

LuminesCent

Message from the Executive Director

We are all delighting in the undoubted benefits of medical research and there are many ideas about how to do even better.

Science is, however, in its essence all about people – creative, dedicated, insightful and persistent scientists.

Without people, all endeavours will bloat and dissipate – with them they will focus and flourish.

For this reason, we at Centenary have done something unusual – and creative. Centenary Institute is now home to a giant glass pear – the fruit of knowledge.

It stands as the perpetual trophy for our \$25,000 Centenary Institute Lawrence Creative Prize, awarded nationwide, for creativity in medical research. In its first year, it went to young, brilliant Melbourne scientist, Marie-Liesse Asselin-Labat.

The prize honours Neil Lawrence. His creativity, resourcefulness and dedication as the inaugural chairman of the Centenary Institute Foundation played a major role in our growth.

Our researchers have shown those same qualities this year with their discoveries in the fields of cancer, cardiovascular and infectious disease research. In the coming decades, this fundamental research, which you can read about in this issue, will mean Australians will live longer, healthier lives.

I would like to welcome our new Board member, Josephine Sukkar, who brings tremendous organisational experience and knowledge of the building industry (and she was once a scientist herself!). We also welcome new Foundation member, Elizabeth Dibbs, whose legal experience and strategic mind are now devoted to supporting pro-bono causes. There is even more new talent coming from a new generation of philanthropists led by Neil Lawrence's daughter Anna, who this year became the first Chair of the Young Centenary Foundation Group.

I congratulate our new Fellows, and the many new grant holders successful in the recent NHMRC grant round and other grant rounds.

The future is bright, indeed.

Best wishes to you and yours over the festive season.

Mathew Vadas

Centenary Institute research update:

Our researchers have been making their mark in recent months with a series of discoveries published in major international science journals.

Highlights include:

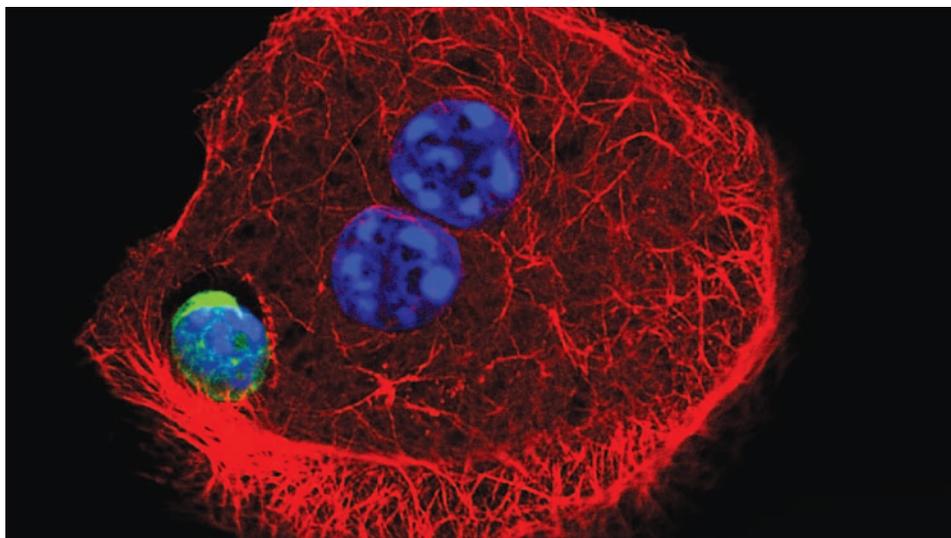
- How our liver kills "killer T cells", and the implications for transplant surgery;
- The immune peacekeepers that stop our skin from attacking good bacteria;
- How immune cells in the dermis fight bad bacteria; and,
- Hopes of a new prostate cancer treatment by starving the cancer cells.

Here are a series of brief stories on these discoveries.



How our liver kills "killer cells"

In September, Dr Patrick Bertolino and his colleagues reported their discovery of how our livers fight back against the immune system, reducing organ rejection but also making us more susceptible to liver disease.



The researchers have seen for the first time (in mice) how the liver goes independent – engulfing and destroying the body's defence troops, T cells.

Their discovery, published in September's Proceedings of the National Academy of Sciences (PNAS), opens the way to both new approaches to transplant rejection, and the fight against hepatitis and other chronic liver diseases which affect over 200,000 Australians and hundreds of millions of people worldwide.



Dr Patrick Bertolino
Cell photo: Michelle Vo, PhD Scholar,
CI Liver Immunology

Barbara Fazekas de St Groth: Immune peacekeepers discovered

There are more bacteria living on our skin and in our gut than cells in our body. We need them. But until now no-one knew how the immune system could tell that these bacteria are harmless.



Professor Barbara Fazekas de St Groth

Professor Barbara Fazekas de St Groth and her team have discovered a set of peacekeepers – immune cells in the outer layers of our skin that stop us from attacking friendly bacteria.

The work will open the way to new therapeutic options for immune-mediated diseases such as inflammatory bowel disease.

The discovery, published in October's Proceedings of the National Academy of Sciences (PNAS), is that the immune cells in the outer layer of the skin constantly act as peacekeepers to stop the immune system from reacting the way it normally would. Known as Langerhans cells, they resisted every attempt by the researchers to get them to generate an immune response.

"This is the opposite of what you'd usually expect. In previous studies of immune cells,

if there was a flurry of activity, we assumed it was the start of a long-term immune response," says Barbara.

This discovery opens up possible ways to figure out why this disorder occurs and to find treatments to a range of diseases of the immune system.

"There is so much we don't know about the immune system, but sometimes just mimicking what the immune system does, like we do with vaccines, can work very well" Barbara says.

Executive Director Mathew Vadas says Centenary is interested in understanding how the immune system works. "These discoveries and others already in the pipeline here are a major step forward towards that goal".

Wolfgang Weninger's skin deep discovery reveals next line of defence

Professor Wolfgang Weninger and his colleagues have revealed still more about how our skin protects against disease. They found gamma delta T cells in the dermis for the first time – a discovery that could provide insight into diseases like psoriasis and other auto-immune conditions of the skin.

While researchers have known about these cells in the epidermis or top layer of skin for more than 20 years, this is the first time their presence has been detected in the next layer of skin down.

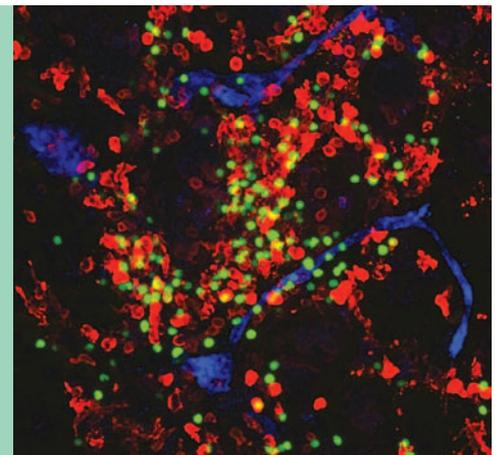
Wolfgang Weninger, who led the study, says that gamma delta T cells are of particular interest because they produce a protein thought to be the 'first responder'

when intruders are detected by the immune system.

"Interleukin-17 is a cytokine that has been getting a lot of interest because of its role in inflammation," Wolfgang says.

The researchers used mycobacteria – related to the bacteria which cause tuberculosis – to investigate the defence mechanisms of these immune cells in the dermis. When exposed to mycobacteria the gamma delta T cells in the dermis produced Interleukin-17, while their better known counterparts in the epidermis did not contribute to immune defence.

"This supports the notion that related immune cells have specialist and unique functions in each layer of the skin. The likely



A stain showing the presence of gamma delta T cells (green) in the dermis. The blood vasculature is shown in red, while blue represents collagen.

Cell pic: Dr Ben Roediger, RO, CI Immune Imaging

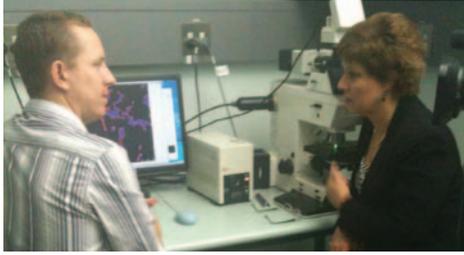
reason for this is that different microbes tend to infect different skin layers. For example, herpes viruses infect the epidermis while bacteria tend to invade the dermis and deeper layers of the skin," Wolfgang says.

Our Vision is Global Health through excellence in medical research and its translation.

Our Mission is to discover and bring to use novel therapeutics and diagnostics.

Our dedicated scientists conduct fundamental research to understand the work of the body's genes, cells and proteins. We are affiliated with the RPA Hospital and the University of Sydney which allows us to translate directly discoveries in the lab to prevent the diseases that affect so many of us.

Jeff Holst: Starving prostate cancer



Dr Jeff Holst with Channel 10's Sheryl Taylor

Prostate cancers are hungry, growing cells. Now we've discovered how to cut off their food supply thanks to research published in the November issue of the journal *Cancer Research*

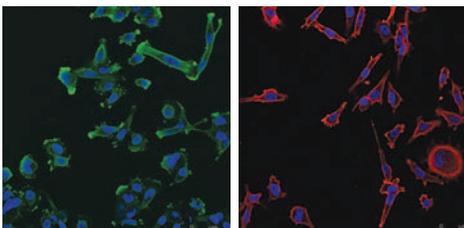
Dr Jeff Holst and his team have discovered a potential future treatment for prostate cancer – through starving the tumour cells of an essential nutrient called leucine, which they need to grow rapidly.

Their work, with human cells grown in the lab, reveals targets for drugs that could slow the progress of early and late stage prostate cancer.

The researchers found prostate cancer cells have more pumps than normal. This allows the cancer cells to take in more leucine and outgrow normal cells.

First author Dr Qian Wang says by targeting different sets of pumps, the researchers were able to slow tumour growth in both the early and late stages of prostate cancer. "In some of the experiments, we were able to slow tumour growth by as much as 50 per cent. Our hope is that we could develop a treatment that slows the growth of the cancer so that it would not require surgical removal. If animal trials are successful over the next few years then clinical trials could start in as little as five years," he says.

The publication of the study came just in time for Movember, a month-long charity drive in which thousands of people around the globe grow moustaches to raise money for men's health issues including prostate cancer. The research has been funded by the Prostate Cancer Foundation of Australia (PCFA) and Movember.



Green (left): Late stage prostate cancer cells showing the nucleus in blue, and the nutrient pump on the surface of the cells in green.
Red (right): Early stage prostate cancer cells showing the nucleus in blue, and the nutrient pump on the surface of the cells in red.

Lawrence Creative Prize

Rewarding creativity in young researchers

On 19 October we presented the inaugural Centenary Institute Lawrence Creative Prize to Marie-Liesse Asselin-Labat from Melbourne's Walter and Eliza Hall Institute (WEHI).



Dr Marie Liesse is a remarkable young researcher who, having unravelled key information on how and why breast stem cells contribute to the progression of breast cancer, is now turning to the challenge of lung cancer.

Her prize was announced on Wednesday 19 October 2011, at a lunch at UBS in Sydney, where she received a cheque for \$25,000 and a "fruit of knowledge" glass sculpture.

"It's fantastic for young scientists to be given the chance to win an award like this and gives you the confidence to give your own creativity a go," she said at the lunch.

"Lung cancer is the biggest cancer killer and is very difficult to treat. We want to apply the

knowledge we've acquired on breast cancer to the lung. We suspect stem cells exist in the lung and we want to find them and see if they have a role in lung cancer."

"The prize is an honour and a great boost for my confidence. It's exciting to see the business community supporting science in this way", said Dr Asselin-Labat.

"The scientific judging panel has been astounded at the quality of the applications," said Centenary Institute Executive Director Professor Mathew Vadas.

There were 34 applications received from early-career scientists from universities and medical research institutes around Australia.

The Prize honours Neil Lawrence, the inaugural Chairman of the Centenary Institute Foundation. Neil and his wife Caroline hold Centenary Institute very near to their hearts, as they are both passionate about advancing the field of medical research so that all Australians can live longer, healthier lives.

"Exceptional young scientists can be hard to keep in Australia and we hope this award will not only celebrate their achievements but also encourage a domestic culture of brilliance in this truly important field", said Mathew.

"We acknowledge the generosity of our sponsors and thank them for making this prize possible."

The prize's major sponsors were FOXTEL, Mindshare, stw group, with supporting sponsors Crosby|Textor and Deloitte, event sponsor UBS and media sponsor The Australian.



Mr Neil Lawrence and Professor Mathew Vadas with Dr Marie-Liesse Asselin-Labat, holding her Centenary Institute Lawrence Creative Prize Trophy "Fruit of Knowledge" - a glass sculpture by Nick Mount, one of Australia's most renowned glass blower designers
Photos: Nick Cubbin

A new Chairperson for Young Centenary

Emerging actor, Anna Lawrence, is following in her father's footsteps. Anna's father, Neil Lawrence was the inaugural Chairman of the Centenary Institute Foundation. Now Anna has been elected first chairperson of the Young Centenary Foundation group.

Anna, 24, and the board of the Young Centenary group are challenging the idea that philanthropy is for older generations.

Anna says "As young people, we often see ourselves as invincible. But we aren't. If we want to protect, maintain and improve our health, then we need to support organisations like Centenary Institute. Young Centenary wants to make a positive, significant and long-term impact and we encourage other young people to jump on board."

To become a member of the Young Centenary Foundation group please contact Anna on 0409 456 529 or email annalouiselawrence@gmail.com



Foundation Chair, Joseph Carrozzi with Anna Lawrence and Professor Mathew Vadas
Photo: Katherine Finch

Media competitors join forces for research

The Football Media Association (FMA) held its first annual fundraising trivia competition in August, inspired by FMA founding member, and Sydney Morning Herald journalist and FOX Sports commentator, Michael Cockerill.

Mike was covering the 2010 World Cup in South Africa when he felt unwell. He was diagnosed with leukaemia soon after. Mike is recovering after extensive treatment under the care of A/Professor Joy Ho at RPA Hospital.

"Medical research institutes, such as the Centenary Institute, contribute to the body of knowledge around Australia and the world that helps advance medical science to improve treatment and, one day, lead to prevention and cure," said Bonita Mersiades, FMA executive committee member and trivia organiser.

"As an Institute associated with RPA where Mike was treated, and Sydney Medical School, we thought it appropriate to support Centenary Institute for our inaugural fundraising event."

15 teams participated and together they raised more than \$5,500 for the Centenary Institute. Fittingly, the contest was a tie between Fairfax and News Limited after the regular rounds of questions. After a dramatic tie-breaker, News Limited pipped their rival.

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- Please contact me about including Centenary Institute Medical Research Foundation in my Will.
- Please send me a brochure on becoming a Research Partner so I can make regular monthly donations to Centenary Institute.
- I would like to organise or participate in a fundraising event to support Centenary Institute, please contact me about how I can help.
- I would like to attend a Centenary open lab tour in Sydney

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Centenary Institute in the news

Centenary researchers have been in the media spotlight over recent months with their discoveries making television, radio, print and online media. Highlights include Patrick Bertolino's liver work in News Ltd papers across the country; Barbara Fazekas de St Groth's immune peacekeepers story on ABC24 News Breakfast and Jeff Holst on the Channel Ten 5pm national news with his prostate cancer research revealed during November.

You can watch/read some of these stories here and in the news feed at www.centenary.org.au

Congratulations

to our successful 2012 grant recipients:

Arby Abtin, Magda Ellis, Jeff Holst (2), Jodie Ingles, Mika Jormakka, Mark Gorrell (2), Paul Mrass, John Rasko (2), Chris Semsarian, Wolfgang Weninger (4).

Jan's story about melanoma

Earlier this year, Jan and Geoff Cook held an event for a cause close to their hearts – melanoma research. Jan, her brother and daughter have all been affected by the disease and they wanted to do something positive about it. They invited 130 guests to sample fine Tamburlain Wines from the Hunter Valley to raise as much money as possible for melanoma research at Centenary.

"I firstly wanted to have an event to raise money for research into melanoma," Jan said. "My brother and I had both had three melanomas and my eldest daughter, Linda, had her first one at age 12. Her second melanoma happened in 2002."

"So when I received a request for a donation I thought this was the opportunity to organise an event. Unfortunately, whilst I was organising this, Linda had secondaries from the second melanoma, which in a funny way made our fundraiser more successful as her friends got on board. Both family and friends were very generous donating items for our raffles."

They invited Dr Nikolas Haass, who leads the melanoma research team at Centenary Institute, to talk about his research into the response of melanoma to therapy.

Jan says that "everyone was in awe of the research being undertaken. It was amazing to learn just how many people there that evening had been touched by this dreaded cancer."

Jan and Geoff raised \$15,557 for Dr Haass and his work on melanoma.



Dr Nikolas Haass with Jan and Geoff Cook

A night at the races for research

In October, Julie and Simon Ford invited Centenary supporters and appreciators of fine art to their beautiful Greenwich home, featuring a spectacular William Robinson landscape painting, to raise money for Centenary Institute.

Racing commentator, Richie Callander, gave guests his tips for the Melbourne Cup at the Races for Research fundraiser. Guests would have been out of pocket if they had followed his advice and bet on Cup favourite, American, who came fourth.

Races for Research raised money for the Institute's bioinformatics unit. Bioinformatics is important because it enables researchers to analyse and interpret the large amounts of data that research produces.

Professor Robert Lusby, a vascular surgeon and owner of Tintilla Estate, – who generously provided wine for the event – explained how medical research had dramatically changed the face of vascular surgery and encouraged guests to dig deep for such an important cause.



Professor Warwick Britton and Julie Ford



Dr Patrick Bertolino and Josephine Sukkar



Georgie Skipper, Lauren Sullivan and Erin May

City2Surf 2011: A record Run4Research

Heartbreak Hill and light drizzle didn't deter the 33-member Centenary Institute team who completed the 14.2km 2011 City2Surf on August 14. Together they raised an amazing \$16,165 with Matt O'Donnell of Macquarie Bank topping the fundraisers with \$2,560.

A record 85,000 runners lined up along College Street for the start of the race that winds its way towards Bondi Beach. 25 of the Centenary runners started in the Red Zone, which is reserved for runners with the fastest times. Three of those finished in under an hour. The quality of the field was so impressive that next year Centenary has secured 30 places in the Charity Gold Zone meaning that these runners can start in the first wave.

Run4Research team captain, the inexorable LauraBeth (pic) completed the race in spite of a fractured pelvis. It's not too early to reserve your position (or to start training!) so please contact LauraBeth at l.albanese@centenary.org.au

William D'Avigdor, PhD Scholar, Liver Immunobiology, Centenary Institute and Philanthropy Coordinator, LauraBeth Albanese.



Thank You

Centenary Foundation acknowledges with deep gratitude those who left a Bequest to Centenary:

The Estate of the Late Barbara Anne Kinsella
The Estate of the Late Leslie Allen Maurer
The Estate of the Late Esme Ruth Parker
The Estate of the Late Ruth Graham Robertson
The Estate of the Late Albert Charles Taylor

Thanks also to all our community

fundraisers, their supporters and their event sponsors, who work so hard to organise amazing events which support the Centenary Institute scientists and their specialist projects. (A record year - \$120,000 so far.)

Centenary's 2011 City2Surf fundraisers; Bonita Mersiades and the Football Media Association Trivia night; Maria, Vincent and Matthew Quigley for their Rebel Sport fun-run; Jan and Geoff Cook's fundraising dinner for Melanoma; Katie Patterson and Odette Halbisch, "keeping young hearts beating" with a special thank you to major sponsor, The Commonwealth Bank; The Ivy Hotel fundraiser run by Ashley Robertson and John Purtell, with matched giving from Macquarie Group Foundation; Meg Taylor's open air cinema event; Jenny Bamford's "The Peter "Wally" Bamford Memorial concert"; Julia Zusa's memorial event; and "Richo and Ray" (Richard Daniel) for the Great North 100 mile marathon (174km)

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Thank you to our workplace giving supporters:

Macquarie Group Foundation, National Australia Bank, The Wine Society, Westpac

The inaugural Young Centenary Foundation Group:

Caroline Fanning, Anna Lawrence, Guy Marshall, Erin Moy, Olivia Rorke, Jodie Sirone, Georgie Skipper, Lauren Sullivan, Nick Wokes

And finally we acknowledge the dedicated individuals who steer the Centenary Institute and support our initiatives -

The Centenary Foundation:

Mr Joseph Carrozzi (Chairman), Justice Margaret Beazley, Mr Alastair Davidson, Ms Liz Dibbs, Mr Simon Dulhunty, The Hon. Michael Egan, Mrs Julie Ford, Mr Simon Ford, Ms Annette Larkin, Mrs Caroline Lawrence, Mr Neil Lawrence, Mr John Samaha, Mr Andrew White

...and the Centenary Institute Board of Governors

The Hon Michael Egan (Chairman), Mr John Samaha (Deputy Chairman), Dr Teresa Anderson, Mr Ken Cahill, Mr Joseph Carrozzi, Mr Alastair Davidson, Professor John Horvath, Mr Graham Kelly, Mr Neil Lawrence, Dr Susan Pond, Professor Bruce Robinson, Mrs Josephine Sukkar, Professor Mathew Vadas

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Centenary Institute
Medical Research Foundation
ABN 85 778 244 012

Address: Locked Bag 6, Newtown
NSW 2042 Australia
Phone: 1800 677 977



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