UNIVERSITY of TASMANIA | WICKING Dementia Research & Education Centre

Annual Report

2017

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Message from the Director

2017 has been a very successful year for the Wicking Centre, with a substantial expansion in reach of our educational programs, and increased grant income. The Centre will have been 10 years in existence by the end of 2017, and we are delighted that the J.O. and J.R. Wicking Trust (Equity Trustees) will be partners with us for the next five years (2018-2022), for 'Stage Three' in the Centre's continued development. The last ten years has culminated in our position as a place of cutting edge research across the Centre's three research themes – the Cause, Prevention and Care of dementia. In addition, the national and international uptake of our MOOCs and degree program has positioned us as the global leader in dementia education.

Also of great significance this year for the Centre, was Professor Andrew Robinson's retirement as Co-Director of the Wicking Centre and Professor of Aged Care Nursing (School of Health Sciences). Andrew has been an excellent collaborator and key driver of the Centre over the last ten years. This has enabled us to pursue an interdisciplinary and pioneering agenda of innovation in our approach to research and education, to help us achieve our mission to make a difference in the lives of people living with dementia. Andrew will maintain his contributions to the Centre through his work with Dementia Training Australia, as well as with our Advisory Board.

We were delighted that the Hon. David Bartlett has agreed to Chair our new Advisory Board. The Board will be of great assistance in shaping and supporting the strategic focus of the Centre, and helping us achieve the reach and impact of our research and educational programs. In other organisational developments for the Centre, Associate Professors Anna King and Alison Canty have been appointed as Associate Directors of the Centre, taking a leadership role for our research and educational portfolios, respectively.

The last ten years of development of the Wicking Centre have been productive, and we look forward to Stage Three, where we hope to deliver on our research and educational goals, and to sustainably build new academic and outreach programs of high impact. Dementia continues to escalate in its prevalence and broad effects on our society, and it has been the community of people affected by this condition that have supported us to this point, and on whom we will rely on for their goodwill, feedback and engagement over 2018-2022 to reach our ambitious goals.

Professor James Vickers
Director, Wicking Dementia Research and Education Centre

About the Wicking Centre

The Wicking Dementia Research and Education Centre is one of the largest dementia-specific research centres in Australia. It is also the primary university provider of dementia education nationally, with a growing profile internationally. The Centre was established in 2008 in the Faculty of Health at the University of Tasmania, and receives substantial financial support from the J.O. and J.R. Wicking Trust (managed by Equity Trustees), with significant contributions and support from the University of Tasmania.

With the prevalence of dementia predicted to continue to increase, it is a major focus of health and social care. In Australia, there are over 400,000 people living with dementia, and numbers are expected to increase to over 900,000 by 2050. The impact of dementia on families, health and care workers, and the economy, is significant. The Centre's work aims to help address this major public health issue of the 21st century.

The Wicking Centre is highly interdisciplinary, and carries out projects across fields such as neuroscience, medicine, nursing, psychology and sociology, health, economics and policy. The research program of the Centre is aligned to three major themes - the Care, Prevention and Cause of dementia. New grant funding in 2017 totalled $8 million, comprised of grants from a broad range of funding bodies including the J.O. and J.R. Wicking Trust (Equity Trustees), National Health and Medical Research Council (NHMRC), the Commonwealth Department of Health, the Dementia Australia Research Foundation, the Tasmanian Community Fund, the Yulgilbar Foundation, Australian Research Council, the Motor Neurone Disease Research Institute and the Royal Hobart Hospital Research Foundation. In addition, previously awarded and currently ongoing grant funding comprised over $10 million across existing projects.

As the end of the year approaches, Stage Two of the Wicking Centre wraps up, and the Centre will move into Stage Three from 2018 with a new governance structure to guide and underpin areas of strategic focus. The Centre's position within the University will also be strengthened through the development of the College of Health and Medicine. The Wicking Centre will form part of this newly configured structure, alongside the School of Medicine, the School of Health Sciences and the Menzies Institute for Medical Research. Leveraging the impact made by the Wicking Centre, the College has recently announced that dementia will be one of three flagship areas of research across the College, along with obesity and multiple sclerosis. It is anticipated that this will mean increased opportunities for strategic and cross-disciplinary research collaborations, and will strengthen the College's ability to attract high performing dementia researchers and academic leaders.

Dementia Research in 2017

The Centre has continued to expand its research, with the themes of dementia Care, Prevention and Cause performing strongly across grant rounds, with many successful grant applications during the year.

A highlight was two Dementia and Aged Care Services (DACS) grants, awarded by the Commonwealth Department of Health, both of which will leverage current dementia education work. One DACS project will nurture and engage students from the Tasmanian Circular Head Aboriginal Community into our Dementia Care Degree Program, and the other will seek to measure and evaluate dementia literacy outcomes of those people participating in the Understanding Dementia MOOC.

The Centre has also attracted major funding from the NHMRC, including a prestigious Fellowship from the Boosting Dementia Research Initiative.

Dementia Education in 2017

Our education programs have continued to provide much needed dementia literacy and knowledge across Australia. Both the Understanding Dementia MOOC and Preventing Dementia MOOC were delivered in 2017, again with record-breaking numbers of engaged participants. Reach through the MOOCs has now surpassed 146,000 enrolments, and attracted participants from 190 countries.

For the second year in a row, the Understanding Dementia MOOC was ranked in the Top 50 Free Online Courses of All Time from over 7,000 courses, and was also the number one ranked MOOC in the Health and Medicine category, as rated by course participants (Class Central). The Dementia Care Degree Program has also continued to generate high levels of interest, with strong enrolment numbers maintained. To date, 528 people have graduated with a University qualification in Dementia Care, providing critical skills and knowledge across the aged care and health industry.

A new project in exploring how a Bachelor of Dementia Care graduate can shape new dementia care models has also been launched, which will provide demonstrable information to aged care providers, about the significance of dementia education.

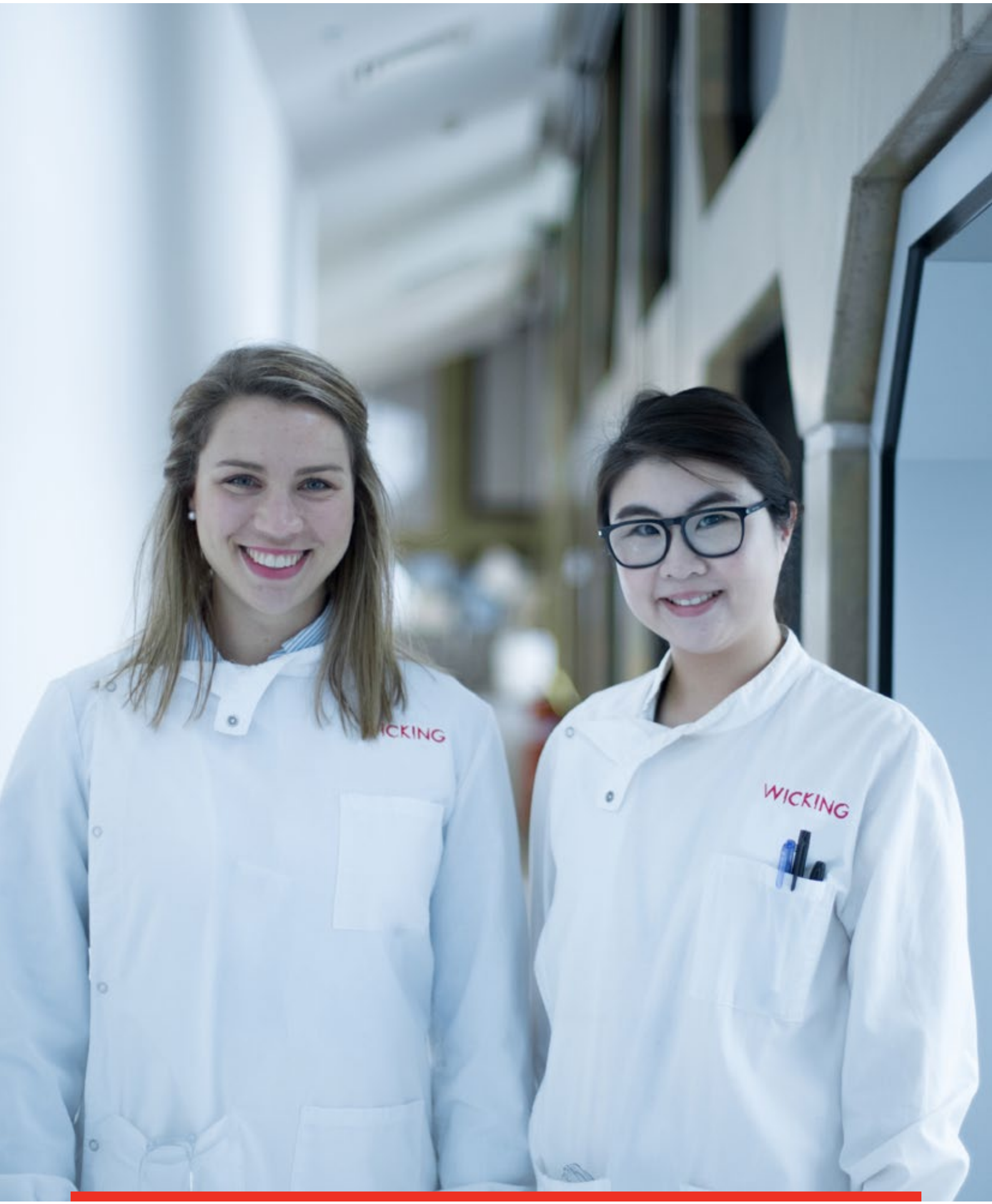
Worldwide
there are more than
46.8 million people
with dementia today
(Alzheimer's Disease International, 2015)

Summary of 2017 Outputs

Research Outputs	2017	2016	2015	2014
New funding	$7,911,929	$5,469,068	$2,833,462	$2,374,291
Total funds managed	$17,553,371	$8,769,482	$11,438,254	$11,158,827
Research publications	47	70	63	43
Research students	27 PhD; 9 Hons	33 PhD; 4 Hons	29 PhD; 6 Hons	21 PhD; 5 Hons

Dementia Care Degree Program	To date	2017	2016	2015	2014
Graduands	358 Diplomas 81 Associate Degrees 89 Bachelor Degrees Total 528	148 Diplomas 33 Associate Degrees 58 Bachelor Degrees	124 Diplomas 32 Associate Degrees 31 Bachelor Degrees	82 Diplomas 16 Associate Degrees	4 Diplomas

Dementia MOOCs	To date	2017
Understanding Dementia MOOC enrolments	119,565	28,976
Preventing Dementia MOOC enrolments	26,938	15,597
Total enrolments	**146,503**	**44,573**
Understanding Dementia MOOC completion rate 2017		41.63%
Preventing Dementia MOOC completion rate 2017		53.01%
Unique countries	190	147


WICKING

Dementia Research – Care, Prevention and Cause

The Wicking Centre carries out a range of interdisciplinary research projects and collaborations across three key major themes: Care, Prevention and Cause.

Care

Research in dementia care comprises four interlinked domains of activity: care, learning organisations, literacy and dementia-friendly communities. One of the projects from this area this year highlights the connection of care with the community.

Building dementia-friendly communities

This project involves undertaking research to help determine dementia education needs across Tasmania, with the aim of supporting the development of dementia-friendly communities.

Led by Dr Claire Eccleston, the team has travelled throughout Tasmania, conducting surveys to investigate what people know about dementia, and talking with community members about their preferences for dementia education delivery. By discovering the educational needs and preferences of our communities in relation to dementia, this project aims to support improvements to dementia literacy to create dementia-friendly communities.

The research is funded by a $50,000 grant from the Dementia Australia Research Foundation and supported by Plants Management Australia. Currently, the project team has collected over 400 dementia knowledge surveys – exceeding the original target, and are continuing to hold focus groups with members of the Tasmanian community.

Investigators:
Dr Claire Eccleston
Dr Helen Courtney-Pratt
Professor Fran McInerney
Dr Kathleen Doherty

Dr Claire Eccleston

Prevention

The research on prevention focuses on understanding the risk factors for dementia and developing effective interventions, such as later-life education, to help people reduce their risk.

Tasmanian Healthy Brain Project

The overarching aim of the Tasmanian Healthy Brain Project is to investigate the potential for later-life tertiary education to build cognitive reserve, and to offer protection against cognitive decline and dementia. The project began in 2010 and is supported by two NHMRC project grants up to 2020, making the project one of the longest continually funded cohort studies by the NHMRC. As evidence of the project's success, several studies produced from the Tasmanian Healthy Brain Project were published in high impact journals in 2017. Some of the central findings were that ageing does not impede academic success; and the identification of associations between specific genetic variations and cognitive reserve.

The Tasmanian Healthy Brain Project has 425 participants actively engaged, 60 of whom are participating in a sub-study investigating brain connectivity by functional Magnetic Resonance Imaging (fMRI), led by PhD candidate Manuela Pietzuch. Moving forward, the investigators aim to start a new sub-study of biomarkers of healthy and pathological cognitive ageing in a blood-sampling study. The investigators also aim to investigate the potential association between chronic stress and cognitive ageing by analysing stress hormone levels in hair samples, and how stress response might interact with genetic markers and cognitive function over time.

Investigators:
Professor James Vickers
Assoc Professor Anna King
Assoc Professor Mathew Summers
Professor Andrew Robinson
Professor Jeffery Summers
Professor Velandai Srikanth
Professor Michael Valenzuela
Professor Karen Ritchie

Cause

Wicking Centre researchers use cutting-edge medical research tools to explore the underlying pathology of the major diseases that cause dementia.

Stem cell research

Dr Anthony Cook is leading a team that received a $52,000 grant to explore gene editing of Batten disease genes in patient-specific stem cells. Batten disease is a rare childhood disease that results in epilepsy, dementia and a progressive loss of vision. It can be caused by variants in one of several genes, including the CLN2 and CLN3 genes. Using advances in stem cell and gene editing technologies, the team will study how the Batten disease-causing variants in these genes differently affect nerve health and function.

The team has generated induced pluripotent stem cells from people living with Batten disease and, in this project, aims to use the CRISPR/Cas gene editing technology to correct the disease-causing variant to produce otherwise genetically matching stem cell lines. The research plan involves maturing both the patient and the variant-corrected stem cells into nerve cells in the laboratory to determine the extent to which correcting the variant prevents development of Batten disease pathology. The cells produced in this manner will provide an ideal system in which to understand the cellular changes that cause dementia in children living with Batten disease, and may also provide insight into the cause of related neurodegenerative diseases.

Investigators: Dr Anthony Cook, Assoc Professor Alice Pébay, Assoc Professor Alex Hewitt, Assoc Professor Anna King, Dr Alexandra Grubman.

Dr Anthony Cook

Dementia Education

The Understanding Dementia MOOC

The Centre's free, nine-week Understanding Dementia MOOC is now in its sixth iteration since the first course began in 2013. Divided into three key modules – The Brain, The Diseases and The Person – the course draws on the expertise of global dementia experts to address the foremost issues surrounding dementia.

This year, there was a record number of enrolments, with over 29,000 people from 133 countries. This course remains the number one Health and Medical MOOC as rated by Class Central, and 2017 participants have now provided over 300 five-star reviews on Class Central's feedback and review forum.

Hear from our Understanding Dementia MOOC participants:

"What a great course! The course was so interesting and very informative. I feel I know so much more about dementia now. There are a series of short conversations throughout the MOOC, all of them with people who are experts in their field. I felt so privileged to have access to their knowledge and for free! An added bonus was 27 CPD points for my nursing education requirements for this year."

Dana Breen, Australia

"I thought I had a reasonable understanding of dementia before completing this course but soon realised that I knew very little. This course has helped me achieve a greater understanding of dementia, which will help me in my work as a community nurse when it comes to caring for those with dementia and providing support to their families. I loved that the course was easy to follow and understand."

Melissa Olave, Australia

"Excellent course to take and I will definitely recommend it to everyone. It has given great information and help all the way through."

Adele Ely, UK

The Preventing Dementia MOOC

In 2017, the Preventing Dementia MOOC was offered for the second time, and once again it proved its growing popularity. The free, five-week online course was also this year launched in China with Wicking Centre collaborator, CareVisions. The Australian Chamber of Commerce and the Australian Embassy assisted with the launch which was well received. The Preventing Dementia MOOC's potential impact in China is significant, with estimates of over 9.5 million people with dementia throughout the country. Worldwide, over 15,000 people enrolled in the course in 2017 from more than 2200 cities. The course had a completion rate of 53%, which was the highest of any English-speaking MOOC to date.

This course draws on the latest scientific evidence, as well as the expertise of leading researchers in dementia prevention, to outline and discuss the key risk factors for dementia that are potentially modifiable. With the latest research estimating that around one-third of dementia cases may be preventable, this course offers practical steps to decrease the risk of dementia, and provides a program to inform risk reduction behaviours at a population level, potentially mitigating the impact of dementia.

Dementia is the single greatest cause of disability in Australians

65 years & older

(Australian Institute of Health & Welfare, 2012)

Hear from our Preventing Dementia MOOC participants:

"This is my second time taking a course from the University of Tasmania and I love it. I have taken other MOOCs from other universities but the University of Tasmania's are the best yet. The format is easy to follow, the videos are highly informative with a wide variety of expertise. Thank you again for offering these courses. They are extremely helpful to myself and the people I support in my work."

Lorraine Porteous, Canada

"The MOOC 'Preventing Dementia' was useful knowledge for people, especially me, to be reminded and encouraged to change our behaviour to a positive healthy lifestyle, to reduce our dementia risk in the future. And, I look forward to the MOOC 'Understanding Dementia' so I can implement my care in my workplace better. Thank you."

Helen Yohanes Bridge, New Zealand

"Thank you to all involved in organising this course. I am really enjoying it!! I love the video presentations. Keep up the amazing work."

Kate Beard, Australia

"Wow, this MOOC is such an amazing gift. We are all truly lucky to have free access to such powerful and in-depth knowledge. This course has enabled me to understand more about dementia, the known risk factors and how to start to modify lifestyle choices and behaviours for the better. This is not just for me but for family, friends and clients at work."

Elizabeth Grochowski, Australia

Left to right: Dr David Ward, Dr Maree Farrow, Dr Shannon Klekociuk and Professor James Vickers

Dementia Care Degree Program

In 2017, the Centre saw the growth of dementia education with further dementia care graduates welcomed into our growing alumni body. This Program offers students the choice to graduate with a Diploma of Dementia Care (8 units), an Associate Degree in Dementia Care (16 units), or a full Bachelor of Dementia Care (24 units). In 2017, 148 new students graduated with a Diploma, 33 with the Associate Degree and 58 with the Bachelor's Degree – taking the total number of Dementia Care Graduates to 528.

The Dementia Care Degree Program provides specialised knowledge in the field of dementia education, research and care from experts in the field. It is available to domestic and international students, to carers and health professionals and anyone with an interest in learning more about dementia and making a difference to the lives of people living with dementia.

"The Bachelor of Dementia Care opened my eyes to the many ways I can support the quality of life of people living with dementia by increasing my knowledge, compassion and ability to advocate for their specific needs."

Evthoxia Lynch
Bachelor of Dementia Care

Our People

In 2017, a new governance structure was implemented to provide leadership, offer structure, develop strategies and project plans, and provide overall management of the Centre.

The Wicking Centre Executive is made up of the Director, Associate Directors and Business Manager.

Professor James Vickers, Director

Professor James Vickers is Director of the Wicking Centre (formerly Co-Director with Professor Andrew Robinson) and Professor of Pathology at the University of Tasmania. James is a world-renowned researcher with interests including neurodegenerative disease (particularly Alzheimer's disease), traumatic brain injury, structural brain plasticity, ageing-related changes in cognition and health services for dementia.

Professor Andrew Robinson, Co-Director

Wicking Centre Co-Director and Professor of Aged Care Nursing (School of Health Science), Professor Andrew Robinson, was fondly farewelled this year. Andrew retired after a 23-year career with the University of Tasmania. Over his academic career, Andrew has authored more than 100 publications and successfully secured more than $25 million in external funding. Andrew will continue to have a pivotal role in the Centre on the Advisory Board and overseeing the Dementia Training Australia program.

Caroline Gray, Business Manager

Caroline leads the professional staff across the Centre, and oversees the administrative, financial and resourcing activities across all major projects. Caroline joined the University of Tasmania in 2003 and has worked across several roles while completing a Master in Business Administration.

Associate Professor Anna King, Associate Director (Research)

Associate Professor Anna King is the Associate Director (Research) at the Wicking Centre. She is a member of the NHMRC National Institute of Dementia Research and was recently awarded a Boosting Dementia Research Leadership Fellowship from the NHMRC (2018 – 2021). Anna also plays a key role in the Wicking Centre's educational offerings including the Bachelor of Dementia Care, and the Understanding Dementia MOOC.

Associate Professor Alison Canty, Associate Director (Learning & Education)

Associate Professor Alison Canty is the Associate Director (Learning and Teaching) at the Wicking Centre. She was centrally involved in leading the development and rapid growth of the high quality, evidence-based, award winning Bachelor of Dementia degree program, and has held an education governance role within the centre for several years. Alison's research focusses on mechanisms of neuroplasticity, degeneration, and trauma – all of which are central to understanding the pathology of dementia.

Staff & Research Student Profile

Executive	Professor James Vickers	Director
	Professor Andrew Robinson	Co-Director
	Caroline Gray	Business Manager
	Associate Professor Alison Canty	Associate Professor
	Associate Professor Anna King	Associate Professor
Leadership	The Hon. David Bartlett	Manager Consultancy and Innovation
	Dr Tony Cook	Senior Lecturer
	Dr Helen Courtney-Pratt	Senior Research Fellow
	Dr Kathleen Doherty	Senior Research Fellow
	Dr Maree Farrow	Senior Academic Lead - Dementia MOOCs
	Dr Lyn Goldberg	Senior Lecturer
	Helen Hornsby	Senior Developer Education Innovation
	Dr Matthew Kirkcaldie	Senior Lecturer
	Professor Fran McInerney	Professor of Dementia Studies and Education
	Dr Juanita Westbury	Senior Lecturer
	Chris Parker	Manager Online Learning Systems and Support
Staff	Dr Michael Annear	Research Fellow
	Monica Antel	Administration Officer
	Dr Susanne Becker	Associate Lecturer
	Monique Belfer	Administration Officer
	Dr Bill Bennett	Research Fellow
	Aidan Bindoff	Statistician
	Dr Vlasti Broucek	Senior Technical Developer
	Laura Brumby	THBP Assessor
	Louise Carnell	Executive Assistant
	Helen Ceperkovic	Associate Lecturer
	Dr Jessica Collins	Research Assistant
	Janet Counsell	Student and Learning Skills Advisor
	Robert Crouch	Senior Project Officer
	Justin Dittmann	Laboratory Technician
	Helen Douglas	Project Manager, Dementia Training Australia
	Josh Eastgate	Senior Technical Developer
	Karin Easton	Administration Officer - Business Support

Staff (continued)	Dr Claire Eccleston	Lecturer
	Dr Kate-Ellen Elliott	Research Fellow
	Rachael Gates	MOOC Project Officer
	Erin Gee	Research Assistant
	Paula Heald	Team Leader Award Courses
	Joanna Healy	Lecturer
	Abbie Rose Imlach	Research Assistant
	Dr Sunny Jang	Lecturer
	James Jestrimski	Administration Officer
	Amber Johnstone	Research Assistant
	Dr Shannon Klekociuk	Lecturer
	Dr Jana Kopecna	Research Assistant
	Dr Emma Lea	Research Fellow
	Dr Jacqueline Leung	Lecturer
	Dr Yao Liu	Research Fellow
	Graeme McCormack	Senior Technical Officer
	Dr Hoang Nguyen	Associate Lecturer
	Ciaran O'Mara	Senior Project Officer
	Dr Sharn Perry	Lecturer
	Russell Porter	Education Developer, Dementia Training Australia
	Andrea Price	Lecturer
	Miriam Rule	Marketing Officer
	Dr Nichole Saunders	Lecturer
	Jo-Ann Savage	THBP Assessor
	Dr Duncan Sinclair	Research Fellow
	Dr Kimberley Stuart	Project Coordinator, Tasmanian Healthy Brain Project
	Joanna Sun	Social Media Officer
	Sarah Taylor	Research Assistant
	Dr Nan Tian	Technical Officer
	Tanya Wadwell	Student and Learning Skills Advisor
	Dr David Ward	Research Fellow
	Dr Adele Woodhouse	Research Fellow
	Dr Jenna Ziebell	Lecturer
Students	Rachel Atkinson	PhD Candidate
	James Bender	PhD Candidate

Students (continued)	Ellie Bucher	Honours Student
	Alexander Cronk	Honours Student
	Hannah Fair	Honours Student
	Sam Dwyer	PhD Candidate
	Marcus Dyer	Honours Student
	Barbara Fulopova	PhD Candidate
	Kelsey Hanson	PhD Candidate
	Olivia Holloway	Honours Student
	Ross Cameron Langley	Honours Student
	Ron Mason	PhD Candidate
	Aidan O'Mara	PhD Candidate
	Andrew Phipps	PhD Candidate
	Manuela Pietzuch	PhD Candidate
	Rebecca Reid	Honours Student
	Jack Sheahan	Honours Student
	Ben Summers	Honours Student
	John Viana	PhD Candidate
	Gongbu Pan	PhD Candidate
	Azam Bazooband	PhD Candidate
	Vani Atluri	PhD Candidate
	Fiona Girkin	PhD Candidate
	Megan Hanley	PhD Candidate
	Bronwyn Hilder	PhD Candidate
	Daniel Hoyle	PhD Candidate
	Daniel Moore	PhD Candidate
	Monila Nadikudi	PhD Candidate
	Christina Searle	PhD Candidate
	Jason Beston	Master's Candidate
	Sangeeta Khadka	PhD Candidate
	Ester Lara Ashworth-Briggs	PhD Candidate
	Fan Liu	PhD Candidate
	Qinyi Lu	PhD Candidate
	Nicole Ranson	PhD Candidate
	Vikrant Singh	PhD Candidate
	Qinyi Wang	PhD Candidate

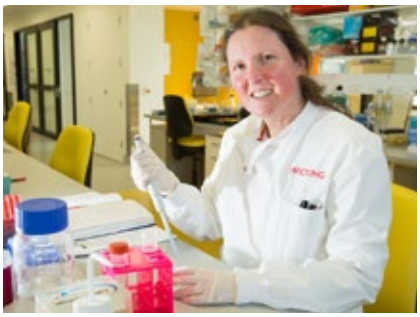
In the Spotlight

Staff

Dr Lyn Goldberg

Dr Lyn Goldberg is a Senior Lecturer in the Wicking Centre, with a background in speech pathology, focusing on swallowing, oral health, nutritional and related quality of life issues in older adults. This year Lyn, along with collaborators, received a Dementia and Aged Care Services (DACS) grant from the Department of Health for the project: Improving the health and wellbeing of Tasmanian Aboriginal people – One community's focus on individualised support, specialised training, and leadership in dementia care. The project was developed in partnership with Circular Head Aboriginal Corporation (CHAC) to address concerns expressed by the community about the need for greater dementia education among its members.

This project enables 10 community members to study in our Dementia Care Degree Program, while gaining practical experience in the community with adults with dementia. The students will gain a high-quality work-related qualification without needing to travel outside their local community.

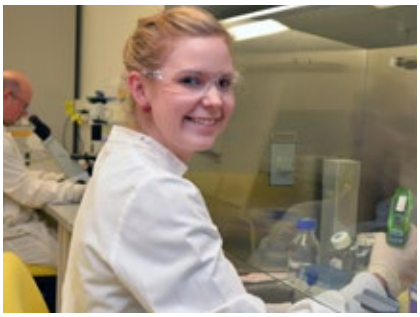


Associate Professor Anna King

Associate Professor Anna King has received an NHMRC Boosting Dementia Research Leadership Fellowship. This fellowship provides salary and research funding for four years and is worth $720,144. Her work – in biomarkers of brain health – aims to determine whether it is possible to develop a blood test to tell us about brain changes that could indicate the degeneration of nerve cells.

Anna received training in molecular biology and biochemistry at Durham University (UK) and the Heart Research Institute (Australia), before completing her PhD in the neuropathology of amyotrophic lateral sclerosis (ALS) at the University of Tasmania in 2008.

Research Students



Rachel Atkinson, PhD Candidate

Rachel Atkinson is in the final stages of her PhD, researching frontotemporal dementia, the second most common form of early onset dementia.

Several proteins have been implicated in the disease. Rachel's project examines whether these proteins play a role in maintaining the long nerve processes of nerve cells, which are responsible for transmitting nerve signals from one part of the nervous system to another. In disease, cells within the nervous system can become disconnected.

To study how these proteins cause nerve cells to dysfunction, Rachel has successfully used viruses to inject cells and cause them to express mutant forms of these proteins. She hopes increased understanding of these proteins will help create new therapeutic interventions to help protect vulnerable cells.

Rachel's PhD scholarship has been supported by the Alzheimer's Australia Dementia Research Foundation and the Wicking Centre, and the Motor Neurone Disease Research Institute funded the research project.

Andrew Phipps, PhD Candidate

PhD candidate Andrew Phipps is investigating the role of epigenetics in the onset and progression of Alzheimer's disease (AD).

During normal development and ageing, our genes are tightly regulated so that the correct combination of genes are switched on, or off, at the proper time. This is achieved by the addition or removal of small chemical residues onto the DNA (methylation), and modifications that alter how our DNA is packaged (histone modifications). The study of these modifications is called epigenetics. Through epigenetics, cells experience different fates despite having the same DNA. These modifications can be inherited, but can also change throughout our lives. They have been associated with the formation of memory but are also implicated in disease.

Recent evidence suggests that epigenetic changes may contribute to the development of AD. Andrew is part of a research team that determined that cells near plaques and cells distant to plaques in Alzheimer's disease have similar overall DNA methylation profiles. The team have also discovered that a supporting cell type in the brain (astrocytes) has a significant reduction in epigenetic marks in human brains associated with Alzheimer's disease as compared to healthy control brains, and that some neurons contain extranuclear methylation that is reduced in this brain condition.

This research was funded by the ANZ Masons Foundation, the Alzheimer's Australia Dementia Research Foundation, and the Yulgilbar Foundation.

Graduates

Kim Page, Graduate Bachelor of Dementia Care

Kim graduated with her Bachelor of Dementia Care in 2016, and is now part of a new program to model roles for graduates of the Dementia Care Degree Program to support the development of dementia care practice in residential aged care homes. The $250,000 'Improving Dementia Care Program' is a collaboration between the Wicking Centre, Masonic Care Tasmania and the Masonic Centenary Medical Research Foundation.

Kim is based in Hobart, but also works across the state's three Masonic Care aged care sites (one in Hobart and two in Launceston). The project will run over two years in the three locations, including two dementia-specific units. The project aims to explore how Kim can shape a new model of dementia care in aged care practice, and will be important in helping address some of the complexities of caring for those living with dementia in aged care facilities.

"I have had a huge interest in dementia since I began working in an aged care secure unit ten years ago. The Bachelor of Dementia Care opened the door for a new career caring for those people who are so in need. I feel very grateful for the opportunity this course has given me."

Kim Page, BDemCare

The Rhonda Ewart Scholarship

The Rhonda Ewart Honours Scholarship in Dementia Care continues to be offered thanks to the generous donation from Ms Rhonda Ewart. Now in its second year, the $5,000 scholarship was awarded in 2017 to Alexander Cronk.

Alexander's research involves investigating how changing the skeleton of neurons alters movement in the cell and whether this is a possible mechanism in developing Alzheimer's disease. Raised in Hobart and having a strong interest in biology and science in high school, Alexander came to the University of Tasmania in 2014, graduating in 2016 with a Bachelor of Biotechnology and Medical Research.

"Receiving the Rhonda Ewart Scholarship has been an amazing privilege, which has allowed me to reduce my outside employment to a minimum. Through studying at the University of Tasmania, I honed my interest in medical research, especially research into neurobiology and anatomy," he said.

A University of Tasmania staff member, Rhonda Ewart said her personal experience with her mother who had Alzheimer's disease moved her to introduce the scholarship, to support research towards finding a cure for the debilitating disease.

More than 52% of residents
in permanent residential aged care on 30 June 2016 had a diagnosis of dementia
(https://www.gen-agedcaredata.gov.au/)

Events

International Experts

The Wicking Centre hosted a range of events and international visitors this year. In February, Sue Pieters-Hawke, National Ambassador for Alzheimer's Australia and daughter of Bob and Hazel Hawke, delivered a public lecture 'Creating Better Care – Reflections on Dealing with Dementia' at the Centre. Sue also facilitated a workshop for staff, students and colleagues who attended from a broad range of disciplines.

Professor Susan Langmore, a speech pathologist and Professor of Otolaryngology at Boston University's School of Medicine, visited the Centre in October. Dr Langmore is an internationally known clinician, teacher and researcher in the area of oral and respiratory health and swallowing disorders (dysphagia). Dr Langmore presented a public lecture, 'Hard to Swallow? Understanding Changes in Ageing and Disease'.

A special guest was the 2017 Australian of the Year, pre-eminent neuroscientist Professor Emeritus Alan Mackay-Sim. Professor Mackay-Sim presented a lecture entitled 'Stem Cells and Regenerative Medicine' in which he explored the possibilities for stem cells to be used to improve health outcomes. His lecture illustrated examples of how stem cells have been used to study the causes of neurodegenerative diseases, as well as their potential to identify new drugs.

Professor Karen Ritchie, an international expert in the fields of neuropsychology and epidemiology, visited from France, addressing the latest scientific evidence about dementia prevention in a public talk entitled, 'Dementia can be prevented: Fact or Fiction?'

From the University of Sussex, Professor Sube Banerjee gave a public talk at the Centre co-presented by the Australian Association of Gerontology (Tasmanian Branch). In his talk, Professor Banerjee considered the outcomes for people with dementia diagnosed at earlier/later stages, the impacts on carers of people with dementia, factors that determine earlier/later stage diagnosis and quality of life, and what should be done in terms of service design and delivery.

Professor Carol Brayne from the University of Cambridge visited the Centre to present a seminar and to contribute to additional content for the Preventing Dementia MOOC. Professor Brayne is an international expert in the study of populations and the impact of dementia, including the role of risk factors.

Left to right: Professor Andrew Robinson, Sue Pieters-Hawke, the Hon David Bartlett

Launching the "Giant Brain"

Following an increase in community engagement and public events, the Wicking Centre recently launched a "giant inflatable brain" which has become a popular feature at community events around Tasmania. The brain has visited Agfest in Carrick, Tasmania's premier community and agricultural event, the Festival of Bright Ideas, the University of Tasmania's Open Day, and has made several appearances at the State Library of Tasmania and the 60 and Better Centre as part of Dementia Awareness Month activities.

The brain has provided the opportunity for the public to find out more information about our MOOCs and the Dementia Care Degree Program, as well as stimulated conversations about brain health and helped encourage members of the public to participate in community research programs.

Grant Funding

Current Funding

Project Title	Wicking Dementia Research and Education Centre (Stage 2)
Cis	**Robinson A**, **Vickers J**
Funding Amount	$3 million
Funding Body	J.O. & J.R. Wicking Trust
Period	2013 – 2017
Project Title	Dementia Training Australia
Cis	Fleming R, Burton R, Winbolt M, Beattie E, **Robinson A**, Stafford A
Funding Amount	$1.7 million (of $27.9 million)
Funding Body	Department of Health, Australian Commonwealth Government
Period	2016 – 2019
Project Title	The Tasmanian Healthy Brain Project: a longitudinal intervention study to reduce the risk of ageing-related cognitive decline and dementia
Cis	**Vickers J**, **Summers M**, Valenzuela M, Summers J**, King A, Robinson A,** Srikanth V
Funding Amount	$878,790
Funding Body	National Health and Medical Research Council
Period	2016 – 2020
Project Title	Improving Dementia Education Access (the IDEA study) for clinical hospital staff in regional and district hospitals
Cis	**Annear M**
Funding Amount	$599,670
Funding Body	National Health and Medical Research Council
Period	2016 – 2020
Project Title	Work4Dementia: Development of an evidence-based intervention to build capacity and resilience for the Australian dementia care workforce
Cis	**Elliott K**
Funding Amount	$595,220
Funding Body	National Health and Medical Research Council
Period	2016 – 2020
Project Title	Microfluidic technology to help understand physical damage to brain cells
Cis	Breadmore M, Guijit R, **King A**, Dickson T
Funding Amount	$414,000
Funding Body	Australian Research Council
Period	2015 – 2017

Project Title	Axon degeneration and axon protection in CNS disease and injury
Cis	**King A, Vickers J, Canty A**
Funding Amount	$377,000
Funding Body	National Health and Medical Research Council
Period	2015 – 2017
Project Title	The tip of dysfunction: synaptic deficits drive ALS
Cis	**Woodhouse A**, Blizzard C, Walker A
Funding Amount	$249,861
Funding Body	Motor Neurone Disease Research Institute Australia
Period	2016 – 2017
Project Title	Role of oligodendrocytes in Amyotrophic Lateral Sclerosis
Cis	**Leung J**
Funding Amount	$240,000
Funding Body	Motor Neurone Disease Research Institute of Australia
Period	2014 – 2017
Project Title	Selectively vulnerable neurons in Alzheimer's disease: functional and morphological changes in healthy ageing and early Alzheimer's disease
Cis	**Woodhouse A, Vickers J**
Funding Amount	$220,000
Funding Body	Alzheimer's Australia Dementia Research Foundation
Period	2015 – 2018
Project Title	General Practice Training Tasmania's Dementia Care Training and Education Program project
Cis	**Doherty K, McInerney F, Robinson A**
Funding Amount	$216,000
Funding Body	General Practice Training Tasmania
Period	2016 – 2017
Project Title	The Integrated Living Workshops and Consultancy
Cis	**Robinson A, Doherty K**
Funding Amount	$131,284
Funding Body	Integrated Living Australia
Period	2015 – 2017
Project Title	Sustained effective oral care to significantly reduce aspiration pneumonia experienced by adults with dementia in residential care
Cis	**Goldberg L**, Crocombe L, **Robinson A**, Jones I, **Lea E**, **Westbury J**, Beattie E, Toye C, Brennan D, Palmer A, Heiss CJ, **McInerney F**
Funding Amount	$99,752
Funding Body	Dementia Collaborative Research Centres
Period	2016 – 2017

Project Title	Identifying the role of oligodendrocytes in disease onset and progression in ALS
Cis	**Leung J, King A**
Funding Amount	$97,923
Funding Body	Motor Neuron Disease Research Institute of Australia
Period	2017
Project Title	Staying connected: determining targets to protect neuronal circuitry in ALS
Cis	**King A, Kirkcaldie M**
Funding Amount	$97,119
Funding Body	Motor Neuron Disease Research Institute of Australia
Period	2017
Project Title	The role of FTLD proteins in neurite health, function and dysfunction
Cis	**King A, Atkinson R**
Funding Amount	$90,000
Funding Body	Alzheimer's Australia Dementia Research Foundation
Period	2014 – 2017
Project Title	Towards a patient-specific stem cell model of the blinding eye disease glaucoma
Cis	**Cook A**, Hewitt A, Pébay A
Funding Amount	$71,000
Funding Body	Clifford Craig Medical Research Trust
Period	2015 – 2017
Project Title	Charting epigenetic reprogramming in Alzheimer's disease mice
Cis	**Woodhouse A, Phipps A**
Funding Amount	$52,500
Funding Body	Alzheimer's Australia Dementia Research Foundation
Period	2015 – 2017
Project Title	Assessing ABCA1 Function in POAG using patient-specific Trabecular Meshwork Cells
Cis	**Cook A**, Hewitt A
Funding Amount	$50,000
Funding Body	Ophthalmology Research Institute of Australia
Period	2016 – 2017
Project Title	Developing Dementia Friendly Initiatives in Tasmania
Cis	**Courtney-Pratt H, Doherty K**
Funding Amount	$48,299
Funding Body	Tasmanian Community Fund
Period	2016 – 2017
Project Title	Optimising Respiratory Care in Dementia (ORCID): an educational program for carers
Cis	**Robinson A, Doherty K**, Walters E, **Elliott K**
Funding Amount	$45,799
Funding Body	Dementia Collaborative Research Centres
Period	2016 – 2017

Project Title	Assessing Alzheimer's disease risk online: What is the relationship between risk factors and objective and subjective memory performance?
Cis	**Farrow M**, Anstey K, **Ellis K, Klekociuk S, Ward D, Vickers J**
Funding Amount	$41,435
Funding Body	Dementia Collaborative Research Centres
Period	2016 – 2017
Project Title	Development of an online education module entitled Recognising, Diagnosing and Managing Dementia in General Practice
Cis	**Doherty K, Robinson A**
Funding Amount	$40,000
Funding Body	Dementia Training Study Centre
Period	2016 – 2017
Project Title	The landscape of gene expression changes in the aqueous humor drainage pathway of glaucoma patients
Cis	**Cook A**, Toh T-Y, Kunde D, Hewitt A
Funding Amount	$36,300
Funding Body	Clifford Craig Medical Research Trust
Period	2015 – 2017
Project Title	Neurofilaments as a mechanism for the effect of mild iodine deficiency on brain development
Cis	**Kirkcaldie M, King A, Vickers J**, Burgess J, Hynes K
Funding Amount	$35,000
Funding Body	Brain Foundation
Period	2016 – 2017
Project Title	Identifying critical neuronal signatures of epigenetic modifier complexes of Alzheimer's disease initiation and progression
Cis	**Woodhouse A**, Taberlay P, Robinson M, Mercer T
Funding Amount	$33,000
Funding Body	Brain Foundation
Period	2016 – 2017
Project Title	Identifying and targeting risk related behaviours raised by Tasmanian youth attending an injury prevention P.A.R.T.Y. (Prevent Alcohol and Risk Related Trauma in Youth) Program
Cis	Greenwood M, Course G, **Doherty K**
Funding Amount	$31,942
Funding Body	MAIB
Period	2016 – 2017
Project Title	Axon degeneration and axon protection in Alzheimer's disease
Cis	**King A**
Funding Amount	$30,000
Funding Body	Yulgilbar Foundation
Period	2015 – 2017

Project Title	Investigating the utility of retinal Base-Editing
Cis	Hewitt A , Liu G, **Cook A**
Funding Amount	$25,000
Funding Body	Royal Hobart Hospital Research Foundation
Period	2017
Project Title	Dementia education program: award for programs that enhance learning
Cis	**Canty A, Vickers J, Robinson A, Wall J, McInerney F, Goldberg L**, Carr A, King C
Funding Amount	$25,000
Funding Body	Department of Education and Training, Australian awards for university teaching
Period	2017
Project Title	Investigating Batten disease-causing CLN3 mutations in patient-specific stem cells and neurons
Cis	**Cook** A, Ware T, **King A**, Hewitt A
Funding Amount	$24,898
Funding Body	Royal Hobart Hospital Research Foundation
Period	2017
Project Title	Selectively vulnerable neurons in Alzheimer's disease: functional and morphological changes
Cis	**Woodhouse A, Vickers J**
Funding Amount	$20,000
Funding Body	Yulgilbar Foundation
Period	2015 – 2017
Project Title	Improving Tasmanian Indigenous health and wellbeing: A case study of one community's focus on dementia
Cis	Cox T, **Goldberg L**, Hoang H
Funding Amount	$12,150
Funding Body	UTAS Cross-Disciplinary Health Project Development Scheme
Period	2016 – 2017
Project Title	Alzheimer's Australia Dementia Research Foundation Half Funded Scholarship
Cis	**Phipps A**
Funding Amount	$7,500
Funding Body	Alzheimer's Australia Dementia Research Foundation
Period	2015 – 2017
Project Title	Vice-Chancellor's award for programs that enhance learning
Cis	**Goldberg L, Canty A, Vickers J, Robinson A**, Carr A, Walls J, King C
Funding Amount	$5,000
Funding Body	University of Tasmania
Period	2016 – 2017

New Funding 2017

Project Title	Wicking Dementia Research and Education Centre (Stage 3)
Cis	**Vickers J, Robinson A**
Funding Amount	$3,721,000
Funding Body	J.O. & J.R. Wicking Trust
Period	2018 – 2022 (rec'd 2017)
Project Title	Improving the Health and Well-Being of Tasmanian Aboriginal People – One Community's Focus on Individualised Support, Specialised Training, and Leadership in Dementia Care
Cis	Cox T, **Goldberg L, Price A**, Hoang H, Cross M
Funding Amount	$834,757
Funding Body	Department of Health: Dementia and Aged Care Services (DACS)
Period	2017 – 2019
Project Title	Detecting biomarkers of brain health in dementia
Cis	**King A**
Funding Amount	$720,144
Funding Body	NHMRC: Boosting Dementia Research Leadership Fellowship Grant
Period	2017 – 2021
Project Title	Turning back the clock on brain cell aging
Cis	Taberlay P, **Woodhouse A**
Funding Amount	$458,608
Funding Body	Australian Research Council
Period	2017 – 2021
Project Title	Paving the way for future stroke drug development: creating a reproducible, humanised model of stroke
Cis	Landowski L, Howells D, Castely H, Sutherland B, **Kirkcaldie M**
Funding Amount	$442,570
Funding Body	Royal Hobart Hospital Research Foundation
Period	2017 – 2019
Project Title	To develop a model to measure consumer dementia knowledge and literacy utilising a large Australian community sample enrolled in the University of Tasmania Wicking Understanding Dementia MOOC
Cis	**McInerney F, Doherty K, Eccleston C, Vickers J, Robinson A**
Funding Amount	$349,200
Funding Body	Department of Health: Dementia and Aged Care Services (DACS)
Period	2017 – 2019
Project Title	Investigating NMDA receptor hypofunction as a point of convergence for genetic and environmental risk factors in schizophrenia
Cis	**Sinclair D**
Funding Amount	$324,812
Funding Body	NHMRC CJ Martin Overseas Biomedical Early Career Fellowship
Period	2014 – 2017

Project Title	Masonic Centenary Medical Research Foundation Improving Dementia Care Program
Cis	**Lea E, Doherty K, Robinson A**
Funding Amount	$250,000 (in collaboration with Masonic Care)
Funding Body	Masonic Care Tasmania, Masonic Centenary Medical Research Foundation, and the Wicking Dementia Research and Education Centre
Period	2017-2019
Project Title	TDP-43 Misprocessing drives synaptic deficits that leads to ALS
Cis	Blizzard C, **Woodhouse A**, Walker A
Funding Amount	$249,861
Funding Body	Motor Neurone Disease Research Institute
Period	2017
Project Title	Towards axon protection in ALS
Cis	**King, A Leung J, Perry S**
Funding Amount	$98,471
Funding Body	Motor Neuron Disease Research Institute of Australia
Period	2018 – 2019 (rec'd 2017)
Project Title	Staying connected: determining targets to protect neuronal circuitry in ALS
Cis	**King A, Kirkcaldie M**
Funding Amount	$97,199
Funding Body	Motor Neurone Disease Research Institute
Period	2017
Project Title	Does plasticity drive Alzheimer's disease and can sleep help?
Cis	**Kirkcaldie M, King A, Vickers J**
Funding Amount	$94,140
Funding Body	The Masonic Foundation: Judith Jane Mason & Harold Stannett Williams
Period	2017
Project Title	Meaningful engagement in nutritional understanding: Best choices for aged care
Cis	**Lea E, Goldberg L, Price A, McInerney F, Doherty K**, Beattie E, Isenring L
Funding Amount	$90,000
Funding Body	Tasmanian Community Fund
Period	2018 – 2019 (rec'd 2017)
Project Title	Developing CRISPR/Cas Library Screens for identifying Novel Cancer Therapies
Cis	Taberlay P, Hewitt A, Holloway A, Liu G, Dickinson J, Brettingham-Moore K, Fitzgerald L, Eri R, **Cook A**
Funding Amount	$63,845
Funding Body	University of Tasmania Foundation Inc: Grant-Cancer Research
Period	2017

Project Title	CRISPR/Cas gene editing of Batten disease genes in patient-specific stem cells
Cis	**Cook A**, Hewitt A, **King** A, Pebay A, Grubman A
Funding Amount	$51,411
Funding Body	Batten Disease Support and Research Association
Period	2017 – 2018
Project Title	Comparison of different proteins for direct gene editing in the retina
Cis	Liu R, Hewitt A, Bui B, **King A**, Li F
Funding Amount	Ophthalmic Research Institute of Australia
Funding Body	$50,000
Period	2017
Project Title	What do they know about dementia? Determining community knowledge about dementia
Cis	**Eccleston C, Courtney Pratt H, McInerney F, Doherty K**
Funding Amount	$50,000
Funding Body	Alzheimer's Australia Dementia Research Foundation
Period	2017
Project Title	How do microglia-synapse dynamics change with Alzheimer's disease?
Cis	**Ziebell J, Canty A, King A**
Funding Amount	$50,000
Funding Body	Alzheimer's Australia Dementia Research Foundation
Period	2017
Project Title	CRISPR screen to identify key genes driving DFTD
Cis	Hewitt A, Liu G, Woods G, Flies A, **Cook A**
Funding Amount	$33,500
Funding Body	University of Tasmania Foundation Inc: Grant - Dr Eric Guiler
Period	2017
Project Title	Integrated Plasticity: How do microglia contribute to synaptic connectivity?
Cis	**Canty A**
Funding Amount	$29,950
Funding Body	University of Tasmania Research Enhancement Program
Period	2017
Project Title	Improving the oral health of Tasmanians in residential aged care
Cis	**Goldberg L**, Crocombe L, Bettiol S, **King A**
Funding Amount	$28,336
Funding Body	Tasmanian Community Fund
Period	2017 – 2018

Project Title	New geNOMeC maps of neuronal epigenetic changes in Alzheimer's disease
Cis	Taberlay P, **Woodhouse A**
Funding Amount	$24,971
Funding Body	Rebecca L Cooper Medical Research Foundation
Period	2017
Project Title	Visiting Fellow – Professor Susan Langmore; internationally known researcher and clinician for her work in the area of oral and respiratory health and swallowing disorders.
Cis	**Goldberg L, Vickers J, Robinson A, King A**
Funding Amount	$16,000
Funding Body	University of Tasmania, Office of the Provost, Visiting Fellows and Visiting Scholars Committee
Period	2017
Project Title	Assessment of the effects of singing on the respiratory function and wellbeing in people with dementia
Cis	Forbes A, **Goldberg L**, Vreugdenhil A, Smithies K
Funding Amount	$9,765
Funding Body	University of Tasmania Research Enhancement Grant
Period	2017
Project Title	Understanding symptom severity and treatment responses in Fragile X syndrome
Cis	**Sinclair D**
Funding Amount	$9,700
Funding Body	University of Tasmania Research Enhancement Program
Period	2017
Project Title	Dementia Cafes: Facilitating community conversations about dementia
Cis	**Becker S, Courtney Pratt H**, Andersson J, Marsh P
Funding Amount	$8,390
Funding Body	University of Tasmania Creativity, Culture and Society Research Development Program
Period	2017
Project Title	Enhancing Early Detection of Cognitive Impairment in the Criminal Justice System
Cis	Spiranovic C, Eckstein L, McWhirter R, Kirkby K, Watters P, **Vickers J, Bindoff A**
Funding Amount	$5,299
Funding Body	University of Tasmania Research Enhancement Program
Period	2017

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