

Menzie's  
Research  
Institute

Annual Report 2013

A network diagram with nodes and lines on a dark background. The nodes are represented by circles of varying sizes and colors (white, light gray, dark gray, and red). The lines are thin and connect the nodes, creating a complex web of relationships. The diagram is positioned in the upper left and center of the page, with some lines extending towards the right side.

To conduct **innovative**,  
world-class medical research  
to improve human **health**  
and wellbeing

Our **ultimate** goal  
is to **cure** or prevent disease  
and **save lives**



*The new Medical Science Precinct includes state-of-the-art laboratories where ground-breaking research takes place.*

# Contents

- 04** About Us
- 06** Chairman's and Director's Report
- 08** Research Highlights
- 18** Education and Training
- 20** Global Collaborations
- 22** Community Engagement and Philanthropy
- 24** Financial Report
- 26** Board and Senior Management Team
- 28** More Information

# About Us

## Who we are

Menzies Research Institute Tasmania, an institute of the University of Tasmania, is one of Australia's leading health and medical research institutes and is recognised worldwide for its research excellence.

**Menzies is dedicated to improving health outcomes for all Tasmanians, today and in the future.**

**Our ultimate goal is to cure or prevent disease and save lives.**

## Our research

Menzies is renowned internationally for its innovative research that utilises the unique competitive advantages Tasmania offers, including our island geography, stable population and extensive genealogical records.

The Institute has the ability to perform high quality basic, clinical and population health research. Research at Menzies takes a bench-to-bedside approach aimed at improving patient care and clinical outcomes for the community.

Menzies offers a dynamic and stimulating scientific environment where scientists share ideas and knowledge to facilitate faster and more effective research results.

## Our key research areas

Our research is structured around five key research themes: Public Health and Primary Care; Neurodegenerative Diseases/Brain Injury; Cardio-Metabolic Health and Diseases; Musculoskeletal Health and Diseases; and Cancer, Genetics and Immunology.

### Public Health and Primary Care

Our Public Health and Primary Care theme seeks to better prevent and manage important population health problems. Projects address a broad range of conditions including cardiovascular disease, type-2 diabetes, cancer, multiple sclerosis and depression. Several projects are

investigating how lifestyle factors (e.g. smoking and physical activity), obesity and hormones in childhood and early adulthood affect the risk of developing disease later in life. Research in this area includes epidemiology, behavioural science, environmental health, biostatistics and health economics.

Established partnerships with the Tasmanian State Government and management of the Tasmanian Cancer Registry and Tasmanian Data Linkage Unit ensure a focus on applied research.

### Neurodegenerative Diseases/ Brain Injury

Using cutting-edge tools, our neuroscientists aim to understand the mechanisms underlying the brain's response to trauma (e.g. road accidents and falls) and diseases such as dementia (including Alzheimer's disease), multiple sclerosis, Parkinson's disease and motor neuron disease. This research will assist in the development of new ways to diagnose, prevent or treat these devastating disorders.

### Cardio-Metabolic Health and Diseases

The primary aim of this theme is to reduce the burden of cardiovascular and metabolic disease on our community. The group uses interventions targeted at identifying and preventing the development of obesity, insulin resistance, type-2 diabetes, hypertension and heart disease. Areas of interest include blood pressure assessment, assessment of large and small blood vessel function, and cardiac imaging in heart disease. Research techniques from laboratory models, clinical and population health studies and clinical interventions are used to discover new ways to prevent the progression of cardio-metabolic disease.

### Musculoskeletal Health and Diseases

Research in this area optimises Tasmania's unique population characteristics to investigate

musculoskeletal disease, with a particular emphasis on osteoarthritis, osteoporosis and ankylosing spondylitis. Epidemiological research into musculoskeletal disease helps us understand the impact of arthritis and other musculoskeletal conditions on the individual and the community, so the best medical care can be developed and delivered where needed.

### Cancer, Genetics and Immunology

The Cancer, Genetics and Immunology team's work is aimed at identifying the underlying causes of complex disease and the drivers of disease progression. These complex diseases include eye disease, cancer and immune disorders. We are using innovative technologies to identify the genetic changes which underly risk of developing a disease or influence disease progression, in addition to laboratory-based approaches to understanding the biology of these diseases. Our work includes studies of several cancers including prostate and blood cancers; eye diseases such as keratoconus and glaucoma, the devil facial tumour disease, and immune disorders such as multiple sclerosis and lupus.

## Making discoveries

In 2013, Menzies celebrated its 25th anniversary. Over the 25 years, significant breakthroughs have been made by our scientists into the cause, prevention and treatment of a number of diseases impacting Tasmanians and people around the world.

Menzies' impressive record of research discoveries includes:

- The link between babies' sleeping position and sudden infant death syndrome (SIDS)
- Genetic markers linked to men's risk of developing prostate cancer
- The potential irreversible impact of childhood exposure to parental cigarette smoke on cardiovascular health later in life



- Association of higher vitamin D levels with a lower relapse risk in multiple sclerosis
- Potential avoidance of increased cardiovascular risk from childhood obesity if obesity in adulthood is avoided
- Remodelling of nerve cells in undamaged parts of the brain in response to acquired brain injury
- Ability of platelets found in the blood to kill the malaria parasite during the early stages of a malarial infection.

### Our history

Menzies Research Institute Tasmania, formerly known as the Menzies Centre for Population Health Research, was established in 1988 by the University of Tasmania with support from the Menzies Foundation and the Tasmanian Government. Menzies was primarily established to address the health issues facing the Tasmanian community.

From modest beginnings, Menzies quickly gained an international reputation for its innovative work into the link between babies' sleeping

position and sudden infant death syndrome (SIDS). From this work our research expanded and population health and epidemiological research programs were developed. In 2006, we expanded our focus to include both clinical and basic science.

In 2010, the University of Tasmania opened a new \$58 million world-class medical research, clinical and education facility known as Medical Science 1 (MS1).

2013 was a notable year. Menzies celebrated its 25th anniversary and, in December, a second facility named Medical Science 2 (MS2) was also officially opened at a cost of \$90 million. Together, MS1 and MS2 make up a significant part of the University of Tasmania Medical Science Precinct, along with the University's Domain campus, which contains the School of Nursing and Midwifery.

These facilities will enable Menzies to further expand our highly innovative research program, attract more internationally renowned researchers, make more discoveries, and intensify

the pace of turning our discoveries into better treatments and health practices for the Tasmanian community.

### How we spend our donor funds

Every donation received by Menzies, whether big or small, goes towards research undertaken in Tasmania. Donations may fund research projects, provide student scholarships, contribute to researcher salaries, or finance equipment purchase. Donations may support an initial research project that later attracts government funding. This is very important because government and competitive funding bodies tend to fund established projects, which can make it difficult to get new research off the ground.

**Gifts to Menzies Research Institute Tasmania are an investment in a healthier future for all Tasmanians.**

# Chairman's and Director's Report

In 2013, Menzies celebrated a significant milestone in its history with two landmark events: the celebration of our 25th anniversary and the official opening of our new home in the University of Tasmania's Medical Science Precinct. Our innovative scientific work resulted in significant findings across all five of our key research areas. At the end of the year, we farewelled Dr Dan Norton AO as Chair after 9 years in the role. Mr Bruce Neill, a long-time supporter of Menzies, will chair the Board from 2014.

## Celebrating 25 years

Our anniversary event in May showcased 25 years of research discoveries by our scientists into the cause, prevention and treatment of diseases impacting on Tasmanians and people around the world. We hosted a debate moderated by award-winning science writer and broadcaster Bernie Hobbs on the topic: *Vitamin D: Should a regular screening program be introduced in Australia?* Top researchers entered the fray – Graeme Jones, Bruce Taylor, Ingrid van der Mei and Tania Winzenberg. With more than 400 guests attending, the event sold out and was testament to the excitement accompanying our celebration and the importance of Menzies' research to all Tasmanians.

Menzies has a bright future thanks to the incredible support of the Tasmanian community. Over the next decade, our research activity will continue to focus primarily on the major diseases affecting our island population,

including arthritis, cancer, dementia, diabetes, heart disease, mental health and multiple sclerosis.

## Opening of Medical Science Precinct

The University of Tasmania Medical Science Precinct was officially opened in December. The iconic MS1 and MS2 stages of the development provide state-of-the-art facilities for the Menzies Research Institute Tasmania and the University's School of Medicine. The precinct also encompasses the University's Domain campus, which contains the School of Nursing and Midwifery, and is situated adjacent to the Royal Hobart Hospital. Those working in the precinct inhabit the cutting edge of health and medical research and teaching. The unveiling of the precinct was an important step towards consolidating these activities and providing the platform to build upon into the future.

The Medical Science Precinct was made possible by funding from the Australian Federal Government through the Health and Hospitals Fund (\$44.7m), the Capital Development Pool grant (\$12m) and the Better Universities Renewal Fund (\$11.5m). The Tasmanian State Government contributed \$24m in funding and in-kind support. Private donors and philanthropic organisations including The Atlantic Philanthropies and The Select Foundation have contributed a total of \$21.5m to the project. The University of Tasmania contributed \$34m.

## Research excellence

Modern medical research is very much characterised by international collaboration, data and resource sharing, as well as publication of research findings in peer-reviewed journals. Our researchers were key to many interesting and significant findings in 2013:

- Deaths from all causes, but particularly cardiovascular and respiratory disease, can be significantly reduced with a decrease in wood smoke. The findings, published in the *British Medical Journal*, have enormous implications for future global health.
- Significantly less medication is needed to achieve healthy blood pressure levels in patients when treatment decisions are based on central blood pressure instead of upper arm blood pressure. This ground-breaking study was published in *Hypertension*.
- Children whose mother's iodine levels during pregnancy are mildly insufficient performed worse on literacy tests as 9-year-olds than their peers whose mothers had adequate iodine.
- The reason why Tasmanian devil facial tumour disease cells are not rejected when transferred between devils is that the cancer cells do not display 'immune recognition molecules'. The genes that code for these 'immune recognition molecules', however, were found still to be intact and could potentially be 'turned back on', which has implications for vaccine development.





*Dr Dan Norton, Chairman*

- A protein called amyloid precursor protein, which is indirectly responsible for causing Alzheimer's disease, is also responsible for the growth of new neurons (nerve cells) in the brain. Menzies' neuroscientists are now investigating how they can use the protein to encourage the brain to replace damaged nerve cells and reverse the brain damage caused by Alzheimer's disease.
- Correcting moderate vitamin D deficiency may stop or slow worsening of knee and hip pain in elderly people and reduce the need for joint replacement.

Grants received by the Federal Government for Menzies research totalled over \$4.82 million in 2013. Eight grants totalling \$3.85 million were awarded by the National Health and Medical Research Council. Two grants were awarded by the Australian Research Council (\$972,000) for research projects beginning in 2014.

### Donors

Donations to Menzies come in the form of funding for research, scholarships for students, salaries for researchers and money to purchase essential equipment. Numerous volunteers also give their precious time to assist us. Menzies is indebted to those who contribute so generously. Without their assistance, our ability to achieve our vision of building



*Professor Tom Marwick, Director*

a healthier future for us all would be much impaired, and we sincerely thank all those who show their faith in us by giving generously to the Institute.

### Key partners

We gratefully acknowledge major organisations that support our work, including the University of Tasmania, the University of Tasmania Foundation, The Atlantic Philanthropies, the Menzies Foundation, the Federal Government, the Tasmanian Government and the Royal Hobart Hospital. Menzies also works closely with the University of Tasmania Faculty of Health Science. For a full list of our generous supporters, please visit [www.menzies.utas.edu.au](http://www.menzies.utas.edu.au).

### Our people

Menzies continues its important work through our people – our staff, students and Board members. We thank our staff and students for their dedication to our mission of providing a healthier future, and for their determination and hard work. To our Board, we thank you for sharing your time and wisdom. We welcome the new Chairman, Mr Bruce Neill, who is well known to us and we look forward to working with him.

**Dr Dan Norton AO**  
Chairman

**Professor Tom Marwick**  
Director

### Dr Dan Norton AO

Dr Norton served as Chair of Menzies from 2004 to 2013, when he retired at the end of his term. In 2013 we were delighted that the University of Tasmania celebrated his considerable achievements by awarding him an honorary doctorate. Since that time he has also been honoured by appointment as an Officer of the Order of Australia (AO).

Dr Norton became the first chairman of the Menzies Research Institute when, in 2004, the University of Tasmania established new governance arrangements for the then Menzies Centre for Population Health Research and expanded its purview to carry out health and medical research that took on a bench-to-bedside and disease-prevention approach.

Under Dr Norton's strong leadership, Menzies has achieved major growth. Over the period of his chairmanship, the number of staff and students has trebled, income has increased from \$5 to \$14 million and the Medical Science Precinct, which includes the MS1 and MS2 buildings, has been constructed. Dr Norton was instrumental in bringing about these results.

Dr Norton is a fellow of the Australian Institute of Company Directors. He has brought his wisdom and governance skills to bear across a wide spectrum of interests and industries, including as Chairman of TasPorts, Chairman of TasNetworks, Deputy Chairman of TasWater and CEO of the Hydro Electric Corporation.

We thank Dr Norton for 9 years of exemplary leadership.

# Research Highlights

In 2013 Menzies continued to consolidate its reputation as one of the leading medical research institutes in Australia. Our research highlights included the following:

## Public Health and Primary Care

### Wood smoke and health

Dr Fay Johnston's paper on wood smoke and mortality showed that deaths from all causes, but particularly cardiovascular and respiratory disease, could be significantly reduced with a decrease in wood smoke. The findings, published in the *British Medical Journal*, highlight the potential for important public health gains from air quality interventions to reduce wood smoke pollution. The study has enormous implications for future global health.

### Childhood school engagement and adult educational and occupational achievement

A study published by Dr Seana Gall in one of the leading international educational research journals, the *British Educational Research Journal*,

found children's engagement with schooling, above and beyond their academic performance at school, predicts their level of education and occupation as adults. The research provides support for the importance of schools delivering a rich learning environment inside and outside the classroom to encourage student engagement in learning.

### Mild iodine deficiency in pregnancy linked to reduced educational outcomes in offspring

A study published by Dr Kristen Hynes' team in the *Journal of Clinical Endocrinology & Metabolism* found that children whose mother's iodine levels during pregnancy were mildly insufficient performed worse on literacy tests as 9-year-olds than their peers whose mothers had adequate iodine. The study found that children may continue to experience the effects of insufficient iodine for years after birth, providing support for the NHMRC's recommendation that pregnant women take daily dietary supplements containing iodine to prevent long-term neurological impairment of their children.

## Neurodegenerative Disease/ Brain Injury

### New target for Alzheimer's disease treatment

Dr Kaylene Young discovered that cells responsible for making brain insulation (oligodendrocytes) can be made and added to the central nervous system throughout a person's life. These insulating cells, which protect and prevent nerve cells from dying, are made from immature brain cells called OPCs (oligodendrocyte precursor cells). The team is now investigating ways to stimulate OPCs to produce more insulating cells, in order to repair the damage typically seen in the brains of Alzheimer's disease patients.

### Understanding the mechanism of traumatic brain injury

Dr Catherine Blizzard and Associate Professor Tracey Dickson have shown how nerve cells that are genetically engineered not to express a particular aspect of the cells' structure have a greatly reduced ability to respond to brain trauma and therefore are less likely to regenerate after an injury. This work

Dr Fay Johnston's research into the impacts of wood smoke on the Launceston community was published in the *British Medical Journal* in 2013.





Research by Dr Seana Gall published in 2013 found that children's engagement with school, rather than their academic performance, predicted their level of education and occupation as adults.

not only further reveals the mechanism of how the brain responds to traumatic brain injury, but also provides a new target for the treatment of traumatic brain injury.

### **New Alzheimer's disease discovery may lead to a cure**

Professor David Small and his team found that a protein called amyloid precursor protein (APP), which is indirectly responsible for causing Alzheimer's disease, may also play a key role in the development of a cure for the disease. They discovered that APP is responsible for the growth of new neurons (nerve cells) in the brain. The team is now investigating how they can use APP to encourage the brain to replace damaged nerve cells and reverse the brain damage caused by Alzheimer's disease.

### **Cardio-Metabolic Health and Diseases**

#### **A better way to manage high blood pressure**

This ground-breaking study by high blood pressure expert Associate Professor James Sharman was published in *Hypertension*. The study used, for the first time, central blood pressure to guide decisions on blood pressure treatment for people with high blood pressure. The main finding was that significantly less medication was needed to achieve healthy blood pressure levels when treatment decisions were based on central blood pressure, instead of upper arm blood pressure. The results of this study have received strong international attention, and a shift in the methods used to manage high blood pressure could be just around the corner.

#### **Reducing heart failure in our community**

A type of heart failure known as heart failure with preserved ejection fraction (HFpEF) accounts for 50 per cent of all heart failure, especially in the elderly. This type of heart failure has so far evaded effective treatment. This randomised trial led by Professor Tom Marwick tested the effects of treatment with ivabradine (a drug that reduces heart rate) on exercise capacity and cardiac function in patients with HFpEF. Patients receiving ivabradine showed an improvement of exercise capacity and cardiac function. This work was published in the world's premier clinical cardiovascular journal, *Journal of the American College of Cardiology*.

# Research Highlights

## Improving outcomes for heart disease patients

Aortic stenosis is a common heart valve disease that occurs with increasing age. Recently a form of this disease has been recognised that is easy to miss. In this international collaboration with investigators at Cleveland Clinic, USA, Professor Tom Marwick showed that patients who underwent aortic valve replacement in this setting had a better outcome than those for whom a 'watch and wait' policy was undertaken.

## Musculoskeletal Health and Diseases

### Vitamin D deficiency associated with change in knee and hip pain caused by osteoporosis

The study published in *Annals of the Rheumatic Disease* found that elderly

people who had vitamin D levels in the moderately deficient range (25 nmol/L or less) were more likely to have new or worsening knee pain over five years, and possibly hip pain over a shorter period, than those with mildly deficient or normal vitamin D levels. This study shows that correcting moderate vitamin D deficiency may stop or slow worsening of knee and hip pain in elderly people and reduce the need for joint replacement.

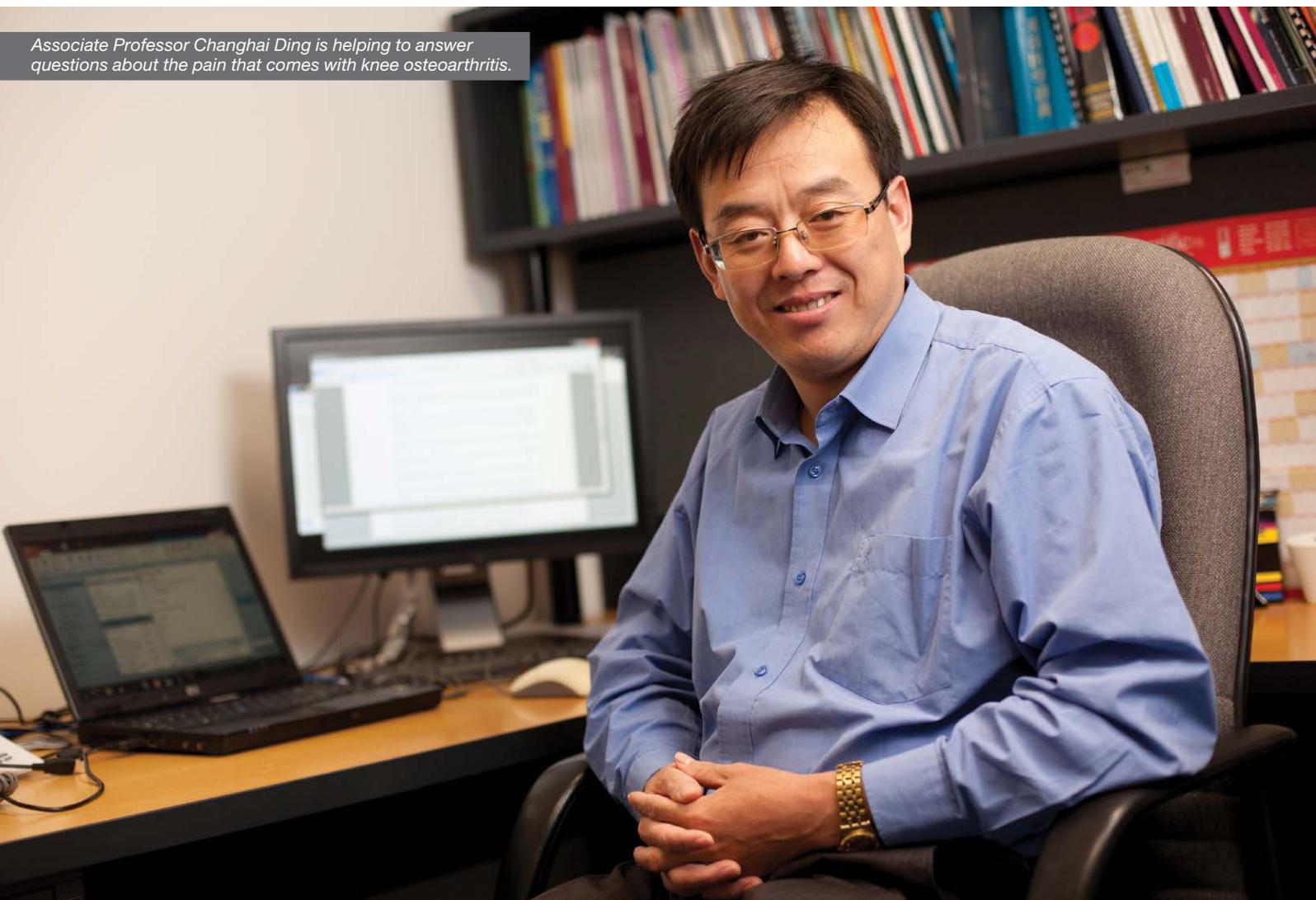
### Systemic inflammation associated with pain in osteoarthritis

This study, led by Associate Professor Changhai Ding, found that the condition known as systemic inflammation is an independent predictor of worsening knee pain of osteoarthritis sufferers over a five-year period. This implies that treatment targeting inflammation, such as anti-inflammatories, will improve pain.

## Reducing the risk of osteoarthritis

Obesity is a risk factor for osteoarthritis, and a specific gene variation has previously been strongly associated with the risk of osteoarthritis. This international study involving Menzies' researchers demonstrated that the effect of this gene variant on osteoarthritis is mediated through your body mass index (ratio of weight to height). Since obesity is modifiable, this is further support for the idea that preventing people from becoming obese might decrease their risk of osteoarthritis, and that if obese people lost weight the risk of them developing osteoarthritis in the future might decrease.

Associate Professor Changhai Ding is helping to answer questions about the pain that comes with knee osteoarthritis.



## Cancer, Genetics and Immunology

### Understanding biobanking

A Tasmanian community consultation was undertaken in 2013 that aimed to understand public opinion on biobanking and the ethical and legal issues it raises. Researchers use tissue samples and information stored in a biobank to learn more about chronic diseases such as cancer and diabetes. The outcomes of this research are currently being finalised. The results of this research will help inform national debate and policy making on biobanking.

### Saving the Tassie devil from extinction

An international collaboration involving Menzies' Professor Greg Woods found that the reason why devil facial tumour disease cells do not get rejected when transferred between devils is because the cancer cells do not display 'immune recognition molecules'. The good news is the genes that code for these 'immune recognition molecules' are still intact. These genes could potentially be 'turned back on' and the cancer cells would then become visible to the devil's immune system, resulting in an immune response to these foreign cells. The ability to turn on these 'immune recognition molecules' provides an important clue towards the development of a vaccine.

### Identifying genetic risk factors associated with prostate cancer

In collaboration with a worldwide genetics research consortium, Menzies' cancer genetics research team, led by Associate Professor Jo Dickinson, continues to make a significant contribution in this area. Recently the collaboration identified a new genetic risk factor that is associated with aggressive prostate cancer – a type of prostate cancer with a poorer prognosis. This discovery will help contribute to efforts to improve diagnostic tools and treatments for prostate cancer.



### Professor Graeme Jones – an exceptional contribution

Professor Graeme Jones was awarded 'The Premier's Tasmanian Scientist of the Year' for his outstanding contribution to the treatment of osteoarthritis. Furthermore, Professor Jones' research was included in the 2013 edition of the NHMRC's Ten of the Best Research Projects book. The selection is based on NHMRC Research Committee peer review of the 2011 Final Reports. The Ten of the Best Research Projects book highlights outstanding Australian researchers who are directly contributing to the prevention, diagnosis and treatment of health issues facing Australians.

Professor Jones is internationally recognised for his work on osteoarthritis treatments, and his trials have demonstrated the effectiveness of different treatments that have the potential to ease pain and reduce joint replacements.

Professor Jones and his team wanted to make a real difference to the quality of life for these patients, and to delay the onset of this disease in our ageing population. Supported by an NHMRC fellowship grant, Professor Jones and his team decided that the first step to understand the disease was by seeing how it developed, utilising exciting new advances in medical imaging. Through dual-energy X-ray absorptiometry they were able to examine bone density, and through magnetic resonance imaging they could see what was actually happening to the internal structures of the joint in osteoarthritis sufferers, long before these arthritic changes could possibly be detected using existing X-ray technology.

This allowed Professor Jones to develop a better understanding of the early factors that lead to the disease, and made it possible for the team to start designing trials of new therapies that would target these early changes.



# Research Highlights

## Publications

In 2013 Menzies researchers published 202 scientific papers, our highest number to date. As always, a number of these were published in leading journals such as the *British Medical Journal*, *Hypertension*, *Journal of the American College of Cardiology* and *The Lancet*.

## Ten of the best awards

In 2013, Menzies presented 'ten of the best' awards to its researchers for papers published in prestigious journals: nine were for junior to mid-career researchers, and the tenth for the paper that received the most citations in that year.

## Clinical category

### **Dr Ashutosh Hardikar, PhD scholar in the Cardiovascular Imaging Group**

'Surgical thresholds for bicuspid aortic valve associated aortopathy' published in *JACC Cardiovascular Imaging*.

This is a ground-breaking paper that points out the lack of clinical evidence in support of the current guidelines for aortic valve surgery, and this work will be used to correct the current, overly aggressive posture.

### **Dr Martin Schultz, Postdoctoral Research Fellow in the Blood Pressure Research Group**

'Exercise central (aortic) blood pressure is predominantly driven by aortic forward travelling waves, not wave reflection' published in *Hypertension*.

This work challenges widely prevailing concepts regarding the pressure waves contributing to blood pressure; it was noted as an extraordinary contribution from a researcher so early in their career.

### **Benny Eathakkattu Antony, PhD scholar in the Musculoskeletal Research Group**

'The association between childhood overweight measures and adulthood knee pain, stiffness and dysfunction: a 25-year cohort study', published in *Annals of the Rheumatic Diseases*.

This paper also won a travel award when presented at the Annual European Congress of Rheumatology EULAR 2013 and attracted media attention nationally and internationally.

## Population health category

### **Dr Costan Magnussen, Postdoctoral Research Fellow in the Venn Research Group (joint first author)**

'Combined effects of child and adult elevated blood pressure on subclinical atherosclerosis: the International Childhood Cardiovascular Cohort Consortium', published in *Circulation*.

This paper was accompanied by an editorial noting its novelty, significance and implications for improving cardiovascular health in the long term, especially for children with elevated blood pressure.

*Dr Martin Schultz's work challenged the prevailing view of how pressure waves contribute to blood pressure.*



# Research Highlights

## **Dr Kristen Hynes, Postdoctoral Research Fellow in the Venn Research Group**

'Mild iodine deficiency during pregnancy is associated with reduced educational outcomes in the offspring: 9-year follow-up of the gestational iodine cohort' in *Journal of Clinical Endocrinology and Metabolism*.

This is a very good example of research that responds to a specific Tasmanian public health issue and results in findings of international significance.

## **Dr Fay Johnston, Senior Research Fellow in the Environmental Epidemiology Research Group**

'Evaluation of interventions to reduce air pollution from biomass smoke on mortality in Launceston, Australia: a retrospective analysis of daily mortality, 1994-2007' in the *British Medical Journal*.

This paper is an excellent example of research that builds on a Tasmanian community health issue and also has international reach.

## **Laboratory category**

## **Dr Kaylene Young, Research Fellow, Leader of the Glial Research Team**

'Oligodendrocyte dynamics in the healthy adult CNS: evidence for myelin remodelling' in *Neuron*.

*Neuron* is the leading journal in the field, and the paper's publication illustrates the excellent calibre of cutting-edge

laboratory-based research performed at Menzies.

## **Dr Dino Premilovac, Postdoctoral Research Fellow in the Diabetes and Metabolism Group**

'Muscle insulin resistance resulting from impaired microvascular insulin sensitivity in Sprague Dawley rats', in *Cardiovascular Research*.

This paper is an important step forward for the group, providing for the first time evidence of causation between microvascular blood flow in muscle and insulin resistance.

## **Dr Jac Charlesworth, Research Fellow in the Genetics Research Group (joint first author)**

'Transcriptomics of cortical gray matter thickness decline during normal aging' in *Neuroimage*.

A significant publication, indicative of the author's ability to lead and progress independent fields of research.

## **Most influential paper for 2013**

## **Professor Graeme Jones, Professorial Research Fellow, Theme Leader for Musculoskeletal Health and Diseases**

'Comparison of tocilizumab monotherapy versus methotrexate monotherapy in patients with moderate to severe rheumatoid arthritis: The AMBITION study'.

This paper was published in *Annals of the Rheumatic Diseases* in 2010.

## **Grant and fellowship successes**

In 2013 Menzies secured \$4.82 million in competitive research grant funding from the Federal Government, including eight grants awarded by the National Health and Medical Research Council (\$3.85 million), and two grants awarded by the Australian Research Council (\$972,000) to carry out new research projects starting in 2014.

The funding will enable our staff to conduct research in the areas of heart disease, Alzheimer's, osteoarthritis, blindness and public health.

## **NHMRC Partnership Grant awarded in 2013**

### **Guidance of heart failure management programs by risk assessment**

Professor Tom Marwick, Professor Alison Venn, Associate Professor Kristy Sanderson, Professor Mark Nelson, Professor Andrew Palmer and Associate Professor Leigh Blizzard.

NHMRC Partnership Grant totalling \$1.9 million over five years. This comprised \$942,739 from NHMRC and an additional \$1,020,000 of in-kind support from the National Heart Foundation of Australia (Tasmanian Division) (\$90,000), Tasmania Medicare Local (\$480,000), Royal Hobart Hospital and Department of Health and Human Services (\$450,000).



## **Dr Clare Smith – young achiever**

PhD graduate Dr Clare Smith won the prestigious Premier's Young Achiever of the Year Award in the 2013 Southern Cross Young Achiever Award. Dr Smith received her PhD in Medical Research in 2012. A major outcome of her research was her discovery of a new anti-malarial compound that may avoid the rapid development of resistance common to the current generation of drugs.



*Associate Professor James Sharman's work has shown the importance of using central blood pressure as a guide in treating people with hypertension.*

### **NHMRC Project Grants awarded in 2013**

**Neuron to glia signalling: learning how synaptic signalling can promote CNS remyelination**

Dr Kaylene Young, Dr Lisa Foa (UTAS) and Dr Robert Gasperini, \$589,583

**Transient receptor potential channels, calcium and Alzheimer's disease**

Professor David Small, \$390,758

**Repulsion and attraction: how do LRPs turn growth cones?**

Dr Lisa Foa (UTAS), Professor Adrian West (UTAS), and Dr Robert Gasperini, \$358,447

**Deciphering the mechanisms underlying LRP-mediated axon guidance**

Dr Lisa Foa (UTAS), Professor Adrian West (UTAS), and Dr Robert Gasperini, \$358,447

### **Australian Research Council (ARC) Grants awarded in 2013**

*ARC Linkage Project Grants*

**Bushfires, smoke, and people: assessing the risks and benefits from planned burning on the urban-rural interface**

Dr Fay Johnston, \$559,330

**Development of an immune-enhancing vaccine to protect Tasmanian devils against facial tumour disease**

Professor Greg Woods, \$412,912

# Research Highlights

## Significant research grants administered by external organisations

Menzies researchers collaborate widely within Tasmania, Australia and globally. This often results in scientists being chief investigators on significant grants awarded to other universities and research organisations. In 2013, the following grants were awarded at other institutions:

- Dr Kathryn Burdon will commence at Menzies in early 2014 bringing with her a \$601,420 NHMRC Senior Research Fellowship. Dr Burdon's research interest is in identification of genes for common blinding diseases and how these genes can be used in clinical care.
- Dr Kaylene Young was appointed as a Chief Investigator (C) on a \$935,558 three-year NHMRC Project Grant received by Monash University titled: 'Probing the potential for the brain to self-repair following an ischemic stroke'.
- Associate Professor Jo Dickinson, Dr Rebekah McWhirter and Dr Russell Thomson were appointed as Chief Investigators on a \$1,116,904 NHMRC Project Grant received by the Menzies School of Health Research (Darwin) titled: 'A vulvar cancer cluster caused by genetic susceptibility: investigating the genetic mechanism'. Approximately \$500,000 of this grant will flow to Tasmania.

## Fellowships awarded in 2013

### NHMRC Research Fellowship

#### Understanding genetic causes of blindness

Dr Kathryn Burdon, \$601,420

### NHMRC Early-Career Fellowships

#### Clinical trials in osteoarthritis

Dr Laura Laslett, \$304,596

## Metabolically healthy obesity: an investigation of its predictors and outcomes across the lifecourse

Dr Kylie Smith, \$304,596

### Alzheimer's Australia Dementia Research Foundation Fellowship

#### Dendritic spine alterations in TDP-43 aggregated Frontotemporal dementia: a novel therapeutic target?

Dr Catherine Blizzard, \$90,000

### National Heart Foundation Postdoctoral Fellowship

#### The UNMASK blood pressure study

Dr Martin Schultz, \$150,000

## Other competitive grants

Many charitable foundations and state government departments awarded research funding to Menzies research during 2013, as follows:

Alzheimer's Australia Dementia Research Foundation, Anhui Medical University, ANZ Charitable Trusts, Brain Foundation, Cancer Council of Tasmania, David Collins Leukaemia Foundation, Diabetes Australia Research Trust, European Molecular Biology Laboratory Australia, General Practice Training Australia, Motor Neurone Disease Research Institute of Australia, National Heart Foundation, Osteoporosis Australia, Rebecca L Cooper Medical Research Foundation, Royal Australian College of General Practitioners, Royal Hobart Hospital, Royal Hobart Hospital Research Foundation, Tasmanian Community Fund, The Lupus Association of Tasmania, University of Tasmania and University of Tasmania Foundation.

## Other research highlights and awards in 2013

- Associate Professor James Sharman received an NHMRC award for 'the top ranked applicant in the Biomedical level 2 category of the Career Development Fellowship Scheme'.
- Dr Dawn Doré was awarded the Doctoral (PhD) Award for 2013 by The Royal Society of Tasmania, in recognition of her contribution to medicine through her research work on osteoarthritis.
- Dr Kristy Sanderson was appointed as Director of the World Health Organisation Composite International Diagnostic Interview Training and Resource Centre, to be hosted at Menzies. This is one of only seven training centres in the world, a network co-ordinated by Harvard University and WHO, and Menzies is the English-language training centre for the Western Pacific Region.



# Education and Training

Menzies attracts and educates the brightest and best research students who will become tomorrow's leaders. 2013 saw an increase in student numbers, with 86 students enrolled for the year, including 69 higher-degree research students. The Institute offers a unique and stimulating scientific environment. The new University of Tasmania Medical Science Precinct, which was officially opened in 2013 and houses both Menzies and the University's School of Medicine within the new MS1 and MS2 buildings, further assists the sharing of knowledge and ideas that flourishes among scientists, academics, clinicians and geneticists. Our students contribute strongly to the Institute's research success.

## Undergraduate research training

Five UTAS undergraduate students, Sanith Cherian, Nabil Chherawala, Luke Fairburn, Anna Talbot and Arul Thalaivasal, were awarded Undergraduate Research Opportunity Program (UROP) Scholarships and studied at Menzies in 2013. The UROP program provides undergraduate students with the opportunity to participate in research at Menzies.

## Honours degree graduates

In 2013, 12 Menzies students successfully completed Honours. We congratulate them on their achievement. They are:

Francesca Cobden-Watts, Yi Chao Foong, Timothy Fielder, Dean Picone, Kathryn Lester, Mary Jane Kirkwood, Bronwyn Smithies, Megan O'Rourke, Amanda Patchett, Ricardo de Paoli-Iseppi, Paul Barlow and Erin Nash.

## Research higher degree students

There were 69 students undertaking their postgraduate research studies in 2013, up 28% from 2012. This included nine new students from a collaborative arrangement with Anhui Medical University in China. Five students graduated in 2013, as follows:

Oliver Stannus, Gabriella Brown, Martin Schultz, Laura Laslett and Fiona Cocker.

## Notable student achievements in 2013

- PhD candidate Lila Landowski had the honour of being invited to the Science Meets Parliament dinner at Parliament House in Hobart. On this annual occasion, parliamentarians are invited to meet notable Tasmanian scientists.



*Nicholas Blackburn, a PhD candidate in the Cancer, Genetics and Immunology theme, was a student leader for the inaugural Tasmanian Youth Science Forum. He also spent 6 weeks at the Texas Biomedical Research Institute in the US.*



*Neuroscience PhD candidate Lila Landowski spoke at the Science Meets Parliament dinner at Parliament House in Hobart.*

- PhD student Benny Eathakkattu Antony won a travel award to attend the prestigious Annual European Congress of Rheumatology EULAR 2013 in Madrid, Spain at which he gave an oral presentation entitled 'The association between childhood overweight measures and adulthood knee pain, stiffness and dysfunction: a 25-year cohort study'.
- PhD student Lisa Jarman presented 'Prevalence and correlates of psychological distress in a large and diverse public sector organisation' at the International Federation of Psychiatric Epidemiology Congress in Leipzig, Germany.
- PhD student Helena Ng was the runner-up of the Australian Society of Medical Research student awards (Tasmania) 2013 for her talk entitled 'Chronic, but not acute, treatment with the green tea polyphenol EGCG ameliorates insulin resistance in Sprague Dawley rats'.
- PhD student Nicholas Blackburn was invited to become a student leader for the inaugural Tasmanian Youth Science Forum. This is a four-day, pilot residential program for Tasmania run by Rotary and the University of Tasmania in conjunction with the National Youth Science Forum.

### **Postdoctoral appointments**

There were 25 postdoctoral fellows on individual fellowships in 2013, a significant increase from 18 in 2012. Five new fellowships were secured, including three from NHMRC. All five of these new fellowships were awarded to researchers who completed their PhDs at Menzies. Among them was a prestigious NHMRC Fellowship awarded to Dr Kathryn Burdon, who returns to Menzies following a period overseas and interstate.

# Global Collaborations

Menzies continues to value and build its national and international research collaborations; it has a large number of each across all five research themes.

## Furthering collaboration with China

Among the considerable number of international collaborators who spent time at Menzies in 2013, nine were from Anhui Medical University (AMU). Notable among these were Professor Faming Pan, Vice Director of Epidemiology and Biostatistics Department, who has had 45 articles published in international journals. Professor Pan joined Menzies' researchers for a year to study the effects of vitamin D supplementation on knee osteoarthritis. Dr Makoto Saito was another much-valued collaborator. Dr Saito has contributed to research on Professor Tom Marwick's team relating to cardiac imaging in heart failure.

## Prostate cancer genetics

Menzies works collaboratively as a member of the PRACTICAL consortium (the Prostate Cancer Association Group to Investigate Cancer Associated Alterations in the Genome), which was established in September 2008. The aims of the consortium are to combine data from many studies to provide a reliable assessment of the risks associated with genes that may be related to prostate cancer, and to validate new findings.

The consortium currently consists of 78 different study groups, incorporating sites in the EU, Australia, China, Japan, India, Canada and USA. This collaboration has generated access to samples from over 65,000 prostate cancer cases and 65,000 controls. Menzies' researchers are co-authors on several published papers.

## Multiple sclerosis genetics

Menzies is a key contributor to the ANZgene consortium, an investigator-led consortium across Australia and New Zealand that has been studying multiple sclerosis (MS) genetics since 2007. The consortium has published more than 25 papers and is actively aligned with the International Multiple Sclerosis Genetics Consortium (IMSGC). The international consortium is currently completing a manuscript describing the genetics of MS in over 80,000 participants including 2,000 directly sourced through Menzies. Recruitment of participants by PREVANZ (Prevention of MS with vitamin D) Australia–New Zealand consortium began during 2013, with over \$3 million for its research being funded by MS Research Australia.

*Associate Professor Changhai Ding and Professor Tom Marwick with the Dean of the School of International Education at Anhui Medical University, Professor Qiang Wu, during a visit to China in April 2013.*



## The International Childhood Cardiovascular Cohort (i3C) Consortium

The Childhood Determinants of Adult Health study (CDAH) involves follow-up tests on school-age participants in a 1985 health survey. Involvement in the i3C Consortium is an important aspect of the CDAH study. This exciting collaboration pools data from the CDAH study with that from similar studies in Finland and the US and involves over 10,000 adults followed up from childhood. The i3C Consortium will extend our knowledge about the childhood origins of adult heart disease by comparing findings across countries; it will also help to overcome statistical problems associated with the small number of relatively young people with established heart disease in the individual studies.



*Professor Greg Woods is collaborating with scientists at the University of Cambridge (UK) and the University of South Denmark in the quest to find a vaccine against devil facial tumour disease.*

# Community Engagement and Philanthropy

At Menzies we are committed to engaging with our community to share our discoveries.

In 2013, as part of the 25th anniversary celebration of Menzies, more of the Tasmanian community engaged with us than ever before. Over 1,300 individuals attended events, public talks and meetings to learn more about our research and to discuss philanthropic opportunities. Menzies staff conducted informative tours of the new Medical Science Precinct, including the laboratories and the clinic, and these proved particularly popular.

Menzies hosted 5 public talks in 2013 on the topics of *Are you taking statins? What you need to know about statins and cholesterol*; *Brain ageing and repair: how we can help*; *Dementia and other brain disorders*; *Where pain comes from in osteoarthritis: new treatments and research*; and *Blood pressure: take the pressure down*.

Our signature fundraising event, the Art of Christmas, was a triumph with 36 artists donating over 70 artworks for sale at our live and silent auction held at the Medical Science Precinct in October. The event raised \$54,000 for medical research. We thank everyone involved for their support.

Generously, our supporters gave almost \$700,000 in donations in 2013. To add to this, bequests to the value of \$2.1 million were also received. In total, philanthropic giving amounted to 15% of the total income for Menzies in 2013.

Many community members generously volunteered to participate in clinical studies during the year, such as at the blood pressure clinic. This is a community venture in which people with resistant hypertension are referred from general practice to receive specialist care. The clinic also serves as a research platform into the causes and consequences of resistant hypertension.

Neuroscientist Professor David Small talks to nursing home residents about medical research into dementia.



In addition to this, Menzies also launched a new heart-screening program in regional Tasmania funded by the Tasmanian Community Fund and Siemens. The purpose of the project, called the TasELF study, is to run a screening program for early-stage heart disease and trial the use of protective therapy to limit the development of heart failure in 'at risk' patients over the age of 65 and living in regional Tasmania.

Through volunteer and philanthropic support Menzies will help to create a happier, healthier future. We thank our loyal supporters for their continued commitment to helping us achieve this vision.



Community engagement coordinator Larissa Bartlett (centre) with Rotary Club of Hobart President Renzo E. D'Orazio and Rotarian Polly Venning.

# Financial Report

1 January to 31 December 2013

## Income

Commonwealth Government Research Support	\$4,603,507
Teaching Income	\$480,515
Menzies Foundation	\$75,000
Commonwealth Government Research Grants	\$5,227,619
Tasmanian Government Grants	\$1,316,997
Other Contracts and Agreements	\$2,804,604
Donations	\$697,878
Bequests	\$2,170,484
Investment Income	\$1,173,936
Sales	\$384,877
Other Income	\$31,342
UTAS Contributions to Contracts	\$167,572
<b>Total income</b>	<b>\$19,134,332</b>

## Expenses

Salaries and On-Costs	\$9,269,979
Building and Related Expenses	\$29,118
Other Equipment and Infrastructure	\$1,580,592
Travel and Training Related Costs	\$586,820
Scholarships	\$312,968
Consultancy and Advisory Costs	\$689,401
Other Expenses	\$2,093,678
<b>Total Expenses</b>	<b>\$14,562,556</b>

<b>Surplus/(Deficit)</b>	<b>\$4,571,776</b>
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## Notes

### 1 Animal Services

The University transferred the responsibility of Animal Services during 2013 from Menzies to the Deputy Vice-Chancellor (Research) Division. The transfer of Animal Services financial responsibilities was effective on 1 January 2013. The 2012 Animal Services financial deficit was \$293,516 and this expense was included the 2012 financial accounts. The 2013 financial result does not include any surplus or deficit associated with Animal Services.

### 2 Operating Contribution to University of Tasmania

The treatment of the Operating Contribution to University of Tasmania has changed in 2013. The 2013 *Operating Contribution to University of Tasmania* includes only contributions from University of Tasmania sections outside Menzies. In 2012 the *Operating Contribution to University of Tasmania* included internal Menzies contribution allocations from external income. The Menzies internal contributions in 2013 were valued at \$992,259 (2012 – \$708,927).

### 3 Trust Funds

As at 31 December 2013 Menzies held Trust Funds valued at \$12,039,911. The capital amount of this trust was valued at \$9,141,187. The capital component of the Trust Fund is expected to increase as further bequests are received. The interest distributed to Menzies will provide a future source of research income.

The remainder and all un-capitalised earnings are made available for current use in accordance with the benefactor's instructions.

The University Foundation manages a Menzies Endowment Trust. As at 31 December 2013 the value of this trust was \$740,675. Trust interest is not distributed and compounded within the Trust. Distributions are made by agreement between the University Foundation and Menzies in accordance with the benefactor's instructions.



*Menzies' home is in the second stage of the University of Tasmania's Medical Science Precinct, known as MS2. The distinctive exterior is inspired by the topography of Hobart. Photo: John Gollings*

# Board and Senior Management Team

## Board directors as at 31 December 2013

Dr Dan Norton AO (Chairman)

Mr Brian Doyle AM

Professor Denise Fassett (ex-officio)

Mr Greg Johannes

Professor Tom Marwick  
(Director – ex-officio)

Professor Paddy Nixon (ex-officio)

Mr John Ramsay

Professor Judith Whitworth AC

Professor Bob Williamson AO

## Senior Management Team as at 31 December 2013

Professor Tom Marwick (Chair)

Mr Mark Bennett (General Manager)

Associate Professor Jo Dickinson

Associate Professor Tracey Dickson

Associate Professor Changhai Ding

Dr David Gell

Ms Fiona Horwood

Professor Graeme Jones

Professor Heinrich Korner

Professor Steve Rattigan

Dr Steve Richards

Dr Kristy Sanderson

Associate Professor James Sharman

Professor David Small

Professor Bruce Taylor

Professor Alison Venn



The Menzies Research Institute Tasmania  
is proudly supported by:



  
research thanks to you

If you would like more information about our research programs,  
collaborations or education opportunities please contact us.

Menzies Research Institute Tasmania  
Medical Science Precinct  
17 Liverpool Street  
(Private Bag 23)  
HOBART TAS 7000  
Phone: +61 (0)3 6226 7700  
Email: [info@menzies.utas.edu.au](mailto:info@menzies.utas.edu.au)  
[www.menzies.utas.edu.au](http://www.menzies.utas.edu.au)

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