

Menzies Institute for Medical Research

**ANNUAL REPORT**

**2016**



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## ABOUT US

Menzies aims to advance human health and wellbeing by contributing significantly to knowledge on the cause, prevention and treatment of diseases including cardiovascular disease, obesity, type-2 diabetes, hypertension, multiple sclerosis, motor neurone disease, mental illness, dementia, cancer, arthritis and osteoporosis.

**Menzies performs excellent clinical, population health and laboratory research in themes that reflect the burden of disease in Tasmania.**

We conduct research that relies on the unique, stable base that characterises Tasmania's population, managing nationwide studies and collaborating with interstate and international researchers. Our context is an island community that has limited funding for health care and specific challenges relating to disadvantage.

Our research is focused on serving the community in both disease prevention and treatment. We aim to translate the knowledge we gain into health policies, training and recommendations for treatment. We also work with commercial partners to develop and apply our discoveries. We educate and train future research scientists, clinicians and health professionals.

Menzies has five key research areas

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### 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, obesity, cancer, multiple sclerosis and depression. Several projects are investigating how lifestyle factors 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.

Within this theme we have established partnerships with the Tasmanian Government. This theme also includes the management of the Tasmanian Cancer Registry and Tasmanian Data Linkage Unit.

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**HARD AT WORK:**

Research students Emily Handley and Renee Pepper are studying for their PhDs in the Neurodegenerative Diseases/Brain Injury research theme.



Miranda Hamman

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**Neurodegenerative Diseases/Brain Injury**

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 and treat these devastating disorders.

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**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. Clinical trials are in progress to reduce the risk of developing cardiac disease in people with early "sub-clinical" disease and in those who have first-degree relatives with heart disease.

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**Musculoskeletal Health and Diseases**

Research in this area optimises Tasmania's unique population characteristics to investigate musculoskeletal disease, with a particular emphasis on osteoarthritis and osteoporosis. Epidemiological and clinical 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.

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**Cancer, Genetics and Immunology**

Work in this theme 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 underlie the 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 prostate and breast cancer; eye diseases such as keratoconus and glaucoma; the Tasmanian Devil Facial Tumour Disease; and immune disorders such as multiple sclerosis and lupus.



## OUR MISSION

MENZIES EXISTS TO PERFORM INTERNATIONALLY SIGNIFICANT MEDICAL RESEARCH LEADING TO HEALTHIER, LONGER AND BETTER LIVES FOR TASMANIANS

### We have a history of discoveries

Menzies 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.

We are located within the University of Tasmania's state-of-the-art Medical Science Precinct, in close proximity to the Royal Hobart Hospital. Over our 29 years, significant breakthroughs have been made by our scientists into the cause, prevention and treatment of several diseases impacting on Tasmanians and people around the world.

Menzies' impressive record of research discoveries includes:

- Key evidence on the link between babies' sleeping position and sudden infant death syndrome (SIDS)
- Remodelling of nerve cells in undamaged parts of the brain in response to acquired brain injury
- Genetic markers linked to men's risk of developing prostate cancer
- Understanding of how bones develop in childhood and risk factors for childhood fracture.
- The potential irreversible impact of childhood exposure to parental cigarette smoke on cardiovascular health later in life



- Recognition of high rates of vitamin D deficiency in Tasmania, development of ways to improve this and the association of higher vitamin D levels with a lower relapse risk in multiple sclerosis
- Development of risk algorithms for prediction of heart failure in persons at risk of heart failure

### How we spend our donor funds

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

Gifts to the Menzies Institute for Medical Research are a tax-deductible investment in a healthier future for all Tasmanians.

### RECOGNITION:

Professor Alison Venn and Senior Database Administrator and IT Systems Designer Tim Albion, who won the 2016 Professional Staff Award.



## MESSAGE FROM THE CHAIRMAN AND DIRECTOR



### FOCUS ON FUTURE:

Top, Professor Alison Venn wants to guide Menzies' evolution as a medical research institute fit for the 21st century; above, Chairman Mr Bruce Neill.

**Our challenge is to guide Menzies' evolution as a medical research institute fit for the 21st Century. This means being dedicated to inquiry and impact, nurturing existing and new scientists and adapting to a funding environment that demands research in lockstep with the community's needs. With this in mind, we began 2016 with three overriding priorities and these will be ongoing. The first is to diversify our funding streams, the second to deliver research ready for translation into policy and practice and the third to develop and mentor our workforce.**

In funding we saw some great gains in 2016 through national competitive grants and partnerships, as well as the continuing support of those wonderful organisations and individuals who support us philanthropically. We won \$7.5 million in competitive funding in 2016 and secured \$1.8 million in

donations and bequests. In the 2016 NHMRC grant round Menzies won more than \$5 million for project grants and Fellowships – more than double our income from this source in 2015. This funding will further our research in multiple sclerosis, cardiovascular disease, health economics, Alzheimer's disease, arthritis and osteoporosis. This was capped off shortly after with \$622,000 for motor neurone disease (MND) research from the Australian Research Council (\$372,000) and the MND Australia Betty Laidlaw Research Prize (\$250,000). We have a new NHMRC Partnership Grant with the Tasmanian Government through the Departments of Health, Education and Premier and Cabinet that will track and review the health and education services available to 12,000 Tasmanian children from birth until they start formal school. The lead partner in the venture

**296**

**ARTICLES**  
published in  
peer-reviewed  
journals

Hard work and talent brought us some wonderful accolades in 2016



is the Kids Telethon Institute in Western Australia and, with the School of Social Sciences at the University of Tasmania, we will provide the local expertise to evaluate what children need to get the best start in life.

Our collaborations continue to bear fruit, with Menzies researchers announced as chief investigators on three NHMRC Centres of Research Excellence being led through collaborating institutions in the fields of genetic eye disease (led by the University of Western Australia), environmental health (Woodcock Institute for Medical Research) and pulmonary fibrosis (University of Sydney).

Philanthropically, the Select Foundation continues its commitment to our mission with Fellowship funding for five of our leading scientists. We have invaluable support from the Farrell Family Foundation and the Halifax Foundation with the Farrell Family Research Fellowship in musculoskeletal research.

For the first time in 2016 we appointed a Menzies Institute for Medical Research Community Fellow. This was possible after \$70,000 to support salary and research costs was raised through our 2015 Community Fellowship Appeal. Among many other philanthropic highlights in 2016 we received a \$67,000 contribution to metastatic breast cancer research from the organisers of the Seconds Count Gala Ball for the second year running. The generosity of every organisation and individual who donates to Menzies is an inspiration to us and we cannot overstate how much we appreciate this support.

In line with our push for evidence-based policy and practice we contributed a submission to the State Government's Healthy Tasmania Five Year Strategic Plan. We welcome the Strategic Plan's commitments to support Tasmanians in making healthy choices but also look forward to the Government implementing evidence-based practice and policy in consultation with the



#### **PARTNERSHIP:**

The project team researching "Pathways to better health and education outcomes for Tasmania's children".

**\$7.5 million**  
in competitive funding

community and key stakeholders.

In clinical research to inform practice, our highlights in 2016 included publications from trials to assess the efficacy of Vitamin D and fish oil for treating osteoarthritis and on the appropriate use of cardiovascular ultrasound. With funding from MS Research Australia we began a large-scale comparison of the outcomes for multiple sclerosis patients receiving a prescribed drug treatment (the practice in Australia) versus the outcomes for those who do not receive the treatment (the practice in New Zealand). With support from the Royal Hobart Hospital Research Foundation, our Blood Pressure Research Group is establishing and testing a service that will provide GPs with accurate cardiovascular risk profiles for individual patients.

Once again our enrolment of research higher degree students increased, this time by 12 per cent. We have welcomed around two-thirds of these students from overseas, in many cases through our scholarship program with Anhui Medical University in China. These international connections, also significant in number within the Institute's staff,

are helping to foster collaboration and build our international profile. Our students contribute substantially to our research output and it is wonderful to see several of them recognised with important publications and awards. Congratulations to all those who graduated in 2016. We are dedicated to continually improving our student supervision and mentorship practice but at the same time we recognise a need to prepare our graduates for a diversity of career opportunities in and beyond the research sector. We have also increased professional development for our post-doctoral staff to ensure that they remain equipped for this highly competitive environment.

Hard work and talent brought us some wonderful accolades in 2016, including Associate Professor Alex Hewitt being announced as the NHMRC's top-ranked Practitioner Fellow in Australia, and Professor James Sharman joining The Lancet Commission on Hypertension. We published 296 articles, a 7 per cent increase on 2015, including in *The Lancet*, *the Journal of the American College of Cardiology*, *Nature Genetics*, *Nature Neuroscience*, *Journal of The American Medical Association* and *Journal of Clinical Investigation*.

Our thanks to all who contributed to this success. There is much to be proud of, and much to build on in 2017.

– Professor Alison Venn, Director

– Mr Bruce Neill, Chairman

**\$2.065 million**  
in donations and bequests

We investigate the diseases that have the most impact in Tasmania, including multiple sclerosis, obesity, mental health, cardiovascular disease, motor neurone disease, osteoarthritis, osteoporosis, cancer and inherited eye diseases

**BEST OF THE BEST:**

Musculoskeletal researcher Dr Xingzhong Jin was the joint winner of the 10 of the Best Award.

## RESEARCH HIGHLIGHTS



Peter Mathew

### Multiple sclerosis

#### **Genetics and Epstein-Barr Virus**

This large collaborative piece of research links two of the major causes of MS – the immune response to Epstein-Barr Virus (EBV) infection and genetic risk. The work used Australian and international data to identify the susceptibility genes associated with a differential immune system response to EBV infection. The research forms the basis for a large international collaborative research group to study the area further and use

similar techniques to study larger cohorts and different viruses. (*Multiple Sclerosis Journal*)

#### **Transcranial magnetic stimulation**

We are investigating the potential of transcranial magnetic stimulation as an MS therapy. As part of this project Menzies research was published demonstrating the effect of magnetic patterns on glial cells in the central nervous system. (*Frontiers in Neural Circuits*)



## Obesity

The INVEST project (Investigating Obesity Surgery in Tasmania) is being conducted in partnership with researchers, government policy makers and clinicians to help develop better treatment services for patients with obesity and obesity-related disease. Members of the project team have investigated reasons people seek obesity surgery, highlighting the importance of health professionals understanding what motivates patients to take this step. This knowledge helps health professionals to manage patients' expectations about surgery outcomes and to plan relevant treatment and supports. Cost and quality-of-life outcomes were investigated in a group of surgery recipients. We also reviewed the rates of re-operations for complications after secondary obesity surgery. We now know the broader costs to the individual and society of obesity management and surgery have not been well measured. As a result, the availability and quality of information to those in charge of allocating healthcare resources is limited. The project is continuing. (*Obesity Surgery, Bariatric Surgical Practice and Patient Care, Health Expectations, Obesity Reviews*)

## Mental health

The importance of lifestyle in mental health had not been properly explored previously, despite recognition of its importance in the prevention of cardiovascular disease. Our study looked at the impact of lifestyle, measured using information on a range of health behaviours, on depression and the impact of depression on lifestyle – the first time the association has been examined from both sides. Researchers examined multiple health behaviours and found that people with a history of depression were 25% less likely to improve their lifestyle and 46% more

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### EQUATOR LINK:

Professor Bruce Taylor is trying to determine the population risk factors for multiple sclerosis.



## AGE OF MULTIPLE SCLEROSIS ONSET LINKED TO LATITUDE

A large international study led by Menziez has found that the age at which symptoms of multiple sclerosis (MS) first start is strongly linked to latitude.

The lead author of the study, Menziez' neuroscientist and clinician Professor Bruce Taylor, said that each 10° increase in distance from the equator was associated with a 10-month earlier onset of symptoms.

MS is thought to be caused by a complex interplay of genetic and environmental factors, including latitude and/or exposure to sunlight and vitamin D levels. But until now it was not clear whether latitude might also affect the age at which symptoms begin. In an effort to find out, the research team drew on an international database of more than 22,000 MS patients from 52 centres in 21 countries in Europe, North and South America, Asia Minor, South Asia and Australia.

More than 80% of the patients in the study were from the northern hemisphere, with around two-thirds (67%) from Europe. Around one in six (just under 16%) were from Australia, including about 300 people with MS from Tasmania. The average age at which symptoms first appeared was about 32. But after taking account of potentially influential factors, it emerged that each 10° increase in latitude was associated with a 10-month earlier start of symptoms, with those furthest from the equator starting their symptoms almost two years earlier than those closest to the equator.

# Measures of childhood muscular fitness predicted adult metabolic syndrome, independent of measures of cardio-respiratory fitness in childhood

**UNDERSTANDING  
STROKE:** Dr Seana  
Gall is comparing the  
way men and women  
recover from stroke.

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likely to have a worsening of lifestyle over the five-year period than those without a history of mood disorder. We also found that healthy lifestyles strongly protected against new episodes of mood disorder over the five-year period independent of a wide range of potentially confounding factors. There was a 22% reduction in the risk of suffering a new episode of mood disorder per healthy behaviour, which is similar to effects seen for pharmacological interventions. (*Psychological Medicine*)

## Cardiovascular disease

### Child muscular fitness and adult metabolic syndrome

This study aimed to determine whether childhood muscular fitness (including strength, endurance and power) independently predicts metabolic syndrome in adulthood. Metabolic syndrome is a term to describe the cluster of conditions associated with the development of cardiovascular disease and type 2 diabetes. Using data from the Childhood Determinants of Adult Health study, we followed up 737 participants who had muscular fitness measures taken in 1985 at age 9, 12 or 15 and who attended clinics 20 years later when measures of metabolic syndrome were collected. We found that the measures of childhood muscular fitness predicted adult metabolic syndrome, independent of measures of cardio-respiratory fitness in childhood. This means that the promotion of muscular fitness among children might provide additional protection against metabolic syndrome in adulthood. (*Medicine & Science in Sports & Exercise*)



### Hospital Re-admissions

This work, through the Tasmanian Study of Heart Failure Re-admission Prevention, has defined an effective means of identifying people at risk of re-admission to hospital after heart failure, meaning the intensity of intervention can be targeted according to risk. Heart failure is the leading cause of hospitalisation and rehospitalisation among adults aged over 65. Short-term re-admissions from heart failure place a burden on the healthcare system and increase mortality risks for patients. Our predictive model of 30-day re-admission or death in heart failure, developed from an Australia-wide sample of heart failure patients, has for the first time combined both clinical and non-clinical factors. The work has international appeal as the first study to identify high-risk individuals by integrating the social determinants of health into the research.

(*Journal of the American Medical Association Cardiology*)

### Stroke

Stroke affects more women than men, and these women are at a greater risk of dying or suffering ongoing disability after stroke than men. Menzies researchers are leading an international team of investigators in one of the world's largest studies of stroke. Data has been gathered from over 16,000 strokes from 14 different studies. Through analysis of this data we have found that women are about 30% more likely to be deceased and about 30% more likely to be disabled than men one year after stroke. The results were consistent across regions of the world and over a 20-year period. We found that the reason women have worse

Peter Mathew



# We have a convincing new insight into why the motor system fails in motor neurone disease

outcomes from stroke than men is mainly due to the fact that they are older when they have a stroke and they appear to have more severe strokes. Treatment in hospital after stroke is about the same for men and women, suggesting that better stroke outcomes may be possible through improvements in general health care for the elderly and by identifying new ways to reduce the severity of strokes. (*Circulation: Cardiovascular Quality and Outcomes*)

## Blood pressure

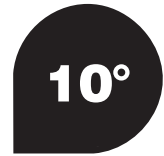
Our work in blood pressure continues to be informed by our on-site clinic for people with difficult-to-manage blood pressure as well as our own research in collaboration with colleagues around the world. Our research group was part of The Lancet Commission on Hypertension, an international collective to identify actions that will improve the management of blood pressure both at population and individual levels. We led an international task force on the validation of blood pressure monitors that appeared in the top European cardiology journal, and we expect this work will lead to better methods of measuring blood pressure – a key problem in the field. We found a new

way for doctors to quickly assess patient home blood pressure diaries to determine the true level of underlying blood pressure. (*European Heart Journal, Journal of the American College of Cardiology, Annals of Family Medicine*)

## Motor neurone disease

Meticulous research produced a convincing new insight into why the motor system fails in motor neurone disease. Researchers investigated whether the main protein, TDP-43, known to cause the disease may be affecting the way neurons communicate. To investigate this they designed a laboratory model to visualise neurons as pathology in the protein developed. They found that mutant TDP-43 protein had a significant pathological effect on the generation and pruning of dendritic spines, the microscopic synapses that connect neurons, which has severe consequences for neuronal function. This was one of the first studies to investigate synaptic and functional changes driven by the protein TDP-43, and indicates that there is an early route by which altered TDP-43 function can cause the neural dysfunction that causes MND. The finding is significant not only for MND but

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Each 10° increase in latitude is associated with a 10-month **EARLIER ONSET** of multiple sclerosis symptoms.



Peter Mathew

**NEW HONOUR:** Professor James Sharman became a member of The Lancet Commission on Hypertension.

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also for understanding the fundamental function of the brain. (*Cerebral Cortex*)

## Osteoarthritis and osteoporosis

### Vitamin D is not the answer

Through the largest and most rigorous randomised trial so far of the effects of Vitamin D on knee osteoarthritis we showed clearly that vitamin D provided no help in reducing knee pain or slowing cartilage loss, even in those who are vitamin D deficient. The finding can be quickly translated to clinical practice, where it will prevent patients from spending money on a therapy now proven to be ineffective. (*Journal of the American Medical Association*)

### How much physical activity?

Research matched musculoskeletal health indicators in middle-aged women (aged 36-57) with physical activity and

sedentary time. We found total physical activity was beneficially associated with improvement in bone mineral density in femoral neck, leg muscle strength and 'timed up and go test' (a test used to assess mobility requiring static and dynamic balance) measurements.

Similarly, moderate to vigorous activity was associated with positive results but light physical activity or sedentary time was not associated with any outcomes. The research can be used to inform programs designed to improve habitual physical activity and to inform public health advice on women's bone health. (*Journal of Bone and Mineral Research*)

### The cost of osteoporosis

We have constructed and validated a new osteoporosis health economics model using state-of-the-art techniques and the most up-to-date clinical data to overcome the shortcomings of previous models. The model looked at the cost-effectiveness of screening and

treatment for osteoporosis in Chinese post-menopausal women, and this will now be adapted to the Australian setting. The model helps decision-makers identify a cost-effective means to prevent future osteoporotic fractures. (*Osteoporosis International*)

### Pre-term birth

Menzies, through the Royal Hobart Hospital, is part of the BOOST-II trial, which has the participation and support of parents and health professionals worldwide. In 2016 this consortium of researchers published the combined results of two multi-centre trials involving 1135 infants in Australia and New Zealand and 973 in the United Kingdom. The work has provided neonatal specialists and hospitals with new clinical evidence of the safer level of blood oxygen for extremely pre-term infants. The results confirm similar findings from a trial in North America, which concluded that targeting oxygen saturation below 90 per cent in extremely pre-term infants was associated with a higher risk of death, but not of disability. (*New England Journal of Medicine*).

## Cancer

### Genetics of prostate cancer

Family history is one of the few known risk factors for developing prostate cancer. This knowledge has led to the creation of the Tasmanian Familial Prostate Cancer Resource, a collection of blood and pathology samples from more than 50 Tasmanian families where prostate cancer is seen in multiple men across several generations. In 2016, we selected 10 families from this resource to identify rare genetic risk variants, those that occur in fewer than 2% of

### COUNTING THE COST:

Dr Lei Si has published important work on the economics of osteoporosis.

## Vitamin D provided no help in reducing knee pain or slowing cartilage loss, even in those who are vitamin D deficient



Peter Matthew





#### EATEN AWAY:

The bottom jaw of a Tasmanian devil destroyed by DFTD.

the future. (*Experimental Eye Research, BMC Medical Genetics, Ophthalmology, Molecular Genetics & Genomic Medicine, Investigative Ophthalmology & Visual Science, Nature Genetics, Journal of Clinical Investigation, Scientific Reports*)

#### Age-related Macular Degeneration (AMD)

We were part of the world's largest ever genetic study of AMD, the most common cause of irreversible blindness in our community. Australian-based researchers contributed the largest clinic-based cohorts to this collaboration, which identified 20 new genes that contribute to AMD. We also showed that the dry and wet forms of AMD, although clinically distinct, are very similar at a genetic level. More work remains to be completed to understand what determines who will get wet or dry AMD and why. (*Nature Genetics*)

#### Diabetic Retinopathy

New work built on several other papers from previous years and showed that a genetic variant in a microRNA gene is associated with diabetic eye and kidney disease, providing insight into why people often get both complications. (*Acta Diabetologica, Diabetes and Vascular Disease Research*)

#### Paediatric (or Congenital) Cataract

We have a large project relating to the genetics of paediatric cataract, which is an important cause of blindness in children. A paper published in 2016 looked at the mechanism of a gene called EPHA2 and showed that it acts through several different pathways to cause cataract, dependent on the mutation that the patient has. Another paper expanded our understanding of the spectrum of mutations in a gene called CRYAA in paediatric cataract and showed that one mutation can cause multiple types of cataract. (*Molecular Vision, BMC Research Notes*)

We ... identified several rare variants that may be contributing to prostate cancer disease in these [five] families and the wider Tasmanian population

the general population. While these variants contribute to disease in just a small number of families, they are thought to increase a man's risk by a large amount. We performed whole-genome sequencing in five families and have identified several rare variants that may be contributing to disease in these families and the wider Tasmanian population. (*British Journal of Cancer, Human Molecular Genetics*)

#### Devil Facial Tumour Disease

The Tasmanian devil immunology team has demonstrated that immune checkpoint molecules that exist in humans are also present in devils. This may play a role in the ability of the Tasmania Devil Facial Tumour to evade the devil's immune system. The identification of PD-1 molecule in the Tasmanian devil is a substantial advance in marsupial immunology as surprisingly little is known about the potential for cancer immunotherapies in the field of veterinary medicine. This paper is the first to explore the relevance of key immune checkpoints in marsupials. The team also provided the first evidence that some wild Tasmanian devils are capable of recovering from DFTD. (*Frontiers in Immunology, Biology Letters*)

#### Inherited eye diseases

##### Glaucoma

We have identified new mutations in the MYOC gene that are important in glaucoma and have shown that genetic testing for this gene in families leads to early diagnosis and prevents vision loss. We identified a genetic mutation in patients with open-angle glaucoma and showed that a well-known glaucoma gene shows differential effects in males and females. As part of a very large international collaboration, we identified five new genes involved in angle closure glaucoma. In collaboration with researchers in the US, we identified a new gene for primary congenital glaucoma, which causes blindness in young children. This type of glaucoma was thought to mainly happen when a child inherited two bad copies of a gene (one from each parent), but this study showed that this is not always the case and that for patients with mutations in the TEK gene, one bad copy is enough to cause disease. Another paper published showed that there is overlap in genetic risk factors for glaucoma and age-related macular degeneration. This has implications for predicting who is at risk of getting the diseases and also for the way we approach treatment in

Heath Holden

## AWARDS AND RECOGNITION

**Professor James Sharman** became a member of *The Lancet* Commission on Hypertension and a co-author of the resulting *Lancet* paper that examined ways in which blood pressure management could be improved. He is one of three Australian commissioners on the report. Professor Sharman leads the Cardio-Metabolic Health and Diseases research theme at Menzies and in 2016 took up the role of co-deputy director at the Institute (with Associate Professor Tracey Dickson). In 2016 Professor Sharman spent an extended period as a Visiting Research Fellow at the Paris Cardiovascular Research Centre.

The **AirRater** smartphone app funded by Sense T and developed by a team led by **Dr Fay Johnston** won the Community Award at the **State Emergency Service 2016 Resilient Awards**.

Aimed at celebrating innovation, the Resilient Australia Awards is a national program to recognise initiatives that strengthen community disaster resilience. AirRater also received a Community Service award at the **State Australian Information Industry Association National iAwards** and then a Merit Award at the national level. Version 2 of AirRater was launched in 2016. The app helps track symptoms associated with asthma, hay fever and other lung conditions such as Chronic Obstructive Pulmonary Disease, and helps to determine how environmental factors such as smoke, pollen and temperature impact on symptoms. More than 3,000 users across Tasmania are now taking advantage of the app. Dr Johnston and **Professor David Bowman** (University of Tasmania Biological Sciences) are the joint leaders of the project.

**Associate Professor Tracey Dickson and Dr Kaylene Young** co-chaired the local organising committee for the Australasian Neuroscience Society's 36th Annual Scientific Meeting, that was held in Hobart. **Professor David Small** was selected to give one of four plenary lectures at the event.

After receiving an Endeavour Research Fellowship, **Dr Michele Callisaya** spent four months in the US with **Professor Joe Verghese** in the Divisions of Cognitive and Motor Aging and Geriatrics at the Centre for the Aging Brain at Albert Einstein College, Bronx, New York.

**Dr Quan Huynh**, who researches hospital re-admissions from heart failure, won the clinical section of the Ralph Reader Prize from the Cardiac Society of Australia and New Zealand.

**Professor Andrew Palmer** was keynote speaker at the Eighth Mount Hood Health Economics Diabetes Modelling Conference in St Gallen in Switzerland in September, speaking on recent developments in Type 1 diabetes modelling.

**Associate Professor Leigh Blizzard** was appointed Chair of the Scientific Committee for the 2017 World Congress on Public Health, which was held in Melbourne and was attended by more than 2,700 delegates.

**Dr Martin Schultz** won Best Oral Presentation Award – Bronze at the 26th meeting of the International Society of Hypertension in Seoul. Dr Schultz's presentation was "Exaggerated exercise blood pressure is associated with higher left ventricular mass in adolescence. The Avon Longitudinal Study of Parents and Children".

The Menzies **Health Economics group** received the **Best Podium Presentation Award** at ISPOR 2016 (International Society Pharmacoeconomics and Outcomes Research) in Singapore for a paper entitled "Life expectancy, quality adjusted life years, and total life-time costs for Australian people with Multiple Sclerosis". ISPOR is among the leading international conference of this type, attracting several hundred research papers for podium as well as poster presentations. The paper's authors are **Mr Hasnat Ahmad, Professor Bruce Taylor, Associate Professor Ingrid van**



**der Mei, Dr Steve Simpson Junior, Dr Lei Si and Professor Andrew Palmer.**

**Professor Changhai Ding** was awarded the University of Tasmania Vice-Chancellor's Award for Outstanding Research Program.

**Dr Kazuaki Negishi** was awarded the Avant Doctor in Training Research Scholarship of \$25,000.

**Dr Jac Charlesworth** gave a platform presentation at the Australasian Genomic Technologies Association meeting in Auckland about rare genetic variants in families.

**Associate Professor Alex Hewitt**, who was recruited through the University's academic re-profiling strategy in 2015, was announced as the NHMRC's top-ranked Practitioner Fellow for 2015 at the NHMRC Research Excellence awards on July 13, 2016.

**Mr Benny Eathakkattu Antony** won the 2016 Young Tall Poppy Award for Tasmania and received the award from the **Vice-Chancellor** of the University of Tasmania, Professor Peter Rathjen.



#### ACCOLADES:

Dr Benny Eathakkattu  
Antony won the  
2016 Young Tall  
Poppy Award.

Peter Matthew



## NEITHER VITAMIN D NOR FISH OIL WILL SOOTHE THOSE PAINFUL KNEES

**Despite good news for many years on the benefits of Vitamin D and fish oil, Menzies research published in 2016 showed that neither is the answer to the pain of knee osteoarthritis.**

A very substantial clinical trial looking at the benefits of Vitamin D for individuals with knee osteoarthritis, published in the highly-ranked *Journal of the American Medical Association*, showed that Vitamin D supplementation provided no help in reducing knee pain or slowing cartilage loss.

Symptomatic knee osteoarthritis occurs in 10 per cent of men and 13 per cent of women aged 60 or older, and has

no treatment apart from symptomatic pain relief or joint replacement.

The study randomly divided 413 patients with symptomatic knee osteoarthritis and low Vitamin D levels into two groups. One group received a monthly oral vitamin D treatment and the other an identical placebo. The researchers found that vitamin D supplementation, compared with placebo, did not result in significant

change in MRI-measured tibial cartilage volume or knee pain over two years. There were also no significant differences in change of knee cartilage defects or change in knee bone marrow lesions, even though blood vitamin D levels increased much more in the vitamin D group than in the placebo group.

A separate project looked at the impact of fish oil on knee osteoarthritis.

The study was published in *Annals of the Rheumatic Diseases*. It compared 202 people, aged over 40, with knee osteoarthritis. They were randomly assigned

into two groups and given either low-dose fish oil combined with sunola oil or high-dose fish oil over two years. Although there was improvement in both groups, the low-dose group had greater improvement in knee pain and function after two years than the high-dose group. There was no difference between the two groups in cartilage volume loss at two years.

Although Vitamin D did not prove to be useful in the treatment of knee osteoarthritis, its importance in overall bone health is not in question.





## **BEST OF THE BEST** **PROFESSOR GRAEME JONES (LEFT) AND DR XINGZHONG JIN**

**For outstanding research achievement evidenced through publication in a scholarly journal**

For 'Effect of Vitamin D Supplementation on Tibial Cartilage Volume and Knee Pain Among Patients With Symptomatic Knee Osteoarthritis. A Randomised Clinical Trial' in the *Journal of the American Medical Association*

## **TEN OF THE BEST**

### **Menzies Ten of the Best and Professional Staff Awards 2016**

Once again Menzies recognised its best journal publications and outstanding professional staff.

#### **Population Health**

**Dr Lei Si:** For 'Screening for osteoporosis in Chinese post-menopausal women: a health economic modelling study' published in *Osteoporosis International*

**Dr Feitong Wu:** For 'Moderate-to-vigorous physical activity but not sedentary time is associated with musculoskeletal health outcomes in a cohort of Australian middle-aged women' published in the *Journal of Bone Mineral Research*

**Dr Seana Gall:** For 'Bi-directional associations between healthy lifestyles and mood disorders in young adults: The Childhood Determinants of Adult Health Study' published in *Psychological Medicine*

#### **Laboratory Research**

**Emily Handley:** For 'Synapse Dysfunction of Layer 5 Pyramidal Neurons Precedes Neurodegeneration in a Mouse Model of TDP-43 Proteinopathies' published in *Cerebral Cortex*

**Emma Cazaly:** For 'Comparison of pre-processing methodologies for Illumina 450k methylation array data in familial analyses' published in *Clinical Epigenetics*

**Dr Andy Flies:** For 'PD-L1 Is Not Constitutively Expressed on Tasmanian Devil Facial Tumour Cells but is Strongly Upregulated in Response to IFN- $\gamma$  and can be Expressed in the Tumour Microenvironment' published in *Frontiers of Immunology*

#### **Clinical Research**

**Dr Quan Huynh:** For 'Predictive Score for 30-Day Re-admission or Death in Heart Failure' published in the *Journal of the American Medical Association Cardiology*

**Dr Yuan Zhou:** For 'Genetic loci for Epstein-Barr virus nuclear antigen-1 are associated with risk of multiple sclerosis' published in *Multiple Sclerosis Journal*

**Dr Tomoko Negishi:** For 'Effect of Experience and Training on the Concordance and Precision of Strain Measurements' published in the *Journal of the American College of Cardiology Cardiovascular Imaging*

#### **Professional Staff Award**

**Tim Albion, Senior Database Administrator and IT Systems**

**Designer:** For outstanding achievement through exceptional performance and contributions to the Institute.

Menzies' graduate students contribute strongly to our record of success ... and the cohort continues to grow

## EDUCATION AND TRAINING

### RESEARCH STUDENTS

Menzies' graduate students contribute strongly to our record of success. The cohort continues to grow, particularly in those coming from overseas to study in a unique and stimulating learning environment within the University of Tasmania Medical Science Precinct. At the end of 2016 96 PhD students were enrolled at Menzies. We celebrated with 14 PhD and 10 Honours students who completed their study in 2016.

Menzies also offers Honours and the Undergraduate Research Opportunities Program (UROP), a scheme designed to give undergraduate students at the University of Tasmania experience and insight into a career in health and medical research. Eight students completed this program in 2016.

### SYMPOSIUM: DATA LINKAGE FOR BETTER POLICY AND RESEARCH

The Tasmanian Data Linkage Unit, hosted at Menzies, ran Data Linkage for Better Policy and Research: New Opportunities for Tasmania. The symposium was aimed at policy makers, planners and researchers from State and Federal Government, non-government organisations, education, research and the private sector. It showcased data linkage and data integration opportunities at State and Federal levels, with case study presentations from invited local and interstate guest speakers. Professor Louisa Jorm, Foundation Director of the Centre for Big Data Research in Health at the University of NSW, was the keynote



**DEEP IN THE DATA:** Health economist Dr Amanda Neil, manager of the Tasmanian Data Linkage Unit Brian Stokes, guest speaker Professor Louisa Jorm, Menzies Director Professor Alison Venn and TDLU project officer Nadine Wiggins at the Data Linkage for Better Policy and Research symposium.

speaker. Professor Jorm is an Australian leader in policy-relevant research using linked administrative health data, including hospital inpatient, mortality and Medicare data.

### STATISTICAL MODELLING

University of Massachusetts Amherst's internationally renowned statistician Dr David Hosmer and Menzies' Senior Biostatistician Associate Professor Leigh Blizzard ran Logistic Regression and Survival Analysis in Epidemiological Research, a five-day intensive course in theoretical and practical training for epidemiologists and professionals of related disciplines.

### WRITING WORKSHOPS

Professor Donald Halstead, Director of Writing Programs at the Harvard School of Public Health, visited Menzies as part of the UTAS Visiting Scholar scheme. Professor Halstead gave a series of writing workshops for academics and research students.

### RESEARCH DESIGN

Dr Sarah Thomas, Deputy Director of the Bournemouth University Clinical Research Unit and a Research Design Service Consultant with the National Institute for Health Research in the UK, visited Menzies. Dr Thomas is particularly interested in the application of psychological approaches to the management of long-term conditions and the development and pragmatic evaluation of complex interventions. She presented on FACETS – a fatigue management program for people with MS.

### MENZIES AND SCHOOL OF MEDICINE SEMINAR SERIES

In 2016, 40 research seminars were held at the Medical Science Precinct. Of these, 10 were invited external speakers, 11 were local speakers and 19 were final PhD seminars.

96

**PHD students** were enrolled at Menzies at the end of 2016

Continued on page 18



Peter Mathew

Continued from page 17

### Student recognition

**Mr Dean Picone** won the Young Investigator Prize at the ARTERY 16 conference in Copenhagen, one of the world's toughest audiences in the field of arterial haemodynamics. Mr Picone presented work on the discovery of a new blood pressure phenotype that explains why accurate blood pressure measurement is so difficult among some people. Dr Martin Schultz was also a finalist in the same Young Investigator session.

**Ms Hoang Phan**, a PhD student with Dr Seana Gall, won the European Stroke Research Foundation's Investigator Award for Excellent Research after a presentation at the European Stroke Conference in Venice, Italy. Ms Phan also presented at the European Stroke Organisation Conference in Barcelona, Spain in May and was selected as one of the Travel Grant Award winners. Ms

## Women are about ... 30% more likely to be disabled than men one year after stroke

Phan also received the most outstanding presentation award at the fourth Tasmanian Health Science Higher Degree Research Student Conference. Ms Phan, who is in the second year of her PhD with Dr Gall, also received the Stroke Society of Australasia Bursary Award in the Combined 27th Annual Meeting of the Stroke Society of Australasia & Asia Pacific.

PhD students **Jing Tian**, **Feng Pan** and **Xia Wang** received the Chinese Government Award for Outstanding Self-Financed Students Abroad. The award is the highest honour bestowed by the Chinese Government for students studying abroad. The awards were presented in Melbourne on April 22

by the Consulate-General of China, Mr Yumin Song.

**Ms Gemma Plottier** received the New Investigator Award – Best Oral Presentation (Neonatology) at the Perinatal Society of Australia and New Zealand Annual Congress. Ms Plottier presented an abstract for 'Clinical Evaluation of a Novel Adaptive Algorithm for Automated Control of Oxygen Therapy in Preterm Infants on Non-Invasive Respiratory Support'.

**Ms Amanda Patchett** and Dr Cesar Tovar, who work in the Tasmanian devil research team, represented the University of Tasmania at the International Student Research Forum at the University of the



Academy of Sciences, Beijing. Graduate students from some of the world's most prestigious institutions attended the forum to discuss their research and meet with other science and technology leaders.

**Ms Lili Wang** received a travel grant from the International Society for Pharmacoeconomics and Outcomes Research (ISPOR) and the University of Tasmania to present her oral paper on 'Multimorbidity and health care service utilisation in the Australian workforce: findings from the National Health Survey' at the ISPOR conference in Singapore in September 2016.

**Ms Kelly Peng** won the Best Moderated Poster at The Pulse of Asia Conference held in September 2016 in Seoul, Korea, for "Validation Testing for the Non-Invasive Measurement of Aortic Reservoir Characteristics from Brachial Cuff Oscillometric Pressure".

**Mr Feitong Wu** received an International Osteoporosis Foundation Young Investigator Award for his abstract entitled "Moderate-to-Vigorous Physical Activity but not Sedentary Time is Associated with Musculoskeletal Health Outcomes in a Cohort of Australian Middle-Aged Women".

**Mr Wu** was also a selected international attendee for the Tenth Fellows Forum on Metabolic Bone Diseases at the American Society for Bone and Mineral Research 2016 Annual Meeting in Atlanta.

**Mr Gongbu Pan** received a Young Investigator Best Poster Award at the Ninth Congress of the Pan-Asian Committee for Treatment and Research into Multiple Sclerosis (MSJ-PACTRIMS) in Bangkok.

**Mr Saliu Balogun** won the award for Best Oral Presentation at the first ANZ Sarcopenia and Frailty conference.

In 2016, our elected Student Committee was **Ms Yi Yang** (president), **Ms Chau Ho**, **Mr Quang Vo**, **Mr Zhenan Zhu** and **Mr Ming Lu**.

**12,000**

**Tasmanians are stroke survivors**

**BACK ON TRACK:** Dr Michele Callisaya is investigating innovative and practical ways to increase rehabilitation after a stroke.



## TACKLING STROKE FROM DIFFERENT ANGLES

There is growing evidence that increasing the amount of therapy after a stroke, particularly in the first six months, improves outcomes. Despite this, numerous studies have reported that physical and cognitive activity is low in inpatient rehabilitation facilities and when patients return home.

At Menzies, Dr Michele Callisaya and PhD student Dawn Simpson, both physiotherapists, are investigating innovative and practical ways to increase rehabilitation after a stroke. This research aims to increase the speed of recovery, improve the quality of life for stroke survivors and reduce the costs associated with stroke.

Stroke is one of Australia's biggest killers and a leading cause of disability. In Tasmania, 12,000 people are stroke survivors and this number will continue to rise in coming years as we feel the personal and societal impacts of high blood pressure, high cholesterol, physical inactivity and smoking.

Two thirds of stroke survivors require care each day and the vast majority live with needs that are not being fully met.

A second stroke team at Menzies, led by Dr Seana Gall, is seeking to better understand the specific causes of haemorrhagic stroke and to use this knowledge to develop interventions to reduce risk factors (particularly in women). As part of this project, PhD student Ms Hoang Phan won the European Stroke Research Foundation's Investigator Award for Excellent Research and received the most outstanding presentation award at the fourth Tasmanian Health Science Higher Degree Research Student Conference.

It is possible to improve our understanding of the cause and prevention of stroke and to improve the quality of care provided in our hospitals and at home. The community's help in our Summer Appeal in 2016 helped us to continue this vital stroke research.



Peter Mathew

## GLOBAL COLLABORATION

A central goal for Menzies is to grow and develop our international profile and global connections. We do this through research collaboration and the enrolment of international research higher degree (RHD) students. Menzies is part of several large international research consortia, particularly in the areas of cardiovascular disease, genetics and multiple sclerosis.

One of our most important international connections is our scholarship program with Anhui Medical University in Hefei, China. The Menzies Director, Professor Alison Venn, and Professor Changhai Ding visited China in March 2016, meeting senior academics at Anhui Medical University as well as Southern Medical University in Guangzhou and Xi'an Jiaotong University in Xi An. During this visit Professor Venn was appointed Visiting Professor of the Xi'an Jiaotong University Health Science Centre.

Postdoctoral researcher Dr Cezar Tovar and a PhD candidate Amanda Patchett participated in the International Student Research Forum (ISRF) hosted by the University of Chinese Academy of Sciences in Beijing. The ISRF aims to

attract the world's brightest upcoming scientists, calling for collaboration beyond and across disciplines and nationalities.

### **In 2016 Menzies was involved in the following international consortia:**

#### **Cardiovascular disease**

##### **The International Childhood Cardiovascular Cohort (i3C)**

**Consortium:** This consortium was established by former Menzies Director Professor Terry Dwyer in 2002, initially with three cohorts (Australia, Finland and the USA). It has grown to include seven cohorts, with five from the USA. The study pools data on cardiovascular risk factors in childhood, following participants over several decades into adulthood. Menzies' involvement is through the Childhood Determinants of Adult Health study, which in 2016 received funding to undertake the third follow-up on adults who initially took part in a 1985 school health survey.

##### **The Long-Term Effects of Early Nutrition on Later Health Project:**

Researchers from 35 institutions in 12 European countries, the United States and Australia are studying how early nutrition

programming and lifestyle factors affect rates of obesity and related disorders.

**SUCCOUR:** An international multi-centre randomised controlled trial attempting to demonstrate that the use of strain imaging can alter heart function in patients with breast cancers and lymphomas.

##### **International STROKE oUTcomes**

**sTudy (INSTRUCT):** A consortium of 14 population-based stroke incidence studies with long-term follow-up data. The study is being used to explore the reasons for differences in outcome between men and women after stroke.

##### **International 24 hour Ambulatory Aortic Blood Pressure Consortium:**

This study aims to derive 24-hour ambulatory aortic blood pressure reference standards by pooling data from existing databases around the world. The study is led from Menzies in collaboration with investigators in Austria and Greece.

##### **Multiple sclerosis (MS)**

**ANZgene consortium, coordinated by MS Research Australia:** Menzies is a key contributor to this investigator-led

## PART OF A GLOBAL RESEARCH COMMUNITY

### **One of the ways in which Menzies has grown over its 28 years is through the internationalisation of the staff and student cohort.**

The Institute was established in 1988 (as the Menzies Centre for Population Health Research). In 2000, it was still a small centre, with 36 staff and research students, however since then Menzies has seen an average annual increase in staff and students of



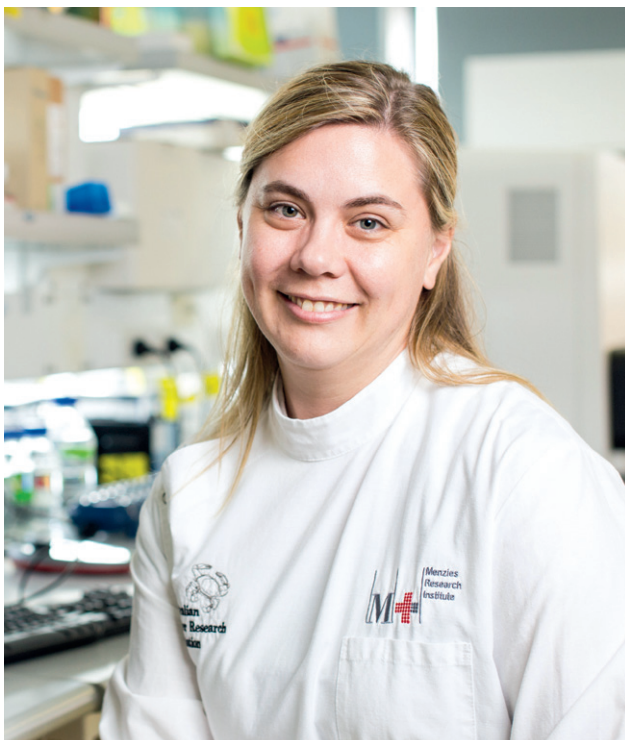
47%, and at the end of December 2016 Menzies had 285 staff and students. Of the 96 post-graduate research students enrolled

at Menzies at the end of June 2016, about two-thirds have come from overseas to study with us. Menzies now has a Memorandum

### **INCOMING**

**TALENT:** Visiting scholars Dr Kang Wang and Dr Liutan Tu, and clinicians who are studying for PhDs at Menzies, Dr Tomoko Negishi and Alexandr Kuzminov.

of Understanding with Xi'an Jiaotong University in China and shares a scholarship program with Anhui Medical University in Hefei, China. Apart from the students, Menzies regularly hosts Visiting Fellows from China, including from Anhui, Shanghai, Nanjing, Guangzhou and Kunming. Clinician-researchers from overseas work conjointly with Menzies and the Royal Hobart Hospital.



Peter Matthew

#### LOOKING TO THE FUTURE:

Associate Professor Kathryn Burdon's area of interest is the identification of genes for blinding diseases.

and the overlap with related eye diseases using multi-ethnic population cohorts.

**Multi-ethnic genetics study of Diabetic Retinopathy:** looking for genes that lead to diabetic eye disease.

**TREATOA:** Studying genes for pain and osteoarthritis.

**GeFOS:** Studying genes for osteoporosis.

**GOBS (Genetics of Brain Structure Study):** This multi-centre study uses large families to study the genetics of MRI-measured traits and cognitive phenotypes in generally healthy people. The study is run from the University of Texas Rio Grande Valley and Yale University.

**GEM – Genes, Environment and Melanoma:** A population-based international consortium studying risk for melanoma development and progression.

consortium across Australia and New Zealand. The consortium is aligned with the International Multiple Sclerosis Genetics Consortium. ANZgene is a collaboration between a team of neurologists, geneticists, bioinformaticians and molecular biologists. It comprises eight geographical nodes and has stewardship of over 3,500 DNA samples for use in MS research.

#### International MS Genetics Consortium:

Uses large-scale whole genome association studies to identify the genes that play a part in the development and progression of multiple sclerosis.

**MSBase:** An international, online registry and platform for collaborative outcomes research in multiple sclerosis.

#### International Progressive MS Alliance:

A collaboration of 15 MS organisations and other stakeholders that brings together researchers from around the world.

#### Genetics

**PRACTICAL consortium (the Prostate Cancer Association Group to Investigate Cancer Associated Alterations in the Genome):** The PRACTICAL consortium aims 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 International Consortium for Prostate Cancer Genetics (ICPCG):

Focusing on the genetic causes of familial and hereditary prostate cancer.

#### The Prostate Collaborative Cancer Research Alliance:

A group of scientific and clinical prostate cancer experts focusing on advancing and translating prostate cancer research.

#### International Glaucoma Genetics Consortium (IGGC):

This consortium has members from Australia, North America, Asia and Europe and uses population-based studies to map genes for clinical traits that lead to glaucoma, and family and case control studies to look at how those genes influence glaucoma risk.

#### The International Age Related Macular Degeneration Gene Consortium:

Includes multiple groups from all over the world and has assembled the largest collection of AMD cases ever studied.

#### Consortium for Refractive Error and Myopia (CREAM):

Aiming to identify genetic risk factors for refractive error

#### Healthy ageing

#### ASPREE (ASpirin in Reducing Events in the Elderly)

Menzies is a critical part of the ASPREE randomised controlled trial of aspirin, the largest primary prevention aspirin study ever undertaken in healthy older people. This collaboration is through Monash University and the Bermann Centre in Minneapolis, USA, and is investigating whether taking daily low-dose aspirin extends healthy active life in those aged over 70 years. The clinical phase of the trial continued through 2016. Results are expected in 2018.

#### STAREE (Statin use in the elderly trial):

STAREE is a community-based public health trial and is not sponsored by pharmaceutical industries. It will determine whether statins maintain and improve quality of life in the elderly population.

#### GOOD (Gait, cOgnitiOn & Decline consortium):

An international collaboration investigating the interplay between gait and cognition/dementia in older people.

**ISN iNET-CKD (the International Network of Chronic Kidney Disease cohort studies)** includes the Tasmanian Chronic Kidney Disease Study.



## GRANTS AND COMPETITIVE FUNDING RECEIVED IN 2016

### **Professor Bruce Taylor: What predicts the progressive phase of multiple sclerosis?**

**\$1,791,342**

While Menzies researchers and others have identified a number of significant factors that affect the onset of multiple sclerosis, it is not known what environmental genetic, epigenetic and lifestyle factors influence the progressive phase of the disease. Researchers have been following an international cohort for 10 years, answering many questions about the early factors that drive conversion to definite MS and the early predictors of outcome. This funding will allow the cohort to be followed to a time point where researchers can comprehensively look at disability progression and conversion to Secondary Progressive Multiple Sclerosis. (NHMRC Project grant)

### **Professor Alison Venn: Cardiometabolic risk trajectories from childhood to midlife: finding pathways to better health**

**\$1,531,987**

This study aims to better define the trajectories of overweight and physical fitness that most strongly predict markers of cardiometabolic disease in midlife, and the factors that modify risk. Researchers in the Childhood Determinants of Adult Health (CDAH) study are conducting a 32-year follow-up of about 1,800 participants aged 38-47 years who were first measured in childhood (aged 7-15 years) in 1985. The follow-up will combine traditional cardiometabolic health assessment methods with newer advanced echocardiographic techniques. Researchers are investigating the influence of individual, social and environmental factors in shaping different risk trajectories. (NHMRC Project grant)

### **Dr Owen Marshall: A genome-wide analysis of the epigenetic control of learning and memory**

**\$547,857**

Both memory acquisition and retrieval are affected by neurodegenerative diseases such as Alzheimer's disease. Although broad changes in epigenetic marks have been associated with memory acquisition and with Alzheimer's progression, a genome-wide understanding of the chromatin states that occur in neurons involved in memory has been lacking. The key transcription factors that initiate and maintain the epigenetic signatures of these neurons are also unknown. Understanding the detailed chromatin state composition of these neurons is a vital foundation for understanding how memories are formed and how neuronal function may be impaired during Alzheimer's. (NHMRC Project grant)

### **WE ALSO ACKNOWLEDGE THE SUPPORT OF:**

- The National Heart Foundation
- The Royal Hobart Hospital Research Foundation
- The Tasmanian Community Fund



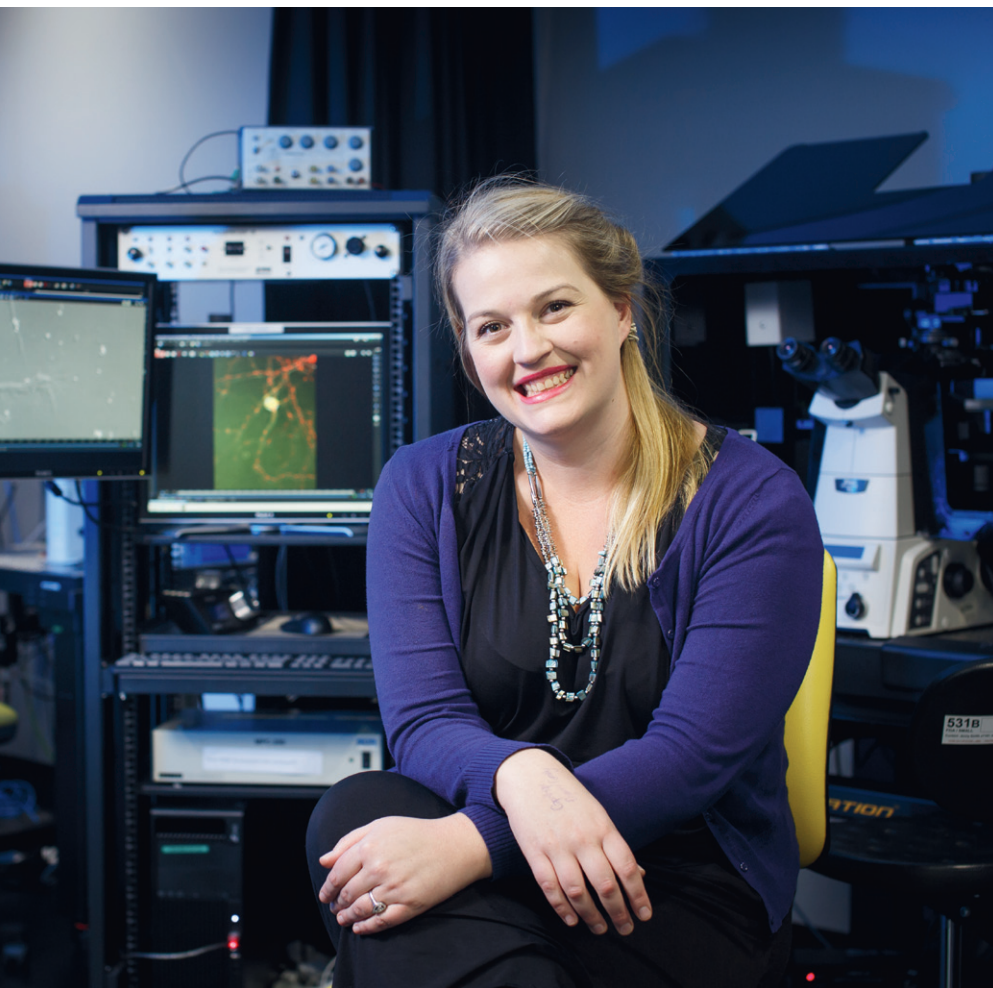
### **GOLD STANDARD:**

Professor Andrew Palmer is looking into the most cost-effective way to manage osteoporosis.

### **Professor Andrew Palmer: AusGo-SHEMO ... Let's Go! Australian Gold Standard Health Economics Model of Osteoporosis**

**\$378,958**

This study will build a gold-standard, validated, transparent decision analysis model of osteoporosis to identify cost-effective interventions. Currently scarce health care resources may be squandered on osteoporosis screening strategies and osteoporosis-related fracture prevention approaches that are neither cost-effective nor safe. As a result, patient access to cost-effective medications may be being restricted or unnecessarily delayed by the use of inappropriate models or data inputs. The team will leverage experience in health economics and the epidemiology of osteoporosis to independently develop this model. (NHMRC Project grant)



Peter Mathew

**MIND MATTERS:** Dr Catherine Blizzard's research into motor neurone disease will benefit from a significant increase in funding.

**Dr Catherine Blizzard: How neuroplasticity – the brain's ability to remodel and make new circuits – is controlled in both excitatory and inhibitory neurons \$372,000**

Neuroplasticity describes the brain's ability to remodel and make new circuits. This capacity, which is vital for all cognitive function, is diminished as we age. It is imperative to determine the mechanisms of neuroplasticity to understand how and why it changes throughout life. (Australian Research Council Discovery Early Career Researcher Award)

**Dr Catherine Blizzard: The inaugural Betty Laidlaw Prize for an outstanding mid-career researcher, MND Australia \$249,861**

Disturbances in neuronal synapses may be an early event that potentially leads to the neuronal dysfunction and death that causes motor neuron disease (MND). The protein known as TDP-43 (transactive response DNA-binding protein 43) is implicated in both the initiation and the

progression of this disease. We have shown that TDP-43 may be involved in maintaining synapses between neurons – the microscopic connections that enable a neuron to function and communicate. We will investigate how TDP-43 protein affects synapses and determine how these synaptic changes can cause MND.

**Centres of Research Excellence (CRE)**

Menzies researchers will be chief investigators on three successful applications led by collaborating institutions:

- From Discovery to Therapy in Genetic Eye Disease (led by the University of Western Australia) - \$450,000 to come to Menzies;
- Energy Transitions, Air Pollution and Health in Australia (led by the Woolcock Institute for Medical Research, NSW) – about \$200,000 to come to Menzies;
- Pulmonary Fibrosis (led by the University of Sydney) – about \$275,000 to come to Menzies.

**Telethon Kids Institute, Menzies, University of Tasmania School of Social Sciences: Pathways to Better Health and Education Outcomes for Tasmania's Children**

**\$593,171**

The Telethon Kids Institute in Western Australia will lead the grant, with Menzies researchers gathering the data in Tasmania. Professor Cate Taylor, from Telethon Kids, will lead the team, with the Chief Investigators including the Menzies Director, Professor Alison Venn and Dr Emily Hansen from the University of Tasmania School of Social Sciences. Using data linkage and qualitative methods the project will track 12,000 Tasmanian children from birth, through all the health and education services available up to the start of formal school at age five. (NHMRC Partnership Grant)

**Professor Graeme Jones, a clinician/ researcher in arthritis, five-year NHMRC Practitioner Fellowship \$338,957**

**Dr Benny Antony, a researcher in arthritis and osteoporosis, four-year NHMRC Early Career Fellowship \$318,768**

**Dr Kaylene Young and Dr Carlie Cullen: Enhancing activity to drive myelin repair in preclinical models of multiple sclerosis \$170,000 (Multiple Sclerosis Research Australia)**

**Dr Andrew Black: Absolute Risk-guided Chest Pain Assessment Clinic \$126,646 (Tasmanian Community Fund)**

## COMPETITIVE RESEARCH FUNDING GRANTED IN 2016

Duration	Funder	Type of grant	Menzies lead and other Menzies researchers	Project	Value \$
5 years	National Health & Medical Research Council	Project Grant	Professor Bruce Taylor, Associate Professor Ingrid van der Mei	What predicts the progressive phase of multiple sclerosis?	<b>1,791,343</b>
4 years	National Health & Medical Research Council	Project Grant	Professor Alison Venn, Adjunct Professor Tom Marwick, Associate Professor Leigh Blizzard, Dr Costan Magnussen, Dr Seana Gall, Dr Verity Cleland, Professor Wendy Oddy	Cardiometabolic risk trajectories from childhood to midlife: finding pathways to better health	<b>1,531,986</b>
3 years	National Health & Medical Research Council (Lead institution – Telethon Kids Institute)	Partnership Project Grant	Professor Alison Venn, Dr Kim Jose	Pathways to better health and education outcomes for Tasmania's children	<b>593,171</b>
3 years	National Health & Medical Research Council	Project Grant	Dr Owen Marshall, Associate Professor Tracey Dickson	A genome-wide analysis of the epigenetic control of learning and memory	<b>547,857</b>
5 years	National Health & Medical Research Council	Practitioner Fellowship	Professor Graeme Jones	From imaging to intervention in osteoarthritis	<b>406,585</b>
3 years	National Health & Medical Research Council	Project Grant	Professor Andrew Palmer, Dr Lei Si, Professor Tania Winzenberg	AusGo-SHEMO ... Let's Go! Australian Gold Standard Health Economics Model of Osteoporosis	<b>378,957</b>
3 years	Australian Research Council	Discovery Early Career Researcher Award	Dr Catherine Blizzard	The Control of Neuroplasticity in the Brain	<b>372,000</b>
4 years	National Health & Medical Research Council	Early Career Fellowship	Dr Benny Eathakkattu Antony	Subchondral bone and synovial pathology in knee osteoarthritis and back pain: can interventions reduce symptoms and slow disease progression?	<b>318,768</b>
1 year	Motor Neurone Disease Research Institute of Australia Inc	Betty Laidlaw Grant	Dr Catherine Blizzard	TDP-43 Misprocessing drives synaptic deficits that leads to ALS	<b>249,861</b>
3 years	Multiple Sclerosis Research Australia	Project Grant	Dr Kaylene Young, Dr Carlie Cullen	Enhancing activity to drive myelin repair in preclinical models of multiple sclerosis	<b>170,000</b>
2 years	Tasmanian Community Fund	Grant	Dr Andrew Black	Absolute Risk-guided Chest Pain Assessment Clinic (ARCPAC)	<b>126,646</b>
1 year	Bayer Pharma AG	Global Ophthalmology Award	Associate Professor Alex Hewitt	Optimisation of CRISPR/Cas gene editing in the retina	<b>72,634</b>
1 year	National Heart Foundation	Vanguard Grant	Dr Martin Schultz, Professor James Sharman, Professor Tom Marwick, Professor Alison Venn	The EXERcise stress Test collaboratiON – Pilot study	<b>55,519</b>
1 year	Arthritis Australia	Research Fellowship	Peng Feng	Effects of krill oil supplementation versus placebo on knee pain and effusion in patients with symptomatic knee osteoarthritis	<b>50,000</b>
1 year	Tasmanian Community Fund	Grant	Professor Changhai Ding, Dr Benny Eathakkattu Antony	Does vitamin D supplementation have a long-term effect on symptoms of knee osteoarthritis: a 5-year follow-up	<b>49,340</b>
1 year	University of Tasmania Foundation Inc	Dr Eric Guiler Tasmanian Devil Research Grant	Dr Andy Flies, Professor Greg Woods	Improving the DFTD vaccine by targeting key immune signalling molecules	<b>35,000</b>
1 year	University of Tasmania Foundation Inc	Dr Eric Guiler Tasmanian Devil Research Grant	Professor Greg Woods	Detection of activated Tasmanian devil cytotoxic lymphocytes by a rapid RNA detection assay	<b>34,999</b>



Duration	Funder	Type of grant	Menzies lead and other Menzies researchers	Project	Value \$
1 year	Avant	Doctor in Training Scholarship	Dr Kazuaki Negishi	Effect of ambient air quality on cardiovascular disease and telomere length	25,000
1 year	Royal Hobart Hospital Research Foundation	Establishment Grant	Associate Professor Alex Hewitt	Investigating the utility of retinal Base-Editing	25,000
1 year	Department of Education and Training (Commonwealth)	Endeavour Research Fellowship	Dr Michele Callisaya	Improving the cognitive and physical health of older Australians	24,500
1 year	Royal Hobart Hospital Research Foundation	Establishment Grant	Dr Liesel Fitzgerald, Associate Professor Jo Dickinson	Investigation of chromosomal loss and gain at 7p21 in a Tasmanian hereditary prostate cancer family	23,186
1 year	Royal Hobart Hospital Research Foundation	Establishment Grant	Professor Graeme Jones, Professor Tania Winzenberg	Clinical and metabolic factors and imaging abnormalities in chronic plantar heel pain	23,000
1.5 years	Tasmanian Community Fund	Grant	Dr Benny Eathakkattu Antony, Professor Graeme Jones	The effect of krill oil on cartilage composition of knee osteoarthritis patients	19,999
2 years	National Health & Medical Research Council (Administered Externally by University of Sydney)	Centre of Research Excellence Grant	Dr Amanda Wheeler, Dr Fay Johnston	Exposure to PAHs and metals in residential dust and soil resulting from the Hazelwood coalmine fire smoke plume	19,990
1.5 years	National Health & Medical Research Council	Centre of Research Excellence Grant	Dr Fay Johnston, Dr Amanda Wheeler	The UTAS Smoke Lab: A request for CAR to fund essential equipment for an Australian facility for inter-disciplinary air quality research	17,683
1 year	University of Tasmania	Research Enhancement Grant	Dr Benny Eathakkattu Antony, Professor Changhai Ding	Associations of physical activity, physical performance measures and obesity in childhood with knee cartilage thickness in adults after 25 years	15,000
1 year	University of Tasmania	Research Enhancement Grant	Dr Katherine Southam	Investigating the function of the amyloid precursor protein in neurons	14,996
1 year	University of Tasmania	Research Enhancement Grant	Dr Amanda Wheeler, Dr Fay Johnston	Hazelwood coal mine fire emissions: Are there risks for infant brain development?	14,959
1 year	University of Tasmania	Research Enhancement Grant	Dr Kylie Smith, Professor Alison Venn, Dr Kim Jose A; Jose, Adjunct Professor Joan Abbott-Chapman	The perceived benefits of school breakfast programs in Tasmanian primary schools	14,878
1 year	University of Tasmania	Research Enhancement Grant	Dr Kimberley Pitman	Understanding the signalling pathways enabling activity-dependent myelination	14,800
1 year	Royal Hobart Hospital Research Foundation	Starter Grant	Dr Benny Eathakkattu Antony, Professor Changhai Ding, Zhaozhua Zhu	Does vitamin D supplementation have long-term effect on inflammatory makers in knee osteoarthritis patients	10,000
1 year	Royal Hobart Hospital Research Foundation	Starter Grant	Yuan Zhou, Professor Bruce Taylor	Identifying novel genetic loci associated with an increased relapse rate and disability progression in multiple sclerosis	10,000

## PHILANTHROPY AND COMMUNITY ENGAGEMENT

Philanthropy and community engagement make a vital contribution to the Institute achieving its mission. Indeed, philanthropy helped establish the Institute through a donation from the Sir Robert Menzies Memorial Foundation. The Institute received its first bequest in 1992 from Ethel Young.

In recent years, philanthropic income at Menzies represents 13-15% of total Institute income. Donations and bequests enable research projects, research salaries, scholarships and fellowships as well as equipment acquisition. Strategically, income

assists priority projects and provides a start for new and innovative areas of research.

Our aim in this area is to forge relationships that lead to support for the Institute and ultimately better health for Tasmanians and beyond. We identify and present compelling opportunities for communities to engage and invest,

thus securing the support and income required to advance the Institute's mission and priorities.

All donations made to the Institute go directly to medical research. Every dollar donated also attracts research infrastructure funding to the University through the Australian Government's Research Block Grant Program.

Continued on page 28

**\$2.9 million**  
Total philanthropic income

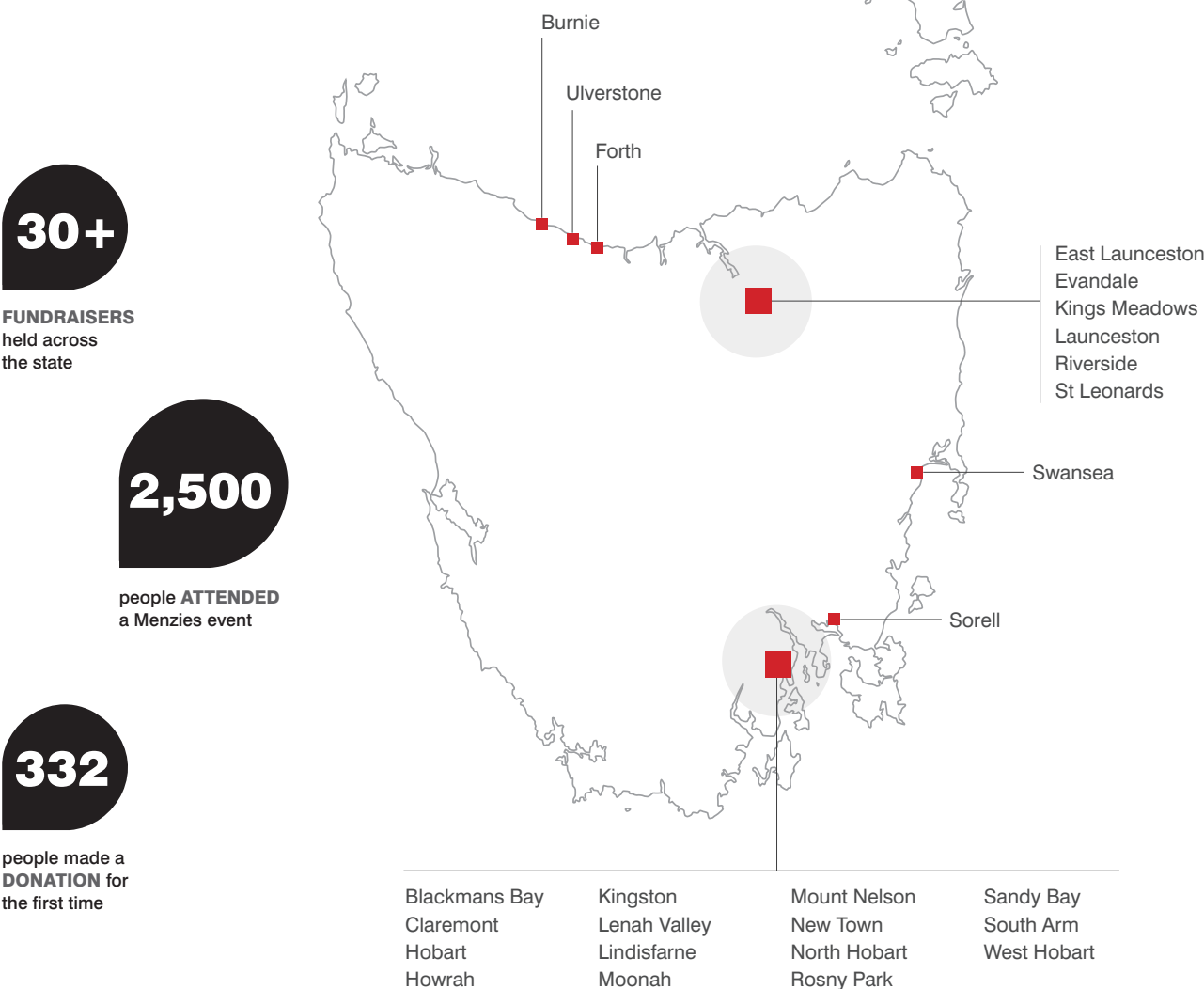


**HELPING HAND:** Award-winning student Hoang Phan, who is studying stroke, is the grateful recipient of the Merle Weaver Postgraduate Scholarship in Medical Research.

Community fundraising initiatives were vital to Menzies in 2016

\$120,000

WAS RAISED FROM EVENTS IN THE COMMUNITIES IDENTIFIED BELOW

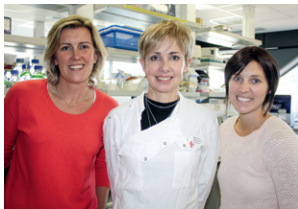


SECONDS COUNT FOR THE SECOND TIME IN 2016

Once again in 2016 the Seconds Count Gala Ball made a wonderful contribution to breast cancer research at Menzies. The ball raised \$67,000 for research into secondary breast cancer, taking the tally for the events in 2015 and 2016 to more

than \$130,000. Organiser Kim Upton said the willingness of so many volunteers to help in organisation, or by donating items for auction, was overwhelming. "The truth is, everyone is affected by cancer in some way and it touches people's lives very deeply.

The idea that we can make a difference to the quality or longevity of the lives of those diagnosed with metastatic cancer is our ultimate aim and with the help of Menzies we think this can be achieved."



Organisers Kim Upton and Nicole Tyson at Menzies with breast cancer researcher Associate Professor Jo Dickinson (centre).





#### EVERY TASMANIAN:

In 2016, Menzies commissioned the advertising agency Clemenger to make a new television commercial and social media video emphasising our connection to the Tasmanian community and our focus on the diseases that are prevalent in Tasmania. Menzies volunteers and supporters donated their time to appear in key segments of the advertisement, which features people standing in response to questions about the diseases that have had an impact on their life.

Continued from page 26

In 2016, income from philanthropy at Menzies was \$2.9 million including donations, bequests and investment returns, 332 people made a donation to the Institute for the first time and 57 major gifts (those over \$5,000) were made.

#### We acknowledge the following gifts made in Wills:

- Estate of the late Nalda Joyce Gilchrist
- Estate of the late Mollie Joan Chick
- Estate of the late Elizabeth Andrea Sealy

- Estate of the late William Desmond Lawrence Bell
- Estate of the late Patricia Glasser

#### EXPENDITURE OF PHILANTHROPIC FUNDS

The Institute adheres to a series of investment principles that guide the expenditure of philanthropic funds. The Menzies Board, Philanthropy Committee and Philanthropic Funds Panel all play a role in the strategic distribution of funds. This distribution is based on capacity

building, stimulus and strategic need.

In 2016 categories of funding included:

#### People (Salaries, Fellowships and Scholarships)

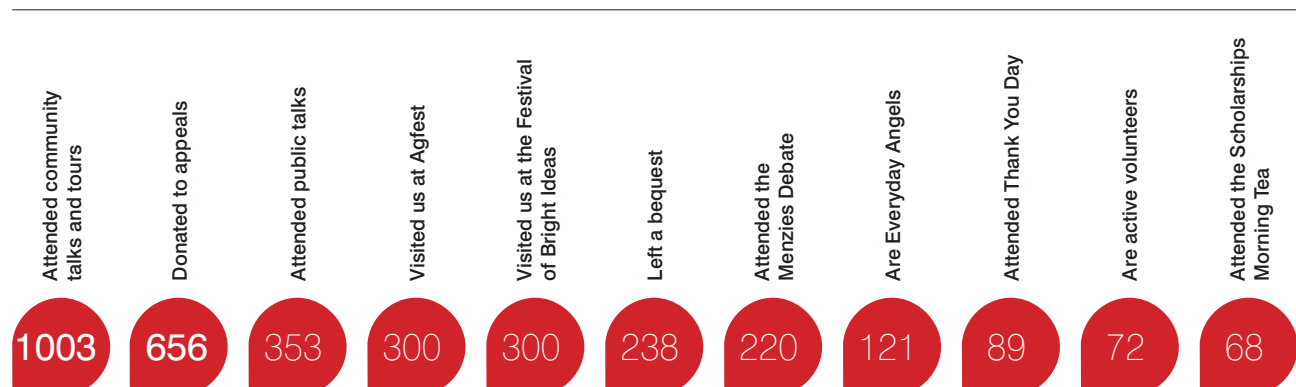
Investing in our people enables the Institute to attract, retain and build capacity in the best and most competitive researchers and areas of research.

The Scholarship and Fellowship program at Menzies funded 54 researchers in 2016, including the

Congratulations to all our volunteers for their hard work and commitment to Menzies. In 2016, we had 72 active volunteers who contributed around 12,000 hours.

## Community engagement

By number of community members involved



Community Funded Fellowship through the Winter Appeal.

### Medical Research Equipment

In 2016, the Institute called for proposals to secure equipment and philanthropic funds enabled the purchase of equipment including a confocal microscope and a DNA analyser.

### Research Projects

All donations made to the autumn and summer appeals went directly to fund medical research in genetic eye disease and stroke.

### Stimulus Funding

Stimulus funding supports researchers to develop and initiate new projects, which may then proceed to nationally competitive Federal Government funding.

### COMMUNITY ENGAGEMENT

At Menzies, improving the lives of Tasmanians is central to our mission. We recognise the important role our local community plays in achieving our research and philanthropic goals by participating in our research, attending our events, making a donation or leaving a bequest to Menzies. In 2016, over 2,500 people engaged with Menzies

by attending public talks, tours and events including the Menzies Debate, Thank You Day, Hobart Run the Bridge, Agfest and the Scholarships Morning Tea.

Community fundraising initiatives were vital to Menzies again in 2016. More than 30 community fundraisers, held in all corners of the state, generated over \$120,000 to support medical research at Menzies.

### We acknowledge the following fellowship supporters:

- Select Foundation Research Fellowships in Medical Research
- Farrell Foundation Research Fellowship in Medical Research
- Broadreach Holdings Early Career Research Fellowship

### We acknowledge the following scholarship supporters:

- Ashdown Family Elite Medical Research Scholarship
- Cuthbertson Elite Scholarship in Medical Research
- Diabetes Tasmania Scholarship in Medical Research
- Dianne Errdan Scholarship in Medical Research
- Diagnostic Services Medical Research Scholarship

- Doctors Tasmania Scholarships in Primary Care Research
- Farrell Foundation Elite Research Scholarship in Medical Research
- Fred Binns Parkinson's Foundation Scholarship in Medical Research
- Hobart Cancer Auxiliary Honours Scholarship in Medical Research
- Heart Foundation / Menzies Institute for Medical Research Honours Scholarships
- Helene Matterson Honours Scholarship in Medical Research
- Merle Weaver Postgraduate Scholarships in Medical Research
- The Moonah Navy Club Honours Scholarship in Medical Research
- The Morrell Family Trust Postgraduate Scholarship in Medical Research
- Pennicott Foundation Scholarship in Medical Research
- Patricia F Gordon Scholarship in Medical Research
- Select Foundation Research Scholarships in Medical Research
- Staples Australia/Konica Minolta Postgraduate Scholarship in Medical Research
- Tasmanian Police Charity Trust Honours Scholarship in Breast Cancer Research
- TasNetworks Mental Health Postgraduate Research Scholarships



### ON THE ROAD:

Dr Catherine Blizzard, PhD students Tongcui Jiang and Emily Handley and Menzies Deputy Director Associate Professor Tracey Dickson at Agfest with the bio-bus that was used in northern Tasmania for the collection of data for the ASPREE study (ASPIrin in Reducing Events in the Elderly)

Miranda Harman

# FINANCIAL REPORT

1 JANUARY TO 31 DECEMBER 2016

	2015 Actual	2016 Actual
<b>Income</b>		
Commonwealth Government Research Support	\$4,163,111	\$4,452,635
Teaching Income	\$615,551	\$753,300
Menzies Foundation	\$75,000	\$75,000
Commonwealth Government Research Grants	\$5,943,950	\$4,112,931
Tasmanian Government grants	\$1,274,523	\$1,505,556
Other Contracts And Agreements	\$4,135,231	\$4,532,809
Donations	\$1,592,889	\$1,845,931
Bequests	\$1,082,955	\$144,441
Investment Income	\$707,087	\$816,586
Sales	\$462,782	\$317,099
Other Income	\$392,978	\$518,590
University of Tasmania Contributions	\$776,441	\$376,821
	\$21,222,499	\$19,451,700
<b>Expenses</b>		
Salaries and On-Costs	\$11,911,885	\$11,899,905
Depreciation, Equipment and Infrastructure	\$1,097,516	\$1,051,776
Medical and Laboratory Materials	\$1,307,058	\$1,220,784
Travel and Training Related Costs	\$748,506	\$673,715
Scholarships	\$760,816	\$947,356
Research Sub-Contractors and Consultants	879,941	1,265,005
Other Expenses	\$819,403	\$945,173
	\$17,525,125	\$18,003,713
Surplus/(Deficit)	\$3,697,374	\$1,447,987

## Notes

### 1 Trust Funds

As at 31 December 2016 Menzies held Trust Funds valued at \$16,922,479. The capital amount of this trust was valued at \$12,450,053. Interest distributions provide a source of research income for Menzies. The non-capital component of these trust funds is available for use in accordance with the benefactors' instructions.

The University Foundation manages a number of trusts on behalf of Menzies. As at 31 December 2016 the value of these trusts was \$789,401. Distributions are made by agreement between the University Foundation and Menzies in accordance with the benefactors' instructions.



## BOARD AND MANAGEMENT

### The 2016 Menzies Board

Mr Bruce Neill (Chair)  
Professor Alison Venn (Director, ex-officio)  
Professor Moira Clay  
Mr Brian Doyle AM  
Professor Denise Fassett (ex-officio)  
Mr Bob Gozzi  
Professor Brigid Heywood (ex-officio)  
Professor Bob Williamson

### The 2016 Menzies Senior Management Team

Professor Alison Venn (Director)  
Associate Professor Tracey Dickson (Deputy Director)  
Professor James Sharman (Deputy Director)  
Mr Mark Bennett (General Manager)  
Associate Professor Jo Dickinson  
Professor Changhai Ding  
Ms Miranda Harman (Institute Marketing and Communications Manager)  
Professor Graeme Jones  
Professor Heinrich Korner  
Ms Magdalena Lane (Institute Advancement Manager)  
Professor Andrew Palmer  
Dr David Steele (Research Laboratory Manager)  
Professor Bruce Taylor



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

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ABN 30 764 374 782 – University of Tasmania

**Menzies Institute for Medical Research,  
 University of Tasmania is proudly supported by:**

