New hope for blood cancer patients

Life-saving changes in clinical practice for treatment of patients undergoing bone marrow transplants are likely thanks to clinical trials led by QIMR Berghofer and the Royal Brisbane and Women’s Hospital.

High dose irradiation and chemotherapy can kill blood cancers such as leukaemia, but also kill off stem cells in bone marrow—essential for producing new blood cells. Patients receiving high dose treatment require a bone marrow transplant administered through a drip. The donor stem cells then make their way into the patient’s bone marrow and start producing blood cells again.

Graft-versus-host disease (GVHD) can be a complication of high dose cancer treatment following a bone marrow transplant. GVHD occurs when particular types of white blood cell (T-cells) in the donated bone marrow attack the recipient’s own body cells, causing acute to chronic symptoms affecting the normal tissues of the skin, gut and liver. It can display as a temporary inconvenience through to a serious, life-threatening disease.

QIMR Berghofer’s senior scientist, Professor Geoff Hill explains: ‘Irradiation and chemotherapy followed by bone marrow transplant is now standard treatment for blood cancers such as leukaemia, and is generally successful, however, the treatment does result in a ramped up response in the newly transplanted immune system’.

Professor Hill and his team have just concluded phase I/II trials administering the drug Tocilizumab (TCZ), usually used for treating rheumatoid arthritis. The aim of the trial was to establish the efficiency of inhibiting the immune system’s production of the protein IL-6 which stimulates the body’s response to injury.

The results were extremely promising, showing a reduction in the incidence of GVHD from the usual 50% to 12% of transplant patients. Severe cases, which often result in death, were reduced from 21% to 4%.

The new therapy has the potential to make transplants safer and applicable to a larger group of patients. A phase III study now underway will be the final test before the addition of TCZ to the GVHD prevention regime is registered and adopted in clinical practice.

This research was published in the prestigious medical journal, The Lancet Oncology.
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FROM THE Director

So much of what we do at QIMR Berghofer is firmly focussed on the future, cutting-edge scientific discoveries that in the months and years ahead will become standard medical practice.

Our goal is to improve health through medical research and there have been many exciting discoveries at QIMR Berghofer over recent months that will do much to offer patients hope for better outcomes and quality of life in the future. We are pleased to provide you with some updates on some of those projects in this edition of LifeLab.

In 2015, QIMR Berghofer marks 70 years of medical research and it is important on such a significant milestone to look back at the Institute’s long and prestigious past. The Queensland Institute of Medical Research Act was passed in 1945 and the first Director, Dr Ian Mackerras, was an entomologist who worked on malaria control for the Australian Army in World War II. The laboratories were rustic—set up in temporary huts previously used by the US Armed Forces, opposite what was then the Brisbane General Hospital. QIMR Berghofer has come a long way indeed.

The Act of Parliament which created QIMR Berghofer 70 years ago set many of the regulations under which we operate today. It stipulates that the State Government appoints a Council to oversee the Institute’s activities. I am pleased to report that the future of QIMR Berghofer’s governing Council is in very good hands. Dr Doug McTaggart, Chairman of the Public Service Commission, has taken up the role of Council Chairman, replacing Governor Paul de Jersey. Other new Council members include Dr John Herron, Emeritus Professor John Shine, Emeritus Professor John de Jersey, and Michael Sargent. All bring experience from both the academic and business sectors to help us to build on QIMR Berghofer’s position as one of Australia’s largest and most successful research institutes.

We invite you to join us in celebrating 70 years of achievements at QIMR Berghofer at our inaugural gala dinner. I am pleased to announce that planning for this exciting new event is now underway, with the date set for Saturday 31 October, almost to the day, the date of the Royal Assent of the Queensland Institute of Medical Research. It will provide a chance for our scientists to meet and mingle with our supporters. Both groups make it possible for the Institute to continue to be a world leader in medical research.

Professor Frank Gannon
Director and CEO – QIMR Berghofer
Research at QIMR Berghofer could offer hope to patients with the aggressive acute myeloid leukaemia (AML).

Using the early phase development drug Imetelstat, Dr Steven Lane and cancer biologist Claudia Bruedigam from QIMR Berghofer’s Translational Leukaemia Research Laboratory have found the drug to be highly effective against human leukaemia cells in pre-clinical trials. They also discovered that Imetelstat delayed or prevented relapse of AML following chemotherapy.

‘Relapse is a common and devastating setback for many AML patients and this treatment could effectively prolong remission,’ Dr Lane said.

The drug works by inhibiting a protein needed for the formation of the leukaemia stem cells, which otherwise would have enormous self-renewal capabilities. The study found that by turning off a gene called telomerase, the cancer cells become unstable and eventually die.

With the potential to use the drug in addition to chemotherapy or as an alternative treatment, particularly in elderly patients, it is hoped early phase clinical trials can be started within the next 12 to 18 months.
In 2014 a total of 1124 riders raised $3.8 million for research. Funds raised by riders are awarded to researchers investigating a range of cancers including skin, brain, colorectal, breast, ovarian, blood and lymphoma.

In four years, the event has raised almost $18 million for cancer research.

Gearing up for the 2015 Ride

Twenty-one researchers and support staff from QIMR Berghofer are in training for this year’s Rio Tinto Ride to Conquer Cancer.

The QIMR Berghofer ride team members say cancer is too big a disease to ignore—impacting one in two Australians. By riding, they aim to raise a team total of $52 000 to tackle the problem.

The team is also hoping to inspire others to join this incredible two-day, 200 km experience.

Team member and molecular biologist Dr Eva Baxter said the Ride is hugely rewarding, with enormous camaraderie between participants, crew members, volunteers and supporters at cheer stations dotted along the route.

‘I’m looking forward to the enthusiasm, the laughter, and of course the cycling,’ Eva said.

‘The greatest inspiration though comes from the cancer survivors who get on a bike to ride 200 km after having undergone chemotherapy, radiotherapy and/or surgery—they are the real heroes of the event.’

The 2015 Rio Tinto Ride to Conquer Cancer will take place on 15 and 16 August. To register to ride visit br15.conquercancer.org.au

In 2014 a total of 1124 riders raised $3.8 million for research.

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More information about QSkin is available at qskin.qimrberghofer.edu.au

Skin cancer genetics

Scientists at QIMR Berghofer are hoping to collect more than 43 000 saliva samples over the coming months as part of the QSkin project.

The project follows thousands of Queensland participants over 10 years in order to develop a full picture of skin cancer trends and costs.

A major genetics study is underway as part of QSkin, led by Professor David Whiteman. The genome-wide association study (GWAS) is a long-term investigation into the burden of skin cancers in Queensland.

A simple procedure using the DNA kit pictured on the right will allow researchers to scan complete sets of DNA from large numbers of people to find genetic markers for particular diseases.

The ultimate aim of QSkin is to develop a tool doctors can use to predict a patient’s likelihood of developing skin cancers, so that those at high risk can be offered regular skin checks to help catch and treat problems early.

More information about QSkin is available at qskin.qimrberghofer.edu.au
Wheezing, breathlessness, chest pain, coughing and extreme fatigue can make life a daily struggle for people suffering from asthma.

The disease affects one in 10 Australians—and tragically will cause one death every day.

‘Sometimes I can’t breathe or stop coughing and it makes me feel helpless,’ said Tiana, a long-time asthma sufferer and mother of three.

‘I’m scared if something does happen to me that I won’t be there to care for my husband and children.’

Research at QIMR Berghofer is giving new hope to people like Tiana and two of her children who have also been diagnosed with asthma.

As part of a world-first clinical trial led by QIMR Berghofer, patients will have their asthma induced under safe conditions to test a new treatment.

It follows the discovery by the head of QIMR Berghofer’s Asthma Genetics laboratory, Dr Manuel Ferreira, that a specific gene is particularly active in asthma patients, increasing the immune system’s response to the protein IL-6.

Patients in the trial will be given a drug that inhibits IL-6 or a placebo—and the severity and duration of their induced asthma episode will be monitored and recorded.

The medication being tested is already available for rheumatoid arthritis.

The study offers the promise that better ways of controlling her own asthma—and that of her children—are on the way.

‘It would be amazing if there was a drug that meant I wouldn’t have to live each day with the worry of a potential attack, or to have to watch the kids as they wheeze and try to catch their breath,’ she said.

Dr Ferreira established the Australian Asthma Genetics Consortium in 2008, a collaborative project that aims to improve asthma management through genetic research.

‘Asthma affects so many Australians and can have such a big impact on lives,’ Dr Ferreira said.

‘We would be thrilled if we could secure additional funding so we can ensure any breakthroughs are made accessible to patients as quickly as possible.’

Dr Ferreira’s research has been published in prestigious scientific journals, including The Lancet, Nature and Nature Genetics.

For more information visit www.qimrberghofer.edu.au/appeal
Early adulthood is a period marked by changes and growth physically, mentally and emotionally. It’s also the risk period for the emergence of psychiatric disorders, such as depression, anxiety and personality disorders—with more than 75% of cases commencing before age 25.

If left untreated, mental health problems can become worse over time, affecting a teen’s school performance, social and emotional life. The sooner these disorders are recognised, the greater the likelihood that treatment will be effective.

The onset of these disorders often coincides with a time of rapid brain development but very few studies have detailed the effects of brain changes on this sensitive period.

Now, a team led by QIMR Berghofer’s Dr Margie Wright is using advanced imaging to record developmental changes in the brain through early and mid-adolescence in a large sample of Australian twins. They will also track changes in cognition, social behaviour and mental health.

The use of twins provides critical knowledge of the role of genes and environment on normal adolescent brain development and how developmental processes during adolescence go awry.

Dr Wright says: 'The study will help to explain why adolescence is not an equally vulnerable period for all individuals.'

‘This has the potential to improve our understanding of development and depression, and the numerous emotional and behavioural health problems that emerge during adolescence.’

QIMR Berghofer scientists have found that a common problem for diabetic patients can significantly increase their risk of cardiovascular disease and death.

Health authorities predict the number of Australians diagnosed with diabetes will reach 3.5 million by 2033, with an estimated 275 Australians developing type II diabetes every day.

The body’s most important fuel is glucose, a type of sugar. When most foods are digested, sugar is released and ends up in the bloodstream as glucose. The body, particularly the brain and nervous system, needs a certain level of glucose to function, not too much and not too little. Hypoglycaemia occurs when a person’s blood sugar level is abnormally low.

Professor Sanjoy Paul has recently led an international study which found episodes of hypoglycaemia, or abnormally low blood sugar, placed patients at greater risk of heart attacks and strokes.

‘Hypoglycaemia can be a problem for patients using insulin, which include those with type I and long-term type II diabetes,’ Professor Paul said.

‘In people with type 2 diabetes, the study found that hypoglycaemic episodes increased the risk of cardiovascular disease by between 50 and 70 per cent.’

‘Hypoglycaemia was also associated with about a two-fold increased risk of death in these people.’

Factors including body mass index (BMI) and previous history of cardiovascular problems also affected patient outcomes.

Another study by Professor Paul has identified factors associated with the risk of hypoglycaemia in type 2 diabetes patients treated with insulin and other anti-diabetes drugs.

Scientists at QIMR Berghofer are now working to develop a method to predict hypoglycaemia onset in patients treated with insulin, to reduce complications.

These studies published in Diabetes Care and Journal of Diabetes involved collaboration with the University of Leicester in the United Kingdom, Danish insulin manufacturer Novo Nordisk, and Astra Zeneca of the USA.
A Day on the Farm raises $40k for melanoma support

More than 1000 people descended on the Fassifern Valley farm of the late Peter Wehl last September to celebrate his life.

After Peter’s passing away from melanoma last February, his family, wife Heather, daughter Alice and sons Jeffrey and Robert, wanted to bring meaning to terrible personal tragedy with a fun family event raising much-needed funds for melanoma research and care.

The family farm at Rosevale, west of Brisbane, was a hub of activity. Children enjoyed climbing over farm machinery, watching fire brigade demonstrations, hay rides and the petting zoo, along with usual amusements like the jumping castle.

Alice said organising A Day on the Farm was a true family affair, with plenty of helpers.

‘Mum and Dad had been on the farm for 35 years so people came far and wide to lend a hand and support us—something Dad always did for others in the local community,’ Alice said.

‘The Rotary and Lions clubs helped out and local businesses and families donated prizes and equipment.’

The family was overwhelmed by the result—with the $40 000 raised to be shared between QIMR Berghofer and the Melanoma Patients’ Association.

Brisbane was a sea of pink when participants in the Weekend to End Women’s Cancers took to the streets last October. Thank you to walkers and their supporters who raised over $2 million for QIMR Berghofer’s and RBWH’s research into the diagnosis, treatment and prevention of women’s cancers.

Gold Coast artist Margaret Nicholas has donated a stunning painting to QIMR Berghofer. An avid art student since high school, it was not until Margaret’s youngest child started kindergarten that she could pursue her passion more seriously. She has now sold hundreds of paintings, and the Institute will be proud to offer the water colour ‘Gumnut Fantasy’ at a fundraising auction later this year.

If you would like to find out more about fundraising for QIMR Berghofer, contact Anna Welch on 07 3845 3747 or Anna.Welch@qimrberghofer.edu.au
Free public forum – Things that make you go ‘Ew!’
Wednesday, 11 March 2015
Researchers will present on our ‘creepy crawly’ research areas. Refreshments will be served from 3:30 pm with the forum commencing at 4:00 pm and concluding at 5:30 pm. Please RSVP by phoning 1800 993 000.

A tribute to Harold Blair AM
11 April 2015
Ipswich Civic Centre

Free public forum – Cancer
20 May 2015

Free public forum – Aboriginal and Torres Straight health
7 July 2015

Rio Tinto Ride to Conquer Cancer
15-16 August 2015

QIMR Berghofer Gala Dinner
31 October 2015

Weekend to End Women’s Cancers
24-25 October 2015

A tribute to Harold Blair AM
On Saturday April 11 the Ipswich Civic Centre will honour the 90th birthday of Australia’s first Indigenous international opera star, Harold Blair AM.

Born in 1924, Mr Blair was a tenor and Aboriginal activist. Deborah Cheetham and the Short Black Opera Company will headline accompanied by special guest artists William Barton, Tim McCallum and Len Mason.

Proudly presented by the Rotary Club of Fassifern Valley Inc, all proceeds from the event will benefit QIMR Berghofer Medical Research Institute and the Indigenous Literacy Foundation.

Tickets on sale from www.ipswichciviccentre.com.au or by phoning 07 3810 6100.