OCTOBER 2006

LUMINESCENT

Newsletter of the Centenary Institute of Cancer Medicine and Cell Biology

Welcome

Welcome to the first issue of *luminesCent*, the Centenary Institute newsletter. To keep in-step with the upcoming changes planned for Centenary and recent developments, some of which you will read about in the following pages, we have decided to give our newsletter a facelift, hence the new name. The new format provides our supporters with an opportunity to meet some of our members, scientists, staff and students, and to catch up with former colleagues who have left Centenary to take on the world. We hope this brings you closer to experiencing the work we do and that you will enjoy reading about our research and learning about the diseases on which our scientists are working. We look forward to your feedback and thank you for your continued support of medical research.

Pearly Harumal, Editor.

In the News

Centenary researchers have been busy with the media this year. Professor John Rasko appeared on Channel 9 in March to talk about how gene therapy was used to successfully treat a Sydney patient suffering from haemophilia, providing a two month relief from the condition. The results of the international study was published in the prestigious journal *Nature Medicine* and reported in The Herald on 16 March.

Dr Joanne Lind was profiled in the Sydney Morning Herald's Health & Science news on May 4 which described her work on the role of gender in the severity and susceptibility to heart disease. Read more on page 3.

Our Flow Cytometry facility received attention for its state-of-the art machines which enable scientists at Centenary to isolate and analyse unique cells at a rate of over 25,000 cells every second, promising a significant increase in research output i.e. faster results, for Centenary studies aimed at disease prevention, diagnosis and treatment.

Associate Professor Barbara Fazekas published a paper in *The Journal of Experimental Medicine* in July showing that a newly developed blood test and Centenary's flow cytometry machines can be used to screen and isolate disease fighting regulatory T cells, which is difficult to do using other methods. This can be used to identify individuals at risk of developing inflammatory bowel disease and other diseases such as diabetes, asthma and cancer. The blood test is a major breakthrough in research and gained media coverage in December 2005 on the

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CENTENARY INSTITUTE

In the news continued

Today Show, National Nine News, Biotechnology News and The Age.

More recently, A/Prof Fazekas was interviewed by The Sunday Telegraph about the Hygiene Hypothesis which suggests that modern society's obsession with cleanliness is making us more susceptible to developing allergies. The article entitled "Clean-Eyed Monsters" was published in the Sunday Magazine on August 27.

Professor Geoff McCaughan, Head of the Liver Immunobiology Program, was interviewed by The Daily Telegraph in June about a 32 year old Australian patient who received a successful triple organ transplant – making medical history. Read about what this remarkable patient has to say about her recovery and the doctors who looked after her on page 4. Dr Nick Shackel, also from Centenary's Liver Immunobiology group, was interviewed by local radio station 2RDJ 88.1 on the 16th of June about Hepatitis C treatments. Read more on this interview on page 4.

Associate Professor Chris Semsarian from the Molecular Cardiology group was interviewed by Sydney's 2SM 1269 on August 18 about his research on heart diseases in a lead up to National Cardiomyopathy Day. More information is available on page 4.

Getting to Know **You**

"I think the Centenary Institute is doing tremendously positive, historically significant research"

Ms Claire Troup has been a Centenary Member since 2000. Claire is the winner of our Membership Survey wine pack. She shares her thoughts and experiences with us.

"I am a specialist reading support teacher in a small Melbourne Primary School. I love my work, especially when I see my students go from finding the printed word frustrating and incomprehensible to something meaningful and enjoyable.

I support the Centenary Institute's work because a cure really needs to be found for cancer; it has plagued and terrified the human race for long enough and several of my family members have suffered with it. Time for it to be consigned to extinction.

I believe it is important for others to support medical research because we all need to help each other. None of us knows what ghastly disease could be lurking in our vicinity and it would be encouraging to know that other people are supporting efforts to find treatments for whatever assails us.

I think the Centenary Institute is doing tremendously positive, historically significant research. I enjoy hearing about the latest research in its newsletters and I am committed to supporting the Institute in the long term. I was thrilled to win the wine pack. I haven't won anything since primary school so I felt quite chuffed."

Thank you Claire. If you would like to share your experiences with other *Centenary News* readers please phone Pearly on 02 9565 6100.

Out and About

Dr John Allen, head of Centenary's Cancer Drug Resistance Group, awed young budding scientists with a lesson on magnetism at the 2006 Veronica James Science Challenge in June.

For the third year running, John has been a volunteer organiser and head tutor at the Science Challenge which brings together 100 hearing-impaired children to teach them all about the world of science through a hands-on approach and interactions with real scientists.

John taught students how to build a simple electric motor using a magnet and metal coil suspended on a metal rack. He was impressed by the ability of students, some as young as 7 years old, to build the motors.

John found the whole experience to be memorable, "It was very hectic, fairly chaotic and loads of fun. Everyone had a good time. The students were all enthusiastic. We were all exhausted by the end of the weekend."

Last year John impressed students with a workshop on rocket science. He is a fine ambassador for science, demonstrating to our future scientists that science attracts individuals with inquisitive minds and just like those magnets, it is a job loaded with fun, mystery, excitement and the WOW factor.

The *Science Challenge* was supported by the Medical Faculty at the University of Sydney.

Genes, Gender, Hormones: How are they linked to heart disease?

Sudden cardiac death (SCD) is the cruelest of killers. It strikes young, otherwise healthy individuals often with no warning signs. Unfortunately, in up to half of the victims, the first presentation of their disease is often at post-mortem. Loved ones are left distraught and without answers.

Each year in NSW alone, at least 60 young people under the age of 35 fall victim to sudden cardiac death. Hypertrophic cardiomyopathy (HCM) is the most common genetic heart disease leading to SCD, affecting 1 in 500 people. It is characterised by marked thickening of the heart muscle.

The Centenary Institute's Molecular Cardiology team, headed by Associate Professor Chris Semsarian, are devoted to solving the mysteries behind sudden cardiac death and other cardiovascular disorders which are caused by underlying genetic abnormalities.

Chris' team led a field study in Sydney which investigated the causes of sudden death in young people over the last 10 years. In approximately one third of young deaths, the cause is unknown following post-mortem. They have discovered that abnormal genes are responsible for many cases of sudden death and have recently identified several of these gene abnormalities in a number of Australian families with heart disease.

"We suspect that in many cases these deaths are due to underlying genetic heart problems, and therefore checking family members is very important," says Ms Jodie Ingles, Cardiovascular Genetics Coordinator.

Ms Liz Jones, a patient of A/Prof Semsarian's, received an implantable defibrillator to stop her dying suddenly. Liz has a family history of SCD; she lost a brother and sister, both young and fit individuals, to SCD. Through clinical and genetic studies performed by A/Prof Semsarian's team, Liz was found to be at a very high risk of SCD. The defibrillator protects Liz from SCD by monitoring her heartbeat and giving her heart a shock when it fails to work properly. Liz is a guest speaker at Centenary's Race Day on October 28 (see page 7).

Centenary's Molecular Cardiology group is also investigating the role of gender in the incidence and severity of heart disease. "Studies at our laboratory have shown that HCM is more common and more severe in men than in women. Women tend to develop heart disease later in life compared to men," says researcher Dr Joanne Lind.

The group believes that sex hormones may be responsible for this observed difference. To date very little work has been performed to examine the effects of sex hormones on the development of HCM and sudden cardiac death.

The team is using unique mouse models and cells in culture to understand at a molecular level the specific causes of inherited HCM and the effects of specific gene mutations.

"These models provide us with an opportunity to study the underlying mechanisms of disease development with a view to develop novel treatments and prevention strategies." says researcher Dr Tatiana Tsoutsman.

Their work has gained international recognition and the scientists have been recipients of numerous awards. Jodie has been awarded one of only two Affiliate Clinical Development Awards by the Cardiac Society of Australia and New Zealand (CSANZ).

Joanne and Tatiana were the recipients of CSANZ Travel Awards to present their research findings at the 54th Annual Scientific meeting in Canberra in August. Tatiana was selected to present as one of three finalists for the Young Investigator Award at the meeting (pictured bottom left).

Joanne was also awarded an Individual Grant from the Layne Beachley Aim for the Stars Foundation which was covered in our March Newsletter.

Centenary Research Seminars

Professor Margaret Morris, Head of the Department of Physiology and Pharmacology at the University of New South Wales presented her work on August 2 in a seminar entitled "Neuropeptide Y - role in obesity and epilepsy". Her research models human behaviour in rats. She revealed that rats exposed to fast food showed certain food preferences. For example, some preferred pies over dim sims and vice versa. Her research also indicates that rats ate more when offered a fatty diet, which may have implications for humans and obesity. This behaviour is believed to be linked to a small molecule in the brain called neuropeptide Y. Prof Morris is currently involved in research with Dr Mark Gorrell and Dr Fiona Warner from the Liver Immunobiology Program.

Centenary Institute Seminars are on every Tuesday at 1pm in the Lecture Theatre on Level 6. If you would like information on upcoming seminars please phone 02 9565 6100 or go to our website: www.centenary.org.au.

Surviving a Triple Organ Transplant – Leanne's Story

When Leanne Myles was presented with the option of having a liver, kidney and pancreas transplant all at the same time, she had very little hesitation in giving her doctors the green light. "I knew they were the best at what they do and I trusted them completely," says Leanne of the doctors who have made a mark in medical history.

"The outcome almost one year post-transplant has been excellent"

Leanne became one of a handful of patients in the world to undergo a successful triple organ transplant. She has been in the care of Professor Geoff McCaughan, Director of the Australian National Transplant Unit and Head of Centenary's Liver Immunobiology Group, since she was diagnosed with autoimmune hepatitis in early 1993. Leanne was already suffering from diabetes at the time. The medication and diabetes eventually took its toll on her kidneys. Subjected to a restricted lifestyle consisting of daily insulin injections, immunosuppressive medication and regular visits to a Sydney hospital from her home in Cowra, Leanne's organs finally gave up.

In May 2005 Leanne was admitted to the Royal Prince Alfred Hospital and was closely monitored. She was soon placed on life support in intensive care with only a few weeks to live when the possibility of a transplant presented itself. It is now a year since the operation and Leanne is enjoying life and making the most of every moment.

"The outcome almost one year post-transplant has been excellent," says Prof McCaughan. "Leanne has had normal liver and kidney function. Her diabetes has shown no sign of returning. She is off insulin altogether and is on low levels of immunosuppressive drugs."

Leanne feels that she has been "blessed with a second chance at life" and has received a "great gift from the organ donor".

Centenary's Liver Immunobiology group is trying to understand how transplanted organs, particularly the liver, can be accepted without the need for long term drugs. The group has had two papers in this area accepted for publication in the journals *Hepatology* and *Journal of Hepatology*.

On air with **Dr Nick Shackel** and **A/Prof Chris Semsarian**

On June 16, local radio station 2RDJ 88.1 interviewed Dr Nick Shackel about hepatitis C, its prevalence, symptoms and treatment. Dr Shackel's research at Centenary is focused on understanding how hepatitis C damages the liver. He also works at the RPA Hospital as a clinician treating patients with the disease.

More than 170 million people worldwide and 200 000 Australians are infected with the hepatitis C virus (HCV). The virus can live inside an individual for many years, even decades, leading to the development of liver failure and liver cancer with fatal consequences. Patients are treated with interferon or ribavirin, antiviral agents. However, these drugs provide little immediate relief as one treatment cycle takes approximately 48 weeks and response rates as low as 65% are observed in some cases. A further concern is the toxicity of interferon which can manifest flu-like symptoms, depression and exacerbate underlying psychiatric problems.

In an interview with Sydney radio station 2SM 1269 on August 18, A/Prof Chris Semsarian spoke about the clinical and genetic research studies his laboratory performs on over 400 Australian families with various cardiomyopathies (heart muscle diseases), with the goals to improve diagnosis, develop new treatment strategies, and to prevent the devastating complications of these diseases, including heart failure and sudden death.

"We now understand a great deal more about how these cardiomyopathies develop, and how to stop people dying suddenly," says A/Prof Semsarian. "It is through excellence in medical research that newer and more effective treatments for these different heart diseases will develop, resulting in improved heart health for all Australians".

A/Prof Semsarian was a keynote speaker at the first Cardiomyopathy Association of Australia Scientific Seminar held on August 19, National Cardiomyopathy Day. This important association aims to provide an opportunity for individuals and their families suffering from cardiomyopathies to share their experience and to support one another.

Dr Umaimainthan Palendira (front row, third from left) with his Birmingham cricket team.

Where are they Now?

Dr Umaimainthan Palendira started out as an Honours student in Centenary's Mycobacterial Research Lab in 1998.

The success and fun of his Honours year convinced him to continue as a PhD student in the same lab under the supervision of Professor Warwick Britton. Umaimainthan's project investigated various strategies to improve vaccines against *Mycobacterium tuberculosis*. He developed recombinant BCG strains (the BCG vaccine is the most commonly used vaccine for the prevention of tuberculosis) to be used in combination with DNA vaccines to test whether they could enhance the effectiveness of treatment. Upon completion of his PhD in 2003, Umaimainthan received a NHMRC CJ Martin Fellowship to undertake postdoctoral research in the UK. He is now working as a Research Fellow at the Department of Cancer Studies, University of Birmingham.

Q. What are you currently working on?

Studying the effects of Cytomegalovirus (CMV) and Epstein Barr Virus (EBV) on the human immune system. In adults, these two viruses are said to account for the majority of the memory T cell population, the cells which help us to fight disease. We are aiming to develop molecules to study the T cell response against CMV, which will then lead to potential T cell therapy work. It has been quite a challenging project.

I am also characterising the T cell population in human bone marrow. Recently a lot of interest has focused on bone marrow. We are interested in seeing what type of T cells are present in the human bone marrow and their potential role. So far we have managed to characterise the antigen-specific T cell population in the human bone marrow and the work is continuing.

Q. How do you find life and work in Birmingham?

It has been fantastic! I have no regrets and have enjoyed every moment of my stay here. Birmingham is not as busy as London, and yet not far from all the major cities. I play cricket for two small clubs, which includes the university staff club. I have to say that cricket has certainly been one of the highlights of my stay here.

Work has been great as well. People here have been extremely friendly and helpful. I have had a great time so far. There are a variety of different groups working on various different areas of immunology, from structural biologists who work on T cell receptors to clinicians who develop T cell therapy. One thing that makes this institute stand out is the huge interaction they have between scientists and clinicians.

Q. What do you miss most about Centenary and Australia?

I had a fantastic supervisor for my PhD and now that I am more independent there are moments when I miss his advice and support. I also miss the willingness of other people at Centenary to help with advice on research, life in science and how to deal with it all. On the social front, I do miss all the coffee breaks and DVD nights we had at Centenary and of course the myco cricket club!

As for Australia, I do miss the blue skies!! It is absolutely frustrating when you don't see the sun all that often.

Q. What do you enjoy most about your work?

I came here to work on human viral immunology and am enjoying every bit of it!

Q. Most valuable lesson you learnt in your time at Centenary?

I guess I learnt what is most commonly said in science. It is not just how much you know that matters in science. Whom you know and how well you can 'sell' your ideas probably matter more.

Q. Any stories you would like to share?

Before the Ashes cricket series, I made a bet with my colleagues at work that England wouldn't win more than one test match. I even had a huge Australian flag hung on the wall near my work bench. Unfortunately not only did England win more than one match, but we [Australia] lost the series as well! So I had to wear an English T-shirt to work as a result of losing the bet. That's what you get for being too patriotic.

$10 Million Federal Government Grant

The Federal Government recognised Centenary as one of Australia's leading medical research institutes by awarding a $10 million grant in its May budget. Centenary was one of five medical research institutes in Sydney to receive a grant.

The grant is a tribute to the quality of research carried out at Centenary. Our scientists are among the best in the world in their areas of expertise. The money will be used to upgrade and expand Centenary's research laboratories.

End of Tax Year Appeal

Thank you to all those who generously donated to our 2006 End of Tax Year Appeal. A total of $67,325 was raised towards Dr Chris Jolly's research that was covered in our March newsletter, aimed at investigating the use of antibodies to treat diseases including cancer and rheumatoid arthritis.

Centenary Welcomes

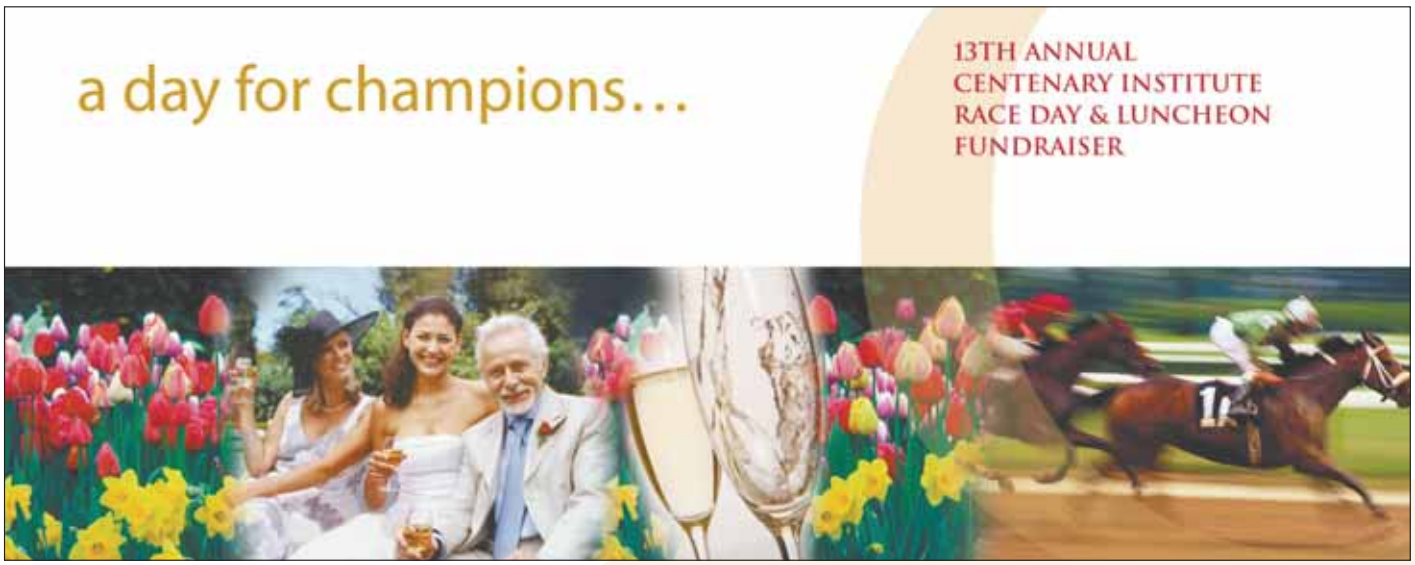
At Centenary we value staff with vision and integrity

Stevie Rose joined Centenary in May as our National Fundraising & Event Manager. Stevie brings more than 17 years experience in the areas of publishing, fundraising, sponsorships and events, and already has made some significant and positive changes here. She is currently organising the13th Race Day event and is looking forward to creating special fundraising initiatives to financially support the on-going medical research for Centenary.

Dr Frank Nottle, Veterinary Manager. Frank has a degree in Veterinary Science from Sydney University and has over 30 years experience in animal production health and management. He has previously worked with NSW Rural Lands Protection Boards. Frank will be responsible for the efficient running of Centenary's Animal Facility.

We bid Farewell...

Dr Jenny Kingham, left Centenary in May. Jenny was Centenary's Veterinary Manager for five years. Her enthusiasm, commitment to, and excellent management of the animal facility will be missed. We wish Jenny the very best in her future endeavours.



13th Annual Centenary Institute Race Day & Luncheon Fundraiser

Saturday 28 October Rosehill Gardens Racecourse

Our goal is to raise funds to continue the race to find cures for the diseases affecting people we know and love, as we focus on two of the areas where Centenary research excels – Cancer and Sudden Cardiac Death.

You are invited to join us. Book your ticket today to support our race day fundraiser. Phone 02 9565 6100.

Membership Survey Results

Congratulations to Ms Claire Troup of Victoria who is the lucky winner of our Membership Survey wine pack from The Wine Society. Ms Troup has been a member of Centenary since 2000. Get to know her in our Member Profile on page 2.

Thank you to all those who completed the survey. We received a response from 30% of our members. Your feedback has prompted us to review our membership fees. We recently sent out letters to our members with our new membership and bequest brochures. If you have any enquiries about the new membership fees please call Stevie on 02 9565 6100.

We need your help to keep our records up-to-date. Please inform us if you are changing your address or contact details, would like to stop receiving information on Centenary activities, or if you have any enquiries about your membership by calling 02 9565 6100.

Members, Principal Members, Life Members

Membership of the Research Society enables people from all walks of life to support Centenary's research programme.

To help financially support medical research at Centenary we offer three levels of membership. In July we introduced the Member for Life option that allows you to join for life for a one-off donation. Members of the Research Society are acknowledged in the Honour Roll which is published and distributed with our newsletters. If you would prefer not to be mentioned in the Honour Roll please call the Research Society Office on 9565 6100.

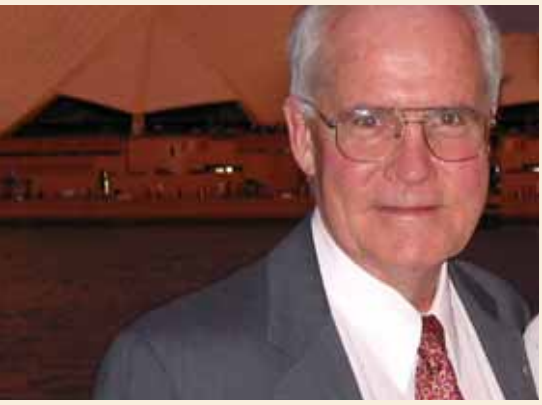
If you or a friend would like to become a member of the Research Society please fill out the membership form attached or call us on 02 9565 6156.

CENTENARY INSTITUTE

Centenary Logo

The Centenary Institute logo has been updated and refined. The refined logo is part of a strategy to increase Centenary's brand and awareness in the community.

The Last Word...



Over the past few months there have been a number of pleasing developments that reinforce our standing as one of the premier medical research institutes in Australia and place us in a sound financial position as we face the future. We have had recognition at both the Federal and State levels, the former by the $10 million grant as detailed on page 6, and the latter by the better-than-expected outcome of our application to the NSW Government under the Medical Research Support Program. Our external relations are in good shape, and our contributions to the academic life of the University of Sydney and the Royal Prince Alfred Hospital, in particular, have grown as we have cemented our pivotal role as an interface between academia and healthcare.

The Commonwealth grant for capital infrastructure is dedicated to the renovation and re-equipping of our laboratories, our animal house and the flow cytometry facility so that we are able to expand research activities within the existing building. The planned expansion and refurbishment of Centenary's facilities will allow growth in our research portfolio as we enter a new era with the recruitment of a new director and of new research groups. Centenary is embarking on a growth path, with the ambition to double our research activities over the next decade.

I would like to invite you to join us at our *13th Annual Raceday and Luncheon* on October 28 to celebrate progress in research into heart disease and cancer. It will be our BIGGEST race ever, one that recognizes the partnership between those who suffer from the many diseases that we are working to cure, those who are working to find the cures, and those whose generosity is helping us do that.

Professor David Burke, Interim Director

Bequests

Thanks to bequests, Centenary has been able to continue growing as a centre of excellence in medical research. By leaving a Bequest to the Centenary Institute Medical Research Foundation your support guarantees our scientists can continue their invaluable research to find cures for the diseases that affect us and those we love. If you would like further information please call our Bequest Manager, Stevie Rose on 02 9565 6166.

Special Donations 2006

Our sincere appreciation to those who have made a lasting gift to Centenary through a Bequest or in memory of their loved ones.

Bequests

Ms Dorothy Caton,
Mr John Robert Alexander McKenzie Miller

In Memorium

Mr & Mrs Bohatko, Ms Susan Byrnes,
Mr & Mrs Burnett , Mr Arnold Vantol,
Mr Michael Veron

Centenary Institute of Cancer Medicine and Cell Biology

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