

scope

A spoonful of sugar helps the medicine go down

The Malaghan Institute of Medical Research is New Zealand's premier vaccine and immunology research centre. For over 16 years our scientists have been focused on developing more effective and natural immune-based therapies for treating disease. This pioneering work has led to the development of a cancer vaccine, which is currently being evaluated in a phase I clinical trial for glioblastoma multiforme (brain cancer); however the research doesn't stop there.

Whilst searching for different ways to control or stimulate even stronger immune responses, Malaghan Institute scientists discovered that 'sweetening' particular immunotherapies with the addition of specific carbohydrates (sugars) can actually make them work better!

Through setting up an Immunoglycomics group, which fuses chemistry with immunology, we are in a unique position to use target sugars that have been synthesised onsite. This technique has enabled us to redefine the way we can treat diseases such as cancer, asthma and tuberculosis.

"Few research groups in the world have the right complement of immunological and chemical skills necessary for discovering the next generation of drugs for treating disease. Our Immunoglycomics programme means that we can now do this right here in New Zealand."

Prof Graham Le Gros, Director.



Immunoglycomics research group leaders Dr Mattie Timmer (VUW) and Dr Bridget Stocker (MIMR).

Immunoglycomics – the new era of drug discovery

Immunoglycomics is an emerging field of research that focuses specifically on understanding how particular types of sugars can influence the immune response and how this knowledge can be applied to improve treatments of disease.

Through an Immunoglycomics research initiative established between the Malaghan Institute and Victoria University of Wellington in 2007, scientists led by Dr Bridget Stocker and Dr Mattie Timmer are currently synthesising a range of sugar-based drugs and evaluating their potential to treat disease.

An example of this is a class of compounds called glycolipids, which are being used in conjunction with the cancer vaccine to enhance anti-tumour

immunity. While the vaccine effectively acts as the ignition and turns the immune response on, the glycolipid acts as the throttle and can be used to control the intensity of the response.

In other work a novel class of drugs are being synthesised that target a survival mechanism of *Mycobacterium tuberculosis*, the causative agent of tuberculosis. Sugar-based compounds are also being used to help understand what triggers the allergic immune response seen in asthmatic individuals.

These studies will provide the first detailed insight into the relationship between carbohydrates and the immune response, which will aid in the diagnosis and treatment of disease.

Green Chemistry

Drug discovery, such as that described above, can often require the use of large amounts of chemicals, which can have a detrimental effect on the environment. In fact, it is estimated that each year the pharmaceutical industry generates over 240,000 tonnes of toxic waste from the organic solvents and associated chemicals used to make target compounds.

To address this issue in the Immunoglycomics programme, PhD student Emma Dangerfield has developed novel (“green”) methodologies for the synthesis of iminosugars, a class of drugs currently used in the treatment of a variety of diseases. Her approaches are not only greener than many (using solvents such as water and ethanol instead of petrol), but also yield high quantities of drugs in fewer steps, thus reducing the total amount of waste generated. The compounds are synthesised from renewable, naturally occurring starting materials (sugars), and are easy to purify because there are fewer contaminants to have to remove at the end.

To date Emma’s methodology has been used to prepare potential drug compounds for the treatment of tuberculosis, cancer and diabetes.



Immunoglycomics PhD student Emma Dangerfield.

Emma’s methodology, which has been patented, was published in the international journal of Organic Letters last year.

Although the optimisation of greener strategies is an on-going process, we are excited about the opportunities that this research brings and the realisation that it is possible to find new ways to treat disease and care for the environment at the same time.

Acknowledging the efforts of three inspiring individuals

Since the Malaghan Institute first opened its doors back in 1979, it has enjoyed immense support and loyalty from the community, without which it could not operate. For three such individuals, their association with the Institute is a very personal one and in this issue of Scope we would like to acknowledge their stories of hope and survival, and their extraordinary efforts to raise funds for our research in 2009.

This is by no means an exhaustive list and we hope to bring you more stories of goodwill in future editions of Scope.

Richard Barr – walked across the UK



Richard Barr (pictured second from right) with his 'reception committee' at Land's End.

Richard Barr is a retired physicist from New Zealand who suffers from CLL (Chronic Lymphocytic Leukaemia). In 2009 he walked 1628 km (1012 miles) from John o' Groats in the northeast of Scotland to Land's End in the southwest of England, to promote awareness of CLL and to raise money for research into the disease. Half of the funds raised went towards the Malaghan Institute's CLL research programme.



Dave Wilson.

Dave Wilson – walked 3200 km around England

For Dave Wilson (pictured left), a former Taranaki man, being diagnosed with prostate cancer in his early seventies came as a shocking blow. However, Dave considers himself one of the lucky ones because two years after undergoing radiotherapy and hormone treatment he is now cancer-free. In May 2009 Dave set off from Brighton pier in England on a five month walk that covered 3200 km (2000 miles). The motivation behind this venture was Dave's wish to give back to the clinicians and cancer researchers that helped save his life. Another reason for Dave's big walk was to promote the critical importance of early diagnosis and detection of some cancers. Dave selected the Malaghan Institute as one of the recipients of the funds raised.



Kylie Archer.

Kylie Archer – ran the 2009 New York Marathon

Aucklander Kylie Archer ran the "42 crazy big apple km's" of the New York Marathon in memory of her Dad and the thousands of kiwis diagnosed with brain cancer every year and dedicated all of the funds raised to the Malaghan Institute.

Collectively Richard's, Dave's and Kylie's efforts raised over \$6000 for our cancer research programmes! Words cannot describe how grateful we are to these inspiring individuals for selecting the Malaghan Institute as the recipient of their incredible fundraising efforts – our sincere gratitude to you all.

2010 Lollipop Appeal

Despite a cold and windy start to the day on Friday 26 February, the sun burst through the clouds, warming the numb fingers of collectors and igniting the philanthropic spirit of Wellingtonians.

Time and time again we are humbled by the overwhelming support we receive from the Greater Wellington Region on our Lollipop Appeal day and this year was no exception. More than \$40,000 was raised, which will go towards supporting the Institute's world-class research programmes.

On behalf of all the staff at the Malaghan Institute

we would like to express our sincere gratitude to all who donated on the day, to our wonderful collectors, and to our Lollipop Appeal sponsors, in particular principal supporter AMI Insurance, as well as Clemenger BBDO, OMD, Allen's Lollipops and MagnumMac.

Focus!

In December 2009, the Malaghan Institute launched Focus, a new monthly email update.

If you have enjoyed reading the Institute's Scope newsletter but have been left wanting more, then Focus is for you! With regular updates on breaking research news stories, hot off the press media announcements, and first-hand notification of upcoming events, Focus is your way of staying informed of the latest developments at the Malaghan Institute.

If you are interested in receiving Focus, please email your details to Vicky Hale, Marketing Admin Assistant, at vhale@malaghan.org.nz.



Left: Dominique Hawinkels and Jacqui Whelan from the Malaghan Institute; Right: Wayne and Wendy O'Brien – thank you Wayne for collecting on your birthday!

The Ultimate Gift

The ultimate gift to show your support for the research of the Malaghan Institute, and our hope for a disease-free future, is a bequest in your will.

As a charity, the Malaghan Institute relies on the generosity of its supporters to continue our work, and a gift in your will is a way of ensuring our research into Cancer, Asthma, Arthritis, Multiple Sclerosis and Infectious Diseases will protect future generations from disease well beyond your lifetime.

To receive information about leaving a gift in your will and how these funds are managed, please tick the box below and enter your contact details on the reverse of this form.

Yes, please send me information on how I can leave a gift in my will and invest in a disease-free future.



Independent Review praises Malaghan research

In February of this year, a panel of independent scientists conducted a review of our research programme.

Prof Ashley Dunn (former Director of the Ludwig Institute, Melbourne), Prof Bryan Williams (Director of the Monash Institute of Medical Research) and Assoc Prof John Carter (Clinical Leader, Wellington Blood and Cancer Centre) spent two days evaluating our research and grilling our group leaders before concluding that our work is of a high international standard and offers the potential for genuine breakthroughs in the field of immunology.

The panel were also keen to stress that the Institute's commitment to translating basic

discoveries about the nature of disease into tangible outcomes with a genuine impact on patient care was both highly commendable and extremely rare. They cited the cancer vaccine programme as a shining example of the "bench to bedside" philosophy that is so vital in turning lab results into improved wellbeing for New Zealanders.

We are extremely proud of the outcome of this independent review and the supportive comments we received. We will continue to strive to undertake the very best quality research into diseases affecting thousands of New Zealanders – and then turn those into improved health outcomes.

World Day of Immunology 2010

Thursday, 29 April 2010, is World Day of Immunology.

To celebrate this occasion the Malaghan Institute and Victoria University of Wellington are hosting a free public lecture by eminent Australian scientist and previous Australian of the Year Prof Ian Frazer. Prof Frazer's research led to the development of the HPV (Human Papilloma Virus) vaccine Gardasil, which has been shown to protect against the development of cervical cancer.

The event will be held at Maclaurin Lecture Theatre MCLT103, on Victoria University's Kelburn Campus, at 6:30 pm. Spaces are limited so if you will be in Wellington on the 29th April and would like to attend Prof Frazer's talk, please contact Vicky Hale on 04 499 6914 ext 821 or vhale@malaghan.org.nz by Mon 26 Apr 2010.

This newsletter was generously supported by:



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Please send me information on how I can leave a gift in my will and invest in a disease-free future

Please call 0800 MALAGHAN (0800 625 244) to find out how to become a regular donor

What's been happening...



BNZ staff volunteering at the Malaghan Institute.

Closed for a Good Cause

On the 4 November 2009, the BNZ closed all of its branches so that its staff could help volunteer in the community. The Malaghan Institute was selected as one of the lucky organisations to receive support. Nine BNZ staff spent the day delivering Scope newsletters to residents in various Wellington suburbs, to help raise awareness of the Institute and to educate the community about the important research being carried out right here in Wellington. We would like to say a special thank you to all the BNZ staff that helped 'beat the streets' for medical research; your efforts were greatly appreciated.

Jumbo Tennis Tournament

The Rotary Club of Wellington's annual Jumbo Tennis Tournament, sponsored by The Interface Financial Group, was held on Friday 5th March at the Renouf Tennis Centre. With giant racquets,

around 100 players (including our own Dr Mike Berridge) 'battled' on court, against each other and gravity to raise funds for the Malaghan Institute. Thank you to all those involved.

Fashion for Research

Hosted by the Australian High Commission, the Wellington Friends of the Malaghan Institute held a charity cocktail event, Fashion for Research, on the evening of March 25th to raise funds for the Malaghan Institute.

A great night was had by all and a special thanks goes out to the Friends Committee, to principal supporter AMI Insurance, Spy Valley Wine, Blue Cactus, Cerise Clothing, Mi Piaci, The Designer Clothing Gallery, The Mews and Vance Vivian.

2009 Golf Tournaments

The end of 2009 saw three successful annual golf tournaments organised by Wellington, Auckland and Hawkes Bay Friends of the Malaghan Institute Committees. Barring a slight hail storm in Wellington, all three tournaments ran extremely well and collectively raised over \$120,000 for the Malaghan Institute. Thank you to everyone who participated, the many generous supporters and to the main sponsors, ING (for the Wellington tournament) and AMI Insurance (for the Auckland tournament).

The Institute was also the lucky recipient of over \$3,000 raised through the Khandallah Monteith's Brewery Bar charity golf tournament held in November.

Upcoming events

Sunday 16th May

Keeping our Engines Running – Charity Cocktail Fashion Event, Auckland

For more information and to reserve your tickets now please contact Annabel Lush (alush@malaghan.org.nz or 09 525 2539)

Grants (June 09 – March 10)

Thank you very much to the following organisations for their support:

The Southern Trust
Springhill Charitable Trust / Frimley Foundation
Margaret Neave Charitable Trust
Cuesports Foundation
Infinity Foundation
Lion Foundation