scientific journal article.

Alcoa's partnership with Garvan

Alcoa's partnership with Garvan was established to provide a vital link between Alcoa and the health and well-being of the community. To date it has delivered strong outcomes for both organisations in terms of capacity building, brand association and a partnership of excellence.

The original contact was with Alcoa's factory site at Yennora regarding health education services for site staff. Garvan's Public Awareness and Community Education Manager customised a series of one-hour on site presentations to suit Alcoa's needs. The presentations were focused on diseases of relevance to employees and their families, such as prostate cancer,

Parkinson's, diabetes and eating disorders and offered strategies and individual and group activities to understand and manage the risks. This program has been well-received and will be repeated in 2010.

The Alcoa Foundation, headquartered in the US, aims to actively invest in the quality of life of Alcoa communities worldwide. For three years now, the Foundation has made a grant to cover the costs of providing our annual Garvan Good Living series of public seminars to the community at no charge.

Recently, on the occasion of the Nuns' Run, we were delighted to have a number of Alcoa employees volunteer to assist at

the Sydney finale, even though it meant travelling all the way from Yennora to Centennial Park and the commitment of the company to provide group transportation. This is a good demonstration of the seriousness with which Alcoa takes its non-profit partnerships, and we are very grateful.

If your company would be interested in a similar customised program designed 'at cost', contact Gabriella Lang on (02) 9295 8112 or email g.lang@garvan.org.au





Nuns' Run Crosses the Finish Line



Reaching the finish line, accompanied by Delta Goodrem



Travelling through Penrith



Making it to Molong



On the home stretch down Oxford St in Darlinghurst

The many hours of training we put in for our 400km walk from Dubbo to Darlinghurst made sure we were physically ready for the journey, but nothing could have prepared us for the overwhelming generosity we received along the way to help us achieve more than \$175,000 towards the Garvan St Vincent's Campus Cancer Centre.

We wish to send a heart-felt thank you to the generous people of Dubbo, Wellington, Molong, Orange, Bathurst, Lithgow, Portland, Katoomba and Sydney for their wonderful hospitality and

support for the Nuns' Run. Many people opened their homes and hearts to the team on the road. Truckies, school kids, passers-by, shop owners and people of all walks of life gave us donations and words of encouragement. Many people shared stories with us of loved ones touched by cancer, reminding us of the purpose of our journey and the great need for the Garvan St Vincent's Campus Cancer Centre.

It has been a privilege for us to take this journey alongside our fellow Sisters of Charity and inspiring to see the huge amount of community support for people touched by cancer. Our journey has come to an end, but sadly for people affected by cancer the difficult journey continues. Thankfully by early 2012 they will have a world-class Cancer Centre with researchers and clinicians working side by side to find the answers.

Helen Clarke

Sr. Helen Clarke

Leane Wittmack

Sr. Leane Wittmack

breakthrough

Volunteers Needed for Clinical Research Studies

We are currently recruiting for research studies, so if you are interested and meet the various prerequisites we would love to hear from you.

Osteoporosis and Bone Biology Program: Volunteer Database

At the Garvan Institute we conduct research into osteoporosis and its treatments. We are inviting you to be included in our Volunteer Database and to be considered as a possible volunteer in future studies related to osteoporosis and its management. If you would like more information, please contact Ruth Toppler on (02) 9295 8269 or Maureen Gaynor on (02) 9295 8255. (St Vincent's Hospital Human Research Ethics Committee Ref H08/067).

Appetite Study

We are looking for adults with Prader-Willi Syndrome (PWS) and healthy people aged between 18-35 years who weigh more than 90kgs and are no taller than 165cm (females) and 170cm (males) for an appetite study. If you are interested contact Trish Humphreys on (02) 9295 8257 or email p.humphreys@garvan.org.au. (St Vincent's Human Research Ethics Ref H07/045)

In memoriam: March – June 2009

We gratefully acknowledge gifts received in memory of:

Gordon Adamson	Gregory John Gardiner	Maria Mirigliani
Tony Antico	John Gates	Bill Murray
Rick Austin	Joan Harrison	Dulcie Psaltis
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Coming up

Personalised Medicine

10am – 12pm Tuesday 25 August

Find out about the advent of diagnostics, prognostics and treatments tailored to the individual in the area of cancer. This event will feature leading scientists and clinicians from Garvan and St Vincent's Hospital.

Brain Power:

Harnessing the Brain to Fight Disease
10am – 12pm Tuesday 20 October

Due to popular demand we are repeating this seminar which first ran in February. Learn how the brain influences physiological systems such as weight management, bone formation and strength and the immune system.

Both events will be held at the Garvan Institute, 384 Victoria Street Darlinghurst. Registrations are essential and can be made by calling (02) 9295 8110 or online at www.garvan.org.au

be part of progress

Please use this coupon if you would like to make a donation to Garvan's breakthrough medical research, or if you would like further information. We would love to hear from you.

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