

# under the microscope

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## Today's scientists for tomorrow's children

The Children's Medical Research Institute (CMRI) is an independent organisation committed to unlocking the mysteries of disease. Our scientists investigate conditions such as birth defects, cancer, and epilepsy. Our philosophy is that major advances in prevention and treatment come from research into the fundamental processes of life. Our work is made possible by our community of supporters and Jeans for Genes®.

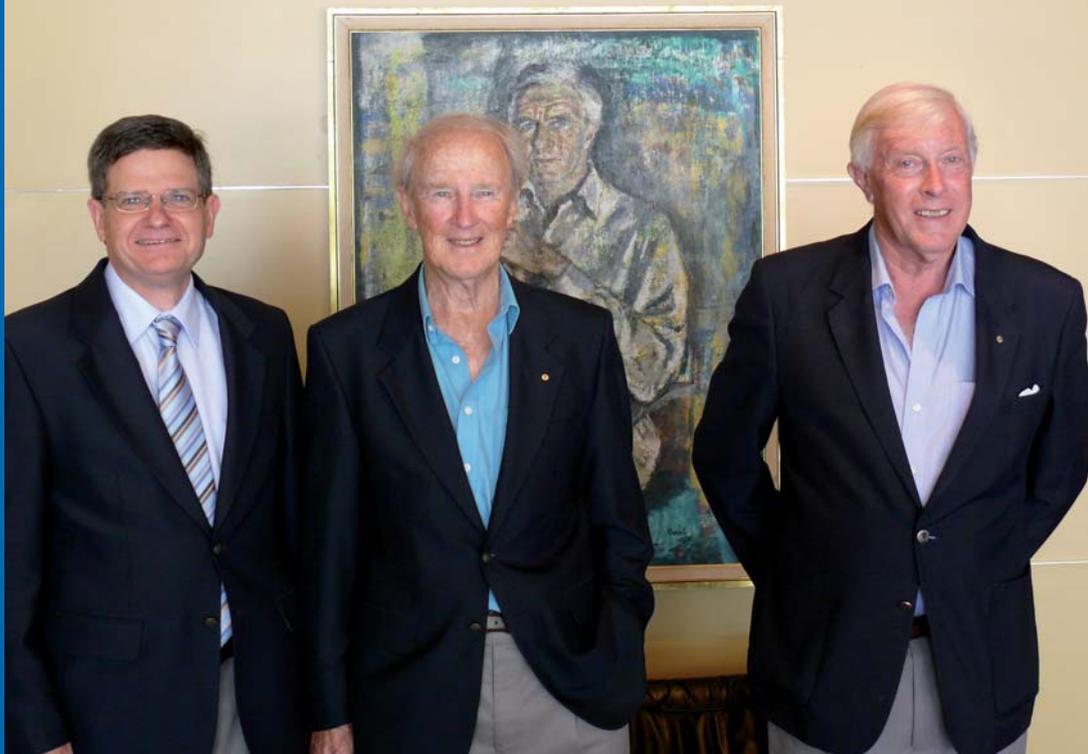
50 YEARS OF  
**DISCOVERY**  
CHILDREN'S MEDICAL RESEARCH INSTITUTE

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*L to R CMRI Director Professor Roger Reddel, Dr Wal Grigor, Dr John Overton in front of the CMRI's treasured portrait of Sir Lorimer Dods*



## 50th Anniversary Reminiscing...

The past and the future met recently when the current Director of the Children's Medical Research Institute (CMRI), Professor Roger Reddel, welcomed early CMRI pioneers Dr Wal Grigor and Dr John Overton. Both have been extremely influential in CMRI history since it was established as The Children's Medical Research Foundation (CMRF) in 1958.

Wal began his association with the CMRF as a young paediatrician at the Royal Alexandra Hospital for Children in Camperdown. In 1957 Wal was Registrar to Lorimer Dods, whom he describes as "a wonderful man who made you feel like you were the most important person in the room."

As Chief Medical Officer for the Children's Hospital, and through his work with his young patients, he researched interesting medical cases which were published regularly in *The Sydney Morning Herald* to raise awareness for the need for support for medical research into children's diseases.

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# Director's desk



Here at the Children's Medical Research Institute we often use the phrase "Today's Scientists for Tomorrow's Children". This is a very powerful description of what your support enables us to do. The research you help us do today has far reaching and lasting effects: it lays the foundation for major improvements in the health of our children, and our children's children. But the ongoing need for research is great. Regardless of how much success we enjoy this year, next year, and over the next decade, there is no possibility that by then we will have learnt all there is to know about the normal functioning of human cells, understood everything about the miracle of how normal embryos develop, or learnt everything we need to know to prevent or treat the diseases suffered by so many children.

So it is particularly gratifying that this issue of Under The Microscope contains items about some of the young scientists at CMRI whose talents and achievements have been recognised by awards and support for their research. It is critically important that we train the next generation of researchers, and provide the equipment and other facilities they need to continue and expand the effort and meet new health challenges as they arise. They are already contributing greatly to our research work even while they are developing the skills to become "Tomorrow's Scientists".

Who knows what discoveries they will make in the future, what insights they will have into subjects we know nothing about today, and what seemingly impossible problems they will solve.

A handwritten signature in white ink on a dark teal background, belonging to Professor Roger Reddel.

Professor Roger Reddel

# Rising star

The Cell Signalling Unit at the Children's Medical Research Institute (CMRI) is at the forefront of research into nerve cell communication. The CMRI's Dr Mark Graham is an integral part of this research, being an expert in mass spectrometry and proteomics. Proteomics is the large scale study of protein structure and function based on their mass and mass spectrometry is one of the analytical techniques used for this purpose.

Mark attended the Human Proteome Organisation's 7th World Congress held in Amsterdam in August 2008, and mixed and exchanged knowledge with the best scientists in the world.

Amongst his already considerable achievements, Mark has been involved in the Cell Signalling Unit's progress towards the development, with their collaborators at the University of Newcastle, of a new class of antiepileptic drugs to a preclinical testing stage. His skills in mass spectrometry and understanding of phospho-regulation of proteins, a process that controls many biological reactions, has enabled a deeper understanding of the fundamental processes involved in brain cell communication and the identification of new drug targets and control points to help control brain signalling disorders such as epilepsy and schizophrenia. Mark is also breaking new ground in studying how another protein modification, glycosylation, is involved in cell signalling.

In a remarkable endorsement of this talent, Mark has just received a large handful of highly competitive major government research grants. These grants will allow Mark to establish himself as an emerging research group leader.

Mark received an extremely competitive Career Development Award from the National Health and Medical Research Council (NH&MRC) of Australia which will pay his salary for the next four years. As a result of this career development award, Mark was also awarded a University of Sydney Research Fellow Establishment Grant of \$20,000 for 2009. Together with Professor Phil Robinson, head of the Cell Signalling Unit, Mark also received two project grants from the NH&MRC and the Australian Research Council. These will enable Mark and Phil to undertake an ambitious project to study how a complex of at least 50 proteins work together to build the molecular machinery of nerve communication.

Mark was also part of a successful application for \$300,000 for a new mass spectrometer which will go towards increasing the capabilities of the CMRI mass spectrometry facility.

Mark's success in publishing top quality research on proteomics in international scientific journals over the last six years is a great indication of the progress of his research so far and predicts his continuing success into the future. The supportive environment at CMRI, created by our many generous donors, made the nurturing of this talented young scientist possible and will also allow Mark to maximise the progress that he can make with these grants.

Mark is one of the many young researchers at CMRI who are determined to make a difference.

*Proteomics expert Dr Mark Graham and a high performance liquid chromatograph, which delivers samples to the mass spectrometer*



# Copycaps in cancer???

CMRI's Dr Alessandra Muntoni has made a discovery that adds to our understanding of cancer and provides a new target for the design of future cancer treatments.

For the last two years, Alex and her colleagues have been researching a mechanism upon which ten percent of human cancers rely for their continued growth. The Alternative Lengthening of Telomeres (ALT) mechanism was first discovered at CMRI in 1995 and understanding the molecular details of this mechanism is vitally important in the development of cancer treatments which can target this mechanism. The CMRI Cancer Research team has already done a lot of work towards this goal.

Telomeres are sequences of DNA which act as protective caps on the ends of chromosomes. In normal cells, these sequences shorten with each cell division and eventually become so short that the cell stops dividing. Cancer cells are able to proliferate because their telomeres can continue elongating by one of two known mechanisms. One is through the action of the enzyme telomerase and the other by the ALT mechanism.

The CMRI team had previously shown that in the ALT mechanism telomeres elongate by copying the telomeric DNA sequences on the ends of other chromosomes. Alex has found that in ALT, the telomeres can also copy their own telomeric DNA sequences, a finding that reveals important information about the molecular machinery behind ALT.

This work was published in the international journal, *Human Molecular Genetics*.



*Dr Alessandra Muntoni has published new research relating to cancer cell proliferation*

*The photo in the "O" on the cover shows a human cell line that uses the ALT mechanism. It shows that telomeres on the chromosomes (blue) of ALT cells have various lengths, with some being extremely long, which gives a bright red signal, while others are very short, giving a faint red signal.*

## Young talent recognised...



*CMRI's Lin Luo (front) and Zeenia Kaul*

Zeenia Kaul, PhD student in the Cancer Research Unit has been awarded a Cancer Institute NSW Research Scholar Award.

Announced by the NSW Minister Assisting the Minister for Health (Cancer), these awards provide funding to support and develop outstanding students who have the ability to make a significant contribution to cancer research.

Zeenia will receive \$50,000 over two years to support her research into exploring the role of shortening chromosome ends (telomeres) in the protection against cancer development. Zeenia is also a Judith Hyam Memorial Trust Fund Scholar.

Lin Luo, from the Cell Signalling Unit, is a recipient of a German Academic Exchange Service (DAAD) Scholarship 2009. This allows for Australian researchers to spend time at partner institutions in

Germany and for German researchers to spend time at participating institutions in Australia. The aim is to foster high quality research collaboration between Australian and German researchers from which the exchange of knowledge and skills will be to the mutual benefit of medical research in both countries. The \$20,000 grant will be split equally between Lin and the collaborating German scientist.

In April, Lin will be travelling to the Freie Universität in Berlin for six weeks to study a new test to screen for anti-epilepsy drugs.

## *continued from page 1*

Dr Grigor was Acting Director of the CMRF from 1976 to 1979 and during that time was a sounding board for Dr John Overton.

John was appointed Director of Anaesthetics at the Children's Hospital in 1978 and was involved in research in paediatric cardiology and was the driving force behind the design and development of a special paediatric intensive care ambulance.

Wal and John were very interested to hear of CMRI's plans for the future – at the forefront of research into the fundamental processes of life.

The CMRI greatly values the input of pioneers such as Wal and John, and it was wonderful to have the opportunity to share reminiscences of past achievements which have led to our successes and strengths.

# Jeans for Genes®

## Tamworth Country Music Festival

Country Artist Adam Brand who won Country Male Artist of the Year, supported Jeans for Genes in Tamworth this year by donating his jeans. Adam's signed jeans were turned into a fantastic artwork by well known Australian Artist Robin Ross and auctioned on line at the Country Music Festival. At the same time the CMRI Tamworth Committee held a raffle at West's Tamworth and together we raised nearly \$2,000 for medical research into children's diseases. There was a huge amount of activity with interviews on both Tamworth Radio Stations and a write up in the country music magazine and local papers. With such a good response we are already planning for next year!

## Christmas wrapping raises \$38,000

Over 500 eager and enthusiastic Jeans for Genes "Genies" wrapped gifts at Myer Parramatta, Bondi, Sydney City and in Castle Towers Shopping Centre over the Christmas period, raising an incredible \$38,000 for the Children's Medical Research Institute. This result could not have been achieved without the commitment and support of individuals, school students and corporate staff who gave up their time to wrap thousands of gifts for Myer and Castle Towers customers.

The team at Jeans for Genes and staff of CMRI would like to thank everyone who volunteered and also a thank you must go to all customers who gave a donation and chose to have their gifts wrapped by our "Genies." If you are interested in volunteering for gift wrapping please contact Lynda Dave Volunteer Manager on 02 9687 2800 or go to [www.jeansforgenes.org.au](http://www.jeansforgenes.org.au)

## Early Bird Registration – Jeans for Genes Day 2009 – August 7 2009

This year we are offering supporters the opportunity to register early for Jeans for Genes Day so they can avoid the rush. This can be done on-line at [www.jeansforgenes.org.au/register](http://www.jeansforgenes.org.au/register). If you register before April 1 2009 you will automatically go in the draw to win 1 of 5 fabulous Jeans for Genes prize packs! This year we are once again calling on all Australian's to wear their jeans and give a donation or buy a badge or wristband. There are loads of activities you can try to help raise funds for the Children's Medical Research Institute. For more information please call 02 9687 2800 and speak to one of our friendly Jeans for Genes staff.

## Jeans for Genes Events 2009 – For your Diary

This year Jeans for Genes has a number of very exciting special events. Previously known as the Jeans for Genes Art Auction the Denim Charity Dinner will be held this year at Royal Randwick. The event will once again be themed and special guests will be in attendance. Celebrity signed jeans already received include Renee Zellweger's and Casey Stoner's. VIP seating and tables are limited and are now available for bookings. We recommend you contact us ASAP to book your seats as this is an extremely popular event on the Sydney socialite calendar. To book and for further details about this event and the others listed please contact Christine McGee on 02 9687 2800.

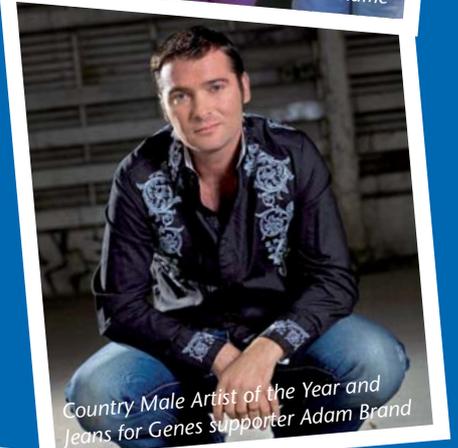
**Denim Charity Dinner – Royal Randwick, Sydney 30 July 2009**

**Jeans for Genes Golf Day – Concord Golf Club 3 September 2009**

**Jeans for Genes Race Day – Royal Randwick 7 November 2009**



Winners of Tamworth Jeans for Genes Raffle



Country Male Artist of the Year and Jeans for Genes supporter Adam Brand



Artist Garry Fleming with Auctioneer, radio presenter and signed jeans donor Ray Hadley  
OAM



Tamworth Committee's Sue Baldwin (L) and President Verity Bligh (centre) with Jeans for Genes Events Coordinator Christine McGee



Volunteer Genies gift wrap for Christmas 2008





# Committee Power

## Racquet Committee Melbourne Cup Luncheon 2008

Everyone was a winner at the home of Di Dickson at the hugely successful Melbourne Cup Luncheon. CMRI Cancer Research Unit scientist Zeenia Kaul captivated the audience with an amusing and insightful talk on her research at CMRI.

## Northern Beaches Luncheon 2008

Monash Country Club was the venue for a superb luncheon with Christmas Crafts, accompanied by a thoroughly entertaining discourse by celebrated author of psychological thrillers, Michael Rowbotham.

## Gerringong Quilt Show 2008

Medical researcher and renowned Australian quilter Dr Annette Gero was the guest of honour at the Gerringong Quilt Show. Annette cleverly crafted her speech using the analogy between medical research and quilting.

**The Ku-ring-gai Committee** were hosts to a private screening of the latest Bond movie "Quantum Of Solace" and enjoyed canapes and cocktails before the event.

**Mudgee** "Spring Fever Luncheon" November 9 2008. The sellout crowd at Mudgee's Prince Hill Wineries enjoyed a wonderful luncheon against a verdant backdrop and saw longstanding Mudgee committee member Helen Peters receive her lifetime membership badge. CMRI scientist Dr Scott Cohen inspired the audience with an update on his exciting cancer research.

**Canberra** Luncheon November 11 2008. Black and White was the theme for the gift stalls and prestigious luncheon for 700 invited guests in the gardens of Government House in Canberra. Organised by the Canberra Committee, a cheque for \$85,000 was presented from the committee's fundraising efforts over the last 6 months.

## Alight with Christmas Spirit... 2008 lights

Each year Kevin and Betty O'Connor attract visitors from near and far to wonder at their magnificent Christmas window display. Donations for CMRI this year netted \$2,213.60 – their best result ever.

## Dates for your Diary

### Friday March 13

Gerringong 50th Birthday Dinner  
Gerringong Town Hall.  
Contact Marg Weir 02 4234 1239.

### Sunday 22 March 8am start

Annual Tennis Day Mixed doubles at various courts. A lovely day of tennis (all grades) with finals and lunch at Lady Mary Fairfax home "Fairwater" Double Bay. \$100 lunch/tennis or \$60 for lunch. Contact Jan Madigan 02 9345 4331.

### Sunday 29 March 11am

Berowra Waters Cruise aboard "Macquarie Princess". This is ideal for a relaxing day out on the beautiful Hawkesbury River. Seafood lunch and bus from Killara \$75. Contact Ozzie Pitts 02 9417 1160.

### Friday 8 May 11am

Mother's Day Luncheon  
Convention Centre Darling Harbour.  
Guest of Honour with John Mangos.  
An event not to be missed \$95.  
Contact Patti Payne 0418 867 784

### Tuesday 12 May

Ladies Golf Day Mona Vale Golf Club.  
Shotgun start 8am. Teams of 4.  
\$55 for a great day out.  
Contact Cheryl Ewing 02 9963 7463.

### Wednesday 27 May 10.30am

Mixed card day for ladies and gentlemen.  
Play Bridge, Canasta or Five Hundred.  
\$30 includes morning tea, luncheon and a glass of wine. Castle Pines Club House Spurway Drive Castle Hill. Contact Mary Howell 02 8850 1271 / Pam Astley 02 9449 3281 / Jean Wall 02 9869 7131.



*Clockwise from top left:*

*Northern Beaches President Maureen Botha with author Michael Rowbotham;*

*Guest speaker Dr Annette Gero with Gerringong Committee President Margaret Weir;*

*Ku-ring-gai Committee's Liz Wubben and Claire 'Goldfinger' Cooper at the Bond screening;*

*Associate Professor Tracy Bryan, Dr Scott Cohen and Mudgee President Margaret Burns;*

*The Black and White themed Canberra Luncheon and gift stalls;*

*One of the themed windows at the O'Connor Christmas light display.*