

LuminesCent



Note from the Editor

Welcome to the second edition of *LuminesCent* for 2009.

Some exciting new developments have occurred at Centenary. We have just launched the world's first National Genetic Heart Disease Registry (p1). Centenary is also working on several new collaborations and partnerships, both internally and internationally, which you can read about on pages 3 and 5.

The researcher profile on page 4 introduces one of Centenary's many promising young scientists. Centenary is proud to be training the next generation of medical research scientists.

In June, the Centenary Institute Foundation held its first Dinner event (p6). The evening was truly a memorable one, as our Sydney supporters joined in a night of great food, music and fun to raise funds for a Bioinformatics Fellowship.

I look forward to sharing with you more news of Centenary achievements in the coming months.

Best wishes.

LauraBeth Albanese, Editor

Professor Chris Semsarian, Head of the Molecular Cardiology Lab and Laura Yeates, NSW Coordinator for the National Genetic Heart Disease Registry

Researchers launch world's first National Genetic Heart Disease Registry

Each year hundreds of seemingly fit and healthy young Australians with no history or symptoms of disease die when their hearts suddenly stop beating.

With no warning, sudden cardiac death (often caused by an underlying genetic heart condition) can leave families devastated. And worse, as an inherited condition, they are often fearful for other members of their family.

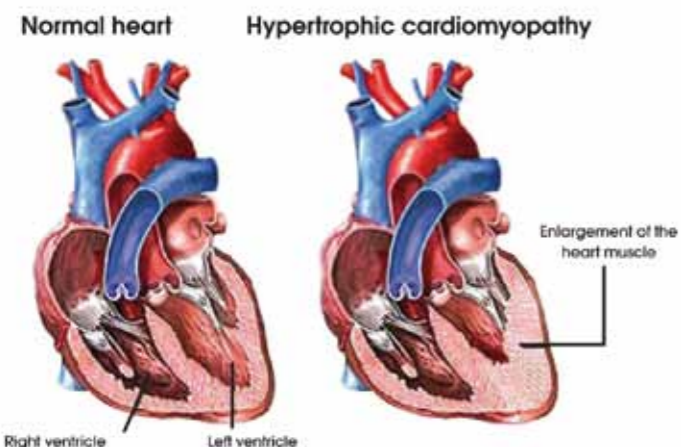
Continued page 2...

IN THIS ISSUE

- | | | |
|-----------------------------|--|-------------------------------------|
| 2 Remembering Chris O'Brien | 5 CI Partners with Vietnam | 7 Awards and Achievements City2Surf |
| 3 Research Update | 6 Foundation Dinner Centenary Welcomes | 8 Director's Message |
| 4 Researcher Profile | | |



Researchers launch world's first National Genetic Heart Disease Registry *continued*



In launching the world's first National Genetic Heart Disease Registry, researchers at Centenary Institute are hoping to shed a new light on genetic heart disease and to provide families the answers they need to understand, and to initiate measures to prevent sudden cardiac death.

The Registry is exciting news for Australia because it is the first in the world to cover all forms of genetic heart disease. For the first time a database will be able to provide an accurate picture of genetic heart diseases in Australia, as currently researchers use incomplete data collected from the USA and Europe.

Professor Chris Semsarian, who leads the Molecular Cardiology Group at Centenary, says: "the Registry will help us to better understand and prevent sudden cardiac death by providing reliable statistical data on inherited cardiomyopathies and electrical disorders in Australia."

Health care professionals and medical researchers will be able to use the database to obtain information on the clinical and genetic aspects of heart diseases, and to evaluate the effectiveness of current prevention and treatment options.

Perhaps most importantly for the general public, the Registry will provide an effective way for health professionals to keep in touch with families who are at risk of genetic heart disease. As a result, families will be more informed about the condition and able to reduce the possibility of future sudden cardiac death as new research breakthroughs develop.

Professor Semsarian says that anyone with an inherited heart disease should enrol in the Registry, as nationwide participation in the project could make a tremendous difference. As the professor explains: "This registry will lead to major improvements in our understanding of genetic heart diseases, how common they are in our community, and how we can develop new treatment and prevention strategies to improve the heart health of all Australians."

To find out more about the Registry visit the Registry website at www.register.centenary.org.au

Remembering CHRIS O'BRIEN

Prof Chris O'Brien had a vision. The vision of building a Comprehensive Cancer Centre, where the best care could be extended to cancer patients in an environment where medical researchers and clinicians worked together to discover and translate new ways of diagnosing and treating cancer.



Proposed design: The Centre for Basic and Translational Cancer Research

In his vision, there was a single minded and engaged Federal and State Governments, the Sydney South West Area Health Service and the Centenary Institute, as well as clinicians and scientists. His success was not only evident in galvanising major support for the clinical arm of his vision (now dubbed Life House) but also in partnering with the Centenary Institute to get Federal funding, and ultimately funding from the Australian Cancer Research Foundation. This funding would go toward a research building to complete and complement the clinical arm of a Comprehensive Cancer Centre.

Chris was also a magnificent human being. His empathy for his patients, his magnetism to engage supporters, his love for his family we all admired. But it is in adversity that the quality of a man shines; and it is in his illness that Chris' strength, his generosity, his braveness and his far sightedness were all so evident, and indeed enriched and will keep on enriching our lives.

- Mathew Vadas, Executive Director Centenary Institute

RESEARCH UPDATE

Centenary Researchers Awarded \$8 Million to Tackle Liver Disease

The National Health and Medical Research Council has awarded Centenary an \$8 million research grant over five years to investigate the causes and treatment of liver cancer, the incidence of which has more than doubled in Australia in the past decade.

The collaborative Program brings together five world-renowned researchers from three laboratories at Centenary to tackle this major health issue.

Centenary Institute Executive Director and grant recipient, Professor Mathew Vadas said "this Program grant is a testament to Centenary's comprehensive approach to cancer research."

"The Program is designed to answer the three big questions in liver cancer – what causes cancer, why does cancer spread and how can we improve treatment?" Collaborators will investigate the steps involved in the progression from chronic liver disease to liver cancer, including inflammation in the liver, changes in the vascular system and cell signaling events.



Program Collaborators Professor Mathew Vadas, Associate Professor Pu Xia, Professor Jenny Gamble, Professor Geoff McCaughan (Not pictured), and Dr Patrick Bertolino

Liver cancer is one of the fastest growing cancers in Australia and the global health burden is immense with more than 680,000 people dying each year.

The new research program at Centenary is unique in that it brings many collaborators with complementary expertise to focus on cancer. All will be working with a common objective – improved outcomes for liver cancer patients.



Dr Patrick Bertolino takes a question at the Colloquium

Centenary Colloquium VI Kick Starts Liver Collaboration

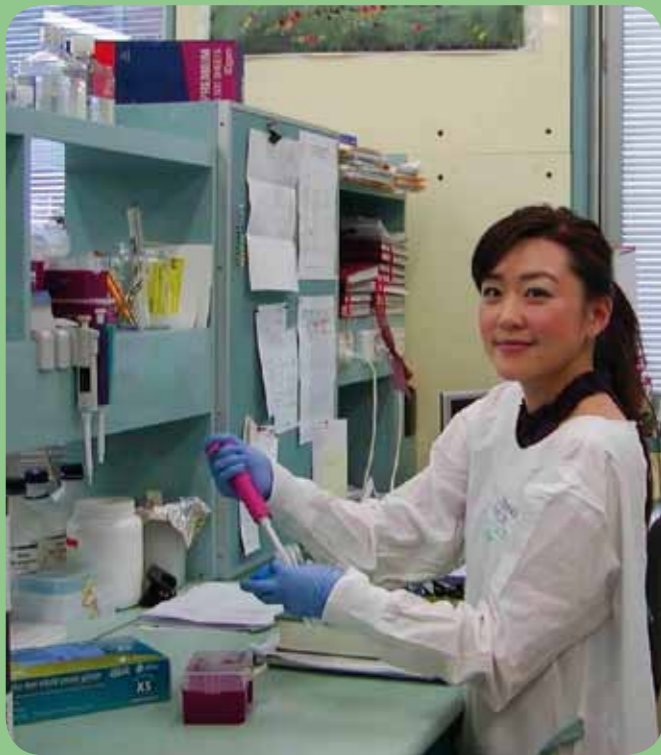
In June, Centenary hosted a one-day colloquium examining research opportunities in liver inflammation and cancer. The event marked the beginning of Centenary's collaborative investigation into Liver cancer.

Speakers at the colloquium focused on the various aspects of liver disease including; the structure of a normal liver and the process by which acute inflammation is initiated in this organ, hepatic viral infections, the development of hepatic fibrosis, and molecular pathways leading to cancer progression in the liver.

The day's events also included presentations from three prominent international scientists, which included Dr Jane McKeating from the University of Birmingham, UK, Dr Valery Krizhanovsky from Cold Springs Harbor Laboratory in New York, and the world's most-cited expert in cancer inflammation published in prestigious journals – Dr Michael Karin from the University of California, San Diego.

Centenary's own scientists also took centre stage during the day. Dr Patrick Bertolino presented his research on why the body accepts a liver transplant without the introduction of immuno-suppressants and the mechanisms allowing the initiation of acute inflammation in the liver.

Dr David Bowen discussed his study into characterising the immune response in models of chronic hepatitis C virus infection. Assoc Prof Pu Xia concluded the day's events with a summation of his research into a family of molecules that play an important role in cell proliferation and cancer.



RESEARCHER PROFILE

As a third-year degree student focusing on Immunology at the University of Sydney, Lien Lam never thought she would end up researching heart disease. But when Professor Chris Semsarian showed her a model of two hearts, one healthy and one deteriorated, Lam knew that the Molecular Cardiology lab at Centenary was where she wanted to be.

Inspired by Professor Semsarian's presentation at the Honours Program Information Session, Lien Lam came to Centenary in 2004 to work on a one-year honours project in molecular cardiology. After nine months of working in Semsarian's lab, Lam found that heart research was her passion, so she decided to stay at Centenary, obtaining her PhD in Molecular Cardiology in March of this year.

If Lam's achievements at Centenary are any indication of her career success, the young researcher has a bright future ahead of her. In addition to graduating with first class honours, Lam has earned a host of prestigious national and international travel grants and fellowships.

In addition, Lam was also awarded Centenary Institute's Travel Award two years in a row, enabling her to present her research internationally. In 2008, the budding researcher also earned a runner-up prize at the International Society for Heart Research Student Investigator Awards for her work using new proteomic techniques to identify proteins that may play an important role in the development of hypertrophic cardiomyopathy.

Now, after five years at the Centenary Institute, Dr. Lam is heading to Harvard Medical School where she will work at the Seidman Lab using a high throughput screening method to look for novel gene mutations in patients with cardiovascular disease. But first, the new Doctor reflects on her time at the Institute that she says shaped her career path.

Why did you decide to stay in molecular cardiology research?

I have a history of cardiac disease in my own family, and after working with Professor Semsarian I realised how it affects many people throughout the world. In many ways, we still do not know what causes heart disease, why it occurs in so many people, young and old, or what we can do to stop it. Now, we understand the genetics behind it and we can take steps toward developing better ways of treating and preventing heart disease.

Describe your research at Centenary.

My research was on finding the modifying factors behind changes in the heart by examining the key proteins that are involved in cardiac disease. I focused on

what environmental factors can alter the heart and how heart disease progresses to such a state that prevents a person from living a normal, healthy life. What I found in my work will help researchers in other labs better understand how proteins interact with the heart, which will eventually help them to develop better cures and treatments for heart disease.

What do you like most about Centenary?

One of the great things about Centenary is that it supports its students by giving them the opportunity to grow as people and as scientists. For example, every Monday students meet to present their research to their peers and experts in the field. This is a good forum for students not only to share their work, but also to build their confidence. Centenary is also a great place for students to thrive and to absorb what some of the best minds in the scientific field are doing. The vast array of labs at the Institute allows not only for a difference in approaches, but also for an opportunity to collaborate with other colleagues in the scientific community.

Would you return to Centenary?

Absolutely! It is difficult to leave after five years of researching here. I would not be the person I am today without Centenary. The support I have received from everyone has made Centenary feel like a second family. We are such a close-knit group, and there is always someone who you can talk to or ask a question if you don't understand something. The environment at Centenary made it an easy choice for me to come here, and it will make it any easy choice to return someday if I'm given the opportunity.

Centenary Partners with Researchers in Vietnam to Cure an Ancient Disease

Many Australians probably think tuberculosis (TB) is a disease of the past. They are wrong. One third of the world's population is infected with TB and more than 1.6 million people die of the disease each year.

What Australians do not realise is that TB is also sitting on Australia's doorstep, with the fastest growing incidence found in South East Asia. Professor Warwick Britton, who leads Australia's largest TB research program at Centenary, says this ancient disease is clever enough to mutate and outsmart our immune system.

"TB is cunning," he says. "It can be traced back to the mummies of Ancient Egypt and has continued to adapt to everything we have thrown at it. Not only does it mutate to resist treatment, but it also evades the immune system by hiding in the cells that are meant to fight it."

"Disturbingly, multi-drug resistant TB has evolved in recent years – and now we even have extensively multi-drug resistant TB," says Professor Britton.

One step to defeating TB in countries where it is widespread, such as Vietnam, Indonesia and the Philippines, is developing and implementing new strategies for disease control.

"In partnership with the National Tuberculosis Control Program (NTCP) in Vietnam and Prof Guy Marks at the Woolcock Institute of Medical Research, we are looking for practical ways of improving TB control in this highly endemic country," Professor Britton explains.

"Dr Greg Fox who trained in respiratory medicine at RPAH has moved to Vietnam to work with the NTCP in Hanoi to establish two research projects; one to study the role of active case finding in TB control, and second to examine the role of genetic susceptibility to the development of TB. We hope this becomes a long-term collaboration with our colleagues in Vietnam."

This major international collaboration will shed light on the genetic reasons for why some infected people develop TB quickly but others remain protected for years.

At Centenary, scientists are attacking TB from different angles: investigating ways to improve the current vaccine; finding new vaccines and new targets for TB drugs; and identifying the genes that make some people more susceptible to the disease.

Professor Britton explains: "The current BCG vaccine has been around since the 1920s but it has limitations. We desperately need a vaccine that is stronger and lasts longer. We are looking at modified forms of BCG and its impact on immunity with promising results."

"Additionally, we recently discovered an enzyme crucial to the growth of TB within the body. This may become a target for new TB drugs."

Dr Nicholas West, Dr Bernadette Saunders and Professor Warwick Britton are seeking to put an end to TB worldwide



Centenary Institute's FOUNDATION DINNER



Wine sponsored by one of Australia's premier vineyards, Yarra Yering



Room generously donated by Pricewaterhouse Coopers and designed by Belle Laide Events

On 19 June, Centenary held its first Foundation Dinner, sponsored by Pricewaterhouse Coopers and Yarra Yering Vineyard. The evening was a memorable one, featuring a three course menu built around some of Australia's finest wines from Yarra Yering, and a special performance by Christine Anu.

All proceeds from the night helped to fund a Bioinformatics Fellowship. This important position will provide Centenary with a dedicated specialist who can help to interpret and make sense of the vast amounts of data generated by modern medical research, accelerating the pace of our research across all of our labs. At our recent strategy meeting, our scientists unanimously agreed that a Bioinformatics Fellow is the Institute's highest need.

At the event, Centenary raised over \$125,000 toward the recruitment of the Fellowship, which is the first year's funding for this highly specialised position. We are still seeking the next two year's funding.

If you would like to join us in our research for life by helping to fund this vital position please contact Sally Castle on 1800 677 977.



Christine Anu performs



Guests at the dinner enjoying the evening's events

Thank you to our sponsors



CENTENARY WELCOMES

Centenary is pleased to welcome Mr Ken Cahill to the Board of Governors

Mr Cahill is currently the Executive Director of Royal Prince Alfred Hospital and has held a number of senior management positions in New South Wales Health. Prior to his current appointment he was General Manager of the Central Coast Health Service. He was formerly a Radiographer and was Chief Radiographer at Royal Prince Alfred Hospital from 1990 to 1997. Mr Cahill has a Master of Public Health from Western Sydney University.



AWARDS AND ACHIEVEMENTS

In honour of their recent achievements, Centenary wishes to recognise the following scientists:



Dr Paulus Mrass from the Immune Imaging lab was recently promoted to the Associate Faculty, a career track towards full Faculty status.

Laura Yeates in the Molecular Cardiology Lab, was awarded an Australian Society of Genetic Counsellors Travel Grant to attend their annual meeting in Perth, May 2009.

Dr Volker Benseler from the Liver Lab received a Travel Award to attend the International Liver Transplantation Society's 15th Annual International Congress in New York in July 2009. For recognition of the excellence of his submitted abstract: Suicidal emperipolosis: A novel mechanism contributing to the T Cell tolerance effect in liver transplantation.

Dr Nikolas Haass received a Travel Scholarship for the 7th World Congress on Melanoma in Vienna, Austria, provided by the Melanoma Foundation.

PhD students **Christine Chiu** and **Emily Tu** received a CSANZ Scholarship to present at the 57th Annual Scientific Meeting CSANZ in Sydney in August 2009.

Nethia Mohana-Kumaran won an award for the best oral presentation by a young investigator at the Australasian Society for Dermatology Research in Surfers Paradise, QLD. Her presentation "NOXA inhibits melanoma growth and invasion in 3D models" was coauthored **Dr Keryn Lucas, Professor Wolfgang Weninger, Professor John Allen** and **Dr Nikolas Haass**.

Congratulations to everyone for all your hard work and dedication!



Dr Nikolas Haass



Director's Message

This is the time of the year that we are all on tenterhooks as the reviews of our applications for grant funding are starting to come in. The chief source of funds for our research come from NHMRC, the most prestigious and rigorously peer reviewed granting body in Australia. In the past, our success rate has been approximately 50%, against the national average of about 25% – an impressive result, and one we continuously strive to improve upon.

There is a general air of optimism in the Institute, since the hard work of not only our superb scientists, but also our highly professional support teams are paying dividends. We just received word of success from the Cancer Institute NSW for two grants totaling \$1.1m, and a smaller grant from Perpetual Trustees that will support our cytometry and imaging facilities. Professor Semsarian also snared a highly prestigious grant from the USA valued at \$400,000.

But in these challenging times, it has been you, our supporters, that have stepped up

to the line with your generosity in regular giving, and with your support of our first Foundation Dinner, which allowed the recruitment of crucial new skills (p6).

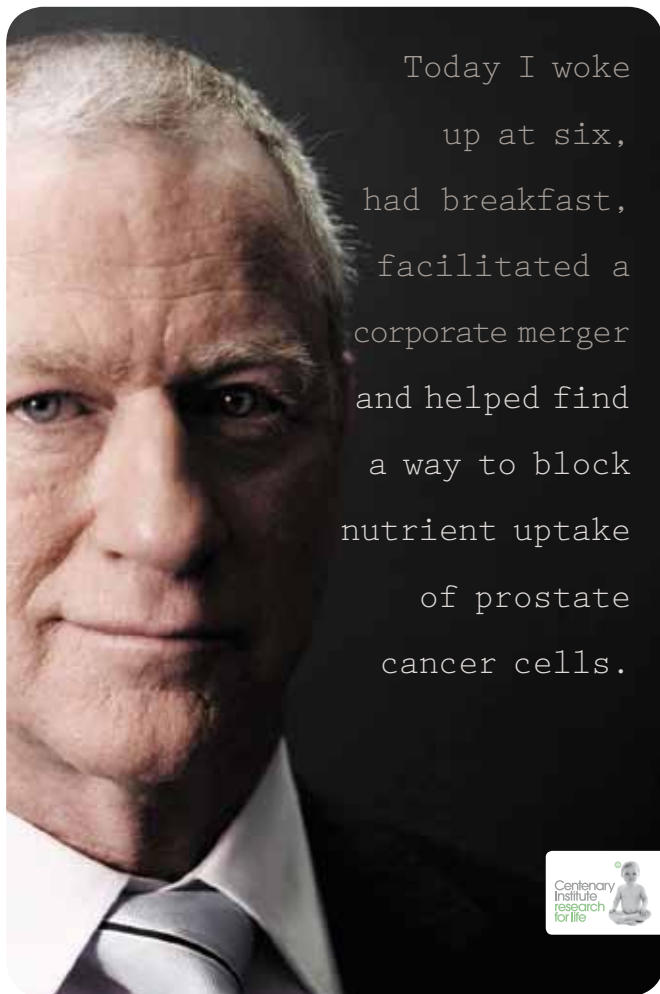
I believe our Institute continues to grow in the right way. We value the relevance of our work for the sick and the use of our skills in collaborating with our neighbours in strengthening our campus. Currently we are involved with the University of Sydney and SSWAHS in the planning stages of a new Centre for Obesity, Diabetes and Cardiovascular Diseases to be built



adjacent to the Centenary, an enterprise that will be of mutual benefit.

Thank you again for your interest in us and your support of our efforts.

Professor Mathew Vadas



Today I woke
up at six,
had breakfast,
facilitated a
corporate merger
and helped find
a way to block
nutrient uptake
of prostate
cancer cells.



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