

Malaria Breakthrough

The World Health Organisation (WHO) states that about 40 per cent of the world's population is at risk of malaria. Of these 2.5 billion people at risk, more than 500 million become severely ill every year and more than one million die from the effects.

Malaria is a life-threatening disease caused by parasites transmitted through the bites of infected mosquitoes. It is also preventable and curable.

One in five childhood deaths in Africa are due to the effects of the disease and every 30 seconds a child dies from malaria.

A group of Menzies Research Institute scientists have made a breakthrough they hope will lead to a new treatment for malaria. They have discovered that platelets found in the blood are a new way the body uses to defend itself against malaria.



Dr Brendan McMorran and Professor Simon Foote

Director of Menzies, Professor Simon Foote and Senior Research Fellow, Dr Brendan McMorran, along with collaborators at the Walter and Eliza Hall Institute (WEHI), Melbourne, have shown platelets play a helpful role early in the infection.

They have found platelets – best known for plugging damaged blood vessels – kill the malaria parasite during the early stages of a malarial infection.

These findings were recently published in the February 6th issue of the prestigious scientific research journal, *Science*.

“What we have found in our studies is that platelets were

binding to the infected red blood cells during the early stages of infection, and this binding resulted in the killing of the parasites inside the red cell,” Dr McMorran said.

“We believe the platelet probably contains compounds or factors that are able to target and kill the parasite. Our next step is to identify what these factors or compounds are and see if any of those can be developed into an anti-malarial therapy.”

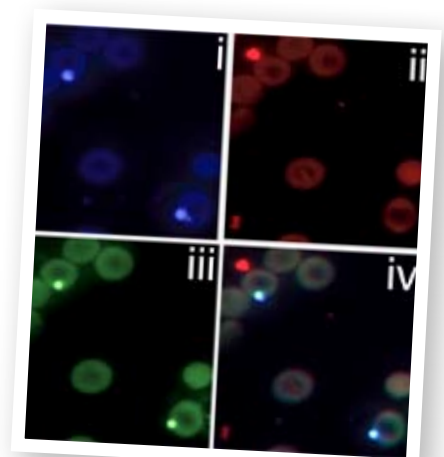
Most of the drugs we use today are becoming useless because of the problem of drug resistance, in a similar way to a lot of bacteria developing antibiotic resistance.

Professor Foote said it is imperative we continue this research, in the hope we can significantly contribute to the global fight against malaria.

Experiments with cultured red blood cells also showed platelet inhibitors, like aspirin, removed the lethal effects that platelets have on the malaria parasites.

“It may not be wise to use aspirin to bring down fevers in children suffering malaria,” Professor Foote said. “The use of aspirin and the potential harm it may have on malaria infection needs to be further investigated.”

The current three-year study is approaching the end of the funding period. The Menzies Research Institute is seeking further grants and assistance for the continuation of this ground breaking and important research.



Parasites within platelet-bound red cells are dead or dying.

Fluorescent staining was used to detect (i) *Plasmodium falciparum* parasites within red cells (blue stain), (ii) human platelets bound to infected red cells, and (iii) fragmented parasite DNA, as a marker of parasite death. Panel (iv) is a merged image of (i)-(iii) showing that parasites within platelet-bound cells are dead or dying.

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Director's message



Welcome to the first edition of the Menzies Research Institute *Bulletin* for 2009. As we look forward to the year ahead, we would like to take the time to reflect on the deep tragedy and loss of the Victorian Bushfires. The team of staff, students and volunteers at Menzies send our heartfelt condolences to all those who have lost loved ones, their homes, pets and livelihoods.

The tragedy has once again shown the indomitable spirit of the Australian people to pull together in a time of need. As the country works together to contribute goods, services and much needed cash to those in need, we at Menzies remain extremely grateful for the generosity that so many people have shown us over the past 21 years.

Our twenty-first birthday celebrations will be underway later in the year and we will finish off the year with the opening of the new building in November.

I'd like to congratulate and welcome our new research fellow, Dr. James Sharman who joins us this month. Dr Sharman was recently awarded a \$1 million, five-year fellowship from the University of Tasmania to fund a cardiovascular research program here at Menzies.

We are looking forward to the challenges and opportunities that 2009 will bring. We continue to strive for local research with global significance and we humbly acknowledge our research is thanks to you.

Foot

Professor Simon Foote

A joint affair



Cameron, Duncan and sister Lauren

Arthritis is the major cause of disability and chronic health problems in Australia, with 3.85 million Australians affected by the condition. Locally, arthritis affects over 20 per cent of Tasmania's population. This equates to approximately 100,000 Tasmanians.

Arthritis is the name given to a group of over 100 medical conditions that affect the musculoskeletal system, specifically joints. These conditions damage joints, usually resulting in pain and stiffness.

Ankylosing spondylitis (AS) is a rheumatic disease that causes arthritis of the spine and joints of the lower back, and can cause inflammation of the eyes, lungs and heart valves.

AS affects 1 in 200 Australians and occurs in twice as many men as women. AS usually has its onset between the ages of 16 to 35. The cause of AS is unknown but there appears to be a strong genetic link.

AS can vary from intermittent episodes of back pain that occur throughout life to a severe chronic disease that attacks the spine, peripheral joints and other body organs, resulting in severe joint and back stiffness, loss of motion and deformity as life progresses.

Cameron Brooke was diagnosed with AS at the age of eighteen. Cameron was familiar with AS, he watched his younger brother Duncan suffer from the disease since he was 12 years old.

"People think arthritis is an old people's disease but it's not, young people can get it too" said Cameron.

Unlike Duncan, Cameron instantly met the criteria to receive medication. While Cameron's condition immediately improved, Duncan struggled daily from pain, stiffness and exhaustion. He waited an agonising eight years to be eligible for the medication he needed.

Cameron says this was one of the most difficult experiences he ever faced – watching Duncan suffer while he could lead a fairly normal life soon after

his own diagnosis.

"It's really tough to see your children in a situation like this," said mum Lynn. "The whole experience has been extremely difficult and life changing."

Menzies' Dr Jane Zochling and the State Government's Dick Butfield Research Fellow is considered one of four ankylosing spondylitis experts in the country.

Dr Zochling recently instigated three new Tasmanian participant-based studies at Menzies, investigating three forms of arthritis – namely AS, scleroderma and psoriatic arthritis.

AS is the fourth most common arthritis in our society, but often goes unrecognised until years after the first symptoms appear.

Menzies has set up the Tasmanian Ankylosing Spondylitis Study (TASS) to research AS numbers in Tasmania, establish how prevalent the disease is, improve early diagnosis, and identify what characteristics may suggest a good or bad long term outcome for AS sufferers.

"By identifying AS patients who may do poorly in early diagnosis, we are able to intervene with appropriate treatments and make a difference in these people's lives," says Dr Zochling.

Cameron is now 23 years old, leads a full and active life and is positive about his future. He recently bought a boat, started waterskiing again and received a promotion at work.

Duncan's life has improved dramatically since he began the medication. His symptoms flare-up, but the pain has definitely improved over time.

Menzies is currently seeking suitable candidates with AS, scleroderma or psoriatic arthritis to take part in our new participant-based studies. If you are interested in finding out more please contact Trish Lewis, Research Officer on 03 6226 7776 or email patricia.lewis@menzies.utas.edu.au.

New Menzies' members

It is always a pleasure to reward success. The Menzies Research Institute would like to congratulate two Senior Research Fellows, Dr Brendan McMorran and Dr Jo Dickinson who became Members of Menzies in January 2009.

Dr McMorran works with Professor Simon Foote in the Genetics laboratory. His major research focus is on malaria and understanding ways in which the body naturally protects itself. Brendan has a particular interest in the role platelets appear to play in killing the malaria parasite during early blood stage infection. He recently had a paper titled *Platelets Do Their Part Against Malaria* published in the prestigious journal, *Science*.

"Receiving Menzies Membership is an honour. I'm grateful to be recognised for my leadership roles at the Institute and my research achievements," Dr McMorran said.

Dr Dickinson is a Senior Research Fellow and The Cancer Council Tasmania Research Fellow, who works in the area of Cancer and Genetics. Dr Dickinson leads a research team investigating the genetic basis of hereditary cancers. Her research focus is on understanding the genetic basis of prostate and blood cancers.

"I am very pleased to be recognised for my research achievements by receiving



Dr Brendan McMorran

Menzies membership. I look forward to contributing further through leadership and research outcomes to the Menzies team, in addition to boosting the representation of women at this level in medical research," Dr Dickinson said.

Her research projects include the Tasmanian Familial Prostate Cancer Genetics Study. This study will help identify the genes that contribute to prostate cancer, the most diagnosed non-skin cancer in Tasmanian men. Dr Dickinson's team has identified a gene significantly associated with the risk of developing prostate cancer in Tasmanian men.

Her group has recently been invited to join the international prostate genetics research consortium "PRACTICAL" involving a collaboration with 21 other groups world-wide in the search for genes associated with prostate cancer risk.

Biobank for Tasmania

The Menzies Research Institute is hoping to establish the first biobank in Tasmania.

A biobank is a collection of human tissue and genetic data derived from that material.

Genetic data is fundamental to Menzies research into complex human diseases. A biobank would enable us to work towards integrating the genealogical information in Tasmania with other data, so as to be able to find susceptibility genes for many of the common diseases in our community.

"Collecting tissue from people with disease and storing this in a biobank, as well as having less restricted access to the DNA of Tasmanians, will allow us to more readily identify genes underpinning diseases such as cancer, bone and joint disease and diabetes," Professor Foote said.

The Centre for Law and Genetics, UTAS, is working with Menzies in the development and governance of the biobank to ensure that world's best practice is achieved in terms of the ethical, legal and social implications of the project.

Tasmanians were asked for their opinions on the collection and use of human tissue for medical research, at a public debate in Hobart in February. Dean of Law, Professor Don Chalmers said it was important public opinion was carefully respected and addressed.

There are a number of biobanks being set up around the world, and the National Health and Medical Research Council is preparing guidelines for this project.

Researcher profile: Dr Changhai Ding

What is the current focus of your research?

We are focusing on the use of magnetic resonance imaging (MRI) as an assessment technique to determine the development and progression of osteoarthritis. Currently, the cause of osteoarthritis is unknown and there is no curative treatment. Using MRI, we will validate knee structural assessment over five years in older people, and determine environmental and genetic factors on knee structural changes. We are also interested in exploring the roles of inflammatory cytokines (proteins) and obesity related hormones in osteoarthritis. Our aim is to develop a practical tool which can be used in the diagnosis and management of osteoarthritis.

What are some of the recent findings from your work?

We've found that sunlight exposure and vitamin D levels are associated with decreased knee cartilage loss in older



Dr Changhai Ding

people, implying vitamin D supplementation may prevent and/or retard cartilage loss in knee osteoarthritis. We also examined the possible effects of non-steroid anti-inflammatory drugs (NSAIDs) uses on knee structural changes in older people and found non-selective NSAIDs have negative effects while selective cyclooxygenase (COX)-2 inhibitors have beneficial effects on knee cartilage. This suggests selective COX-2 inhibitors may be superior to conventional NSAIDs in terms of slowing osteoarthritis progression.

What is the biggest challenge in your area of research?

Measuring disease progression in osteoarthritis. Some dietary supplements such as glucosamine and chondroitin, which are widely used in the management of osteoarthritis, are regarded to have disease-modifying effect. However, this has not been clinically proved. To make real progress in the management of osteoarthritis we need to develop clinically practical detecting methods. MRI techniques allow us to diagnose some risk factors of osteoarthritis and this research promises to apply in clinical practice in the near future.

What do you enjoy doing away from the research?

I enjoy playing tennis and table tennis. I have started to enjoy watching Australian rules football and cricket, which I never watched when I was in China.

Rising star



Jacqueline Leung at work in the laboratory

Menzies PhD student Jacqueline Leung is the recipient of the Adam J Berry Memorial Award from the Australian Academy of Science. The award will give Jacqueline the opportunity to visit with Professor R Douglas Fields at the Laboratory of Developmental Neurobiology, National Institute of Child Health and Human Development in the United States.

Jacqueline is a first year Menzies PhD student, working as a research assistant in the Neuro Repair Group. This award will enable Jacqueline to travel to the US for a twelve week study tour in 2009.

Jacqueline is looking forward to studying with Professor Fields as they share an interest in the relationship between glial cells (non-nerve) and neurons (nerve cells) in the central nervous system (CNS).

"My major aim ... will be to learn an advanced in vitro tissue culture system that will allow me to enhance my PhD studies on the action of the neuroprotective protein, metallothionein, in a multicellular environment after CNS injury. To the best of my knowledge, there are no laboratories in Australia that currently use these specialised techniques," she explains.

Jacqueline is looking forward to the opportunity to study with Professor Fields and bring new techniques back to Tasmania. We wish her well in her endeavours.

Thank you to our valued supporters

Many thanks, to all our donors for your ongoing support of Menzies' local research with global significance.

Listed below are new Menzies' individual and community supporters for November 2008 – January 2009.

Individual Donors

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Listed below are our Everyday Angels, our monthly supporters who make regular gifts to Menzies.

Everyday Angels

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The Menzies Research Institute is deeply indebted to ALL our generous supporters who kindly donated to our research. Thank you.


research | thanks to you

Community support you can bank on

The Westpac Huon Contact Centre in Launceston is an inspirational example of what can be achieved in the workplace for the benefit of the community.

"We hold all kinds of fundraising activities throughout the year," says Huon charity group member Di Courto. "We decide what charities will be the beneficiaries by ballot at the beginning of the year, and then we get to work." Charities are elected by the 300 plus staff.

"We raise money through a variety of things like plain clothes days. We also provide practical support for some organisations – for example, we collected items for the RSPCA in December. The foyer at the centre was full of dog food, blankets and other things that were desperately needed."

In 2008 the centre staff raised over \$8,000 that was distributed to the nominated organisations. "We are very fortunate that every dollar raised by the staff is matched by Westpac. This means



Dianne Courto, Karen Murphy and Jeremy Hollister

that the charities receive an added bonus at the end of the financial year."

Menzies is very grateful for the generous support of the Westpac Huon Contact Centre. The \$700 raised by staff,

coupled with the matching payment from Westpac, will help us continue our groundbreaking research. Thank you everyone who participated in fundraising activities for Menzies.

Veolia supporting our future researchers



Barbara Zimmerman with Veolia's Group General Manager Tasmania, Ron Ward and Sales and Marketing Manager, Michelle Mizzen

Veolia Environmental Services is one of Menzies Research Institute's most loyal and generous supporters. Veolia is the largest waste-management operator in Tasmania.

Ron Ward, Group General Manager Tasmania, has proactively managed philanthropic giving at Veolia since he

arrived in the state in 2000. He sees it as just one element of an overall program that gives substance to the company's policy of sustainable development and is committed to being socially responsible.

When asked why Veolia supports Menzies, Ron said, "It is part of



Veolia's philosophy to give back to the communities in which it does business. Menzies makes a positive contribution through medical research to Tasmanian society and indeed beyond that, to the whole world. That fits with Veolia which is after all an international organisation."

Veolia is one of four inaugural sponsors of scholarships for young researchers doing Honours projects at Menzies. Veolia is hoping that by supporting a researcher, "We will be part of funding a cure." Menzies is very grateful to Veolia for its years of major support.

If you or your company would like to join Veolia in supporting a young researcher, please ring Menzies' Development Manager on 03 6226 7782 or email Barbara.Zimmerman@menzies.utas.edu.au.

Menzies will be profiling our four scholarship supporters in future issues of the *Bulletin*.



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research | thanks to you

Substantial progress on site



Photomontage of Liverpool St entrance

The new Menzies Research Institute building is continuing to make substantial progress. In the last few months there have been significant changes on the site with all concrete and in-ground works now completed, and lift and stair 'core' structures installed. Many of the precast external facade panels and internal circular columns have been installed. This allows passers-by to gain a good idea of how the iconic facade will look once completed. The panels of the new building are made of exposed aggregate precast concrete in a sandstone colour. Services installation to level one has also commenced.

Current progress now revolves around the construction of the top floors and it is anticipated the external structure and framework will be completed by March 2009. The windows will be curved to fit the curved panels and this complex work is anticipated to be finalised by May 2009.

A Transitional Planning group - comprising Menzies, School of Medicine and Faculty of Health Science staff - has been formed to plan and prepare for the relocation from existing sites to the new building. A Transitional Project



Photomontage, corner of Campbell and Liverpool Streets

Officer has been appointed to assist with undertaking these tasks. The transition tasks include procedure inductions, operational commissioning, new systems development and implementation, relocation of existing equipment and furniture, and reviewing the administration

and support services for both Menzies and the School of Medicine to ensure the required staff and systems are in place to support the efficient operation of the new building.

The project is due for completion in late 2009.

More than flowers

In Memorium November 2008 – January 2009

We gratefully acknowledge gifts made in honour of:

Mrs Helen Carlsensen
Mrs Anita Higginson
Mr Brian Raymond Hunn
Mr Bruce Norman James
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Mr David Vincent McCann
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Society for the Future



"Remember Menzies Research Institute in Your Will"

If you have made a gift in your Will for Menzies Research Institute, please contact Barbara Zimmerman on 03 6226 7782 or email Barbara.Zimmerman@menzies.utas.edu.au so we may extend our gratitude.

Bequests save lives by funding new research projects.

Thank you!



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Please send me information on remembering Menzies in my Will.

Thank you for your support.

Please post to:
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