

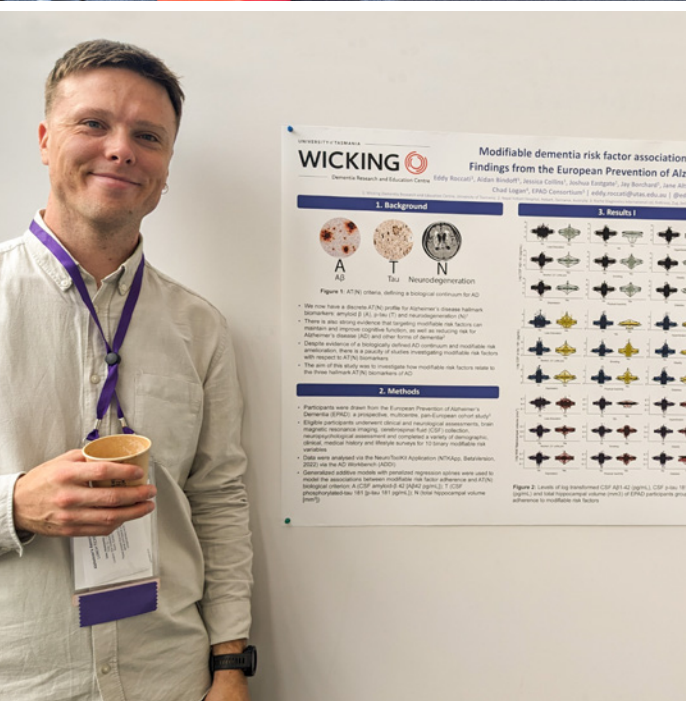
# Annual Report 2023

UNIVERSITY OF TASMANIA

**WICKING** 

Dementia Research and Education Centre





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## Acknowledgment of Country

We acknowledge the Palawa/Pakana people of lutruwita (Tasmania) and the Gadigal people of Sydney, the traditional owners, and custodians of the land upon which we live and work. We pay respects to Elders past and present as the knowledge holders and sharers. We honour their strong culture and knowledge as vital to the self-determination, wellbeing, and strength of the community. We stand for a future that profoundly respects and acknowledges Aboriginal perspectives, culture, language, and history.

- ◀ Top: James Brady – Research Candidate and Associate Professor Alison Canty at the Tarooma High School STEM Expo.
- Middle: December 2023 Graduates with Distinguished Professor James Vickers.
- Middle: Farewell Event for Caroline Gray with the Wicking Dementia staff.
- Bottom: Dr Eddy Roccati – Wicking DementiaCentre Research Fellow.



## Wicking Dementia Research and Education Centre – Our Mission

The Wicking Dementia Research and Education Centre, was established in 2008 and continues to lead the way in dementia research and education. The Centre's mission is to transform the understanding of dementia worldwide and to improve the lives of people living with dementia and their caregivers.

### The Centre aims to:

- Better understand the diseases affecting the brain that cause progressive decline in function affecting memory, problems solving skills, function and social behaviour;
- Develop evidence-based models of care provision for people with dementia and their carers;
- Determine how to reduce risk of dementia by building resilience through ageing;
- Provide educational programs to build knowledge and understanding of dementia within the community.

The Wicking Dementia Centre is a global leader in dementia research and the largest provider of dementia education in the world. The Centre offers world-class online education based on the latest evidence, contributing to the local, national and global aged care workforce and community by offering courses suitable for everyone at any stage of their career or education.

Dementia is a neurological condition that affects tens of millions of people all around the world, posing significant challenges to people living with the condition, their families, communities, and the health care sector. The Wicking Dementia Centre is a collaborative environment of researchers and global specialists who work together to advance progress across the cause, prevention, and care of dementia.



In 2023 it is estimated there are more than 400,000 people living with all forms of dementia in Australia. This figure is projected to increase to more than 800,000 by 2058.

*Source: (Dementia Australia (2023) Dementia Prevalence Data 2024–2054, commissioned research undertaken by the Australian Institute of Health and Welfare.)*

# Message from the Director of the Wicking Dementia Centre

In 2023, significant progress was made in our educational programs alongside pivotal research projects. We were especially delighted to collaborate with several key national and international organisations to expand our educational opportunities.

For example, it was great to collaborate with Dementia Australia to provide a pathway from the new *Certificate IV in Dementia Practice* developed by Dementia Australia to our Diploma of Dementia Care. The *Certificate IV in Dementia Practice* has been designed by the Centre for Dementia Learning at Dementia Australia to support leaders in implementing change to practice. Participants completing this qualification will now also receive recognition of prior learning if they then choose to undertake the Wicking Centre *Diploma of Dementia Care*.

We were delighted to be supported by Dementia Training Australia with our Massive Open Online Courses (MOOCs) on dementia. This will enable us to refresh the content in our Understanding Dementia and Preventing Dementia MOOCs so that they continue to deliver up-to-date evidence-based learning.

We were also fortunate to work with Dementia Support Australia for a new educational program, DREAM, specifically designed to support dementia respite providers and workers. These are just a few examples of how the major dementia training and education organisations in Australia can work together to address the challenge of improving community awareness of dementia and the quality of care for people living with dementia.

A highlight in 2023, has been the recognition of our dementia education programs through accreditation with Alzheimer's Disease International, who are the peak organisation representing associations for dementia across the globe. A team from Alzheimer's Disease International had a close look at the variety of our free short courses as well as the undergraduate and postgraduate degrees and met with a range of stakeholders including students that have undertaken our courses. The Alzheimer's Disease International team was particularly impressed with our students who are seeking to apply what they have learnt to support people with dementia.

We are very proud of accreditation by Alzheimer's Disease International as this represents recognition of the work of many Wicking Dementia Centre staff in building our various courses over the last decade. Accreditation will also help us extend the reach of various courses to those who may benefit from them.

2023 also saw the release of the initial 3-year results from the *Island Study: Linking Ageing and Neurodegenerative Disease (ISLAND)*, which is where we have sought to develop the Tasmanian community's awareness of potentially modifiable risk factors for dementia.

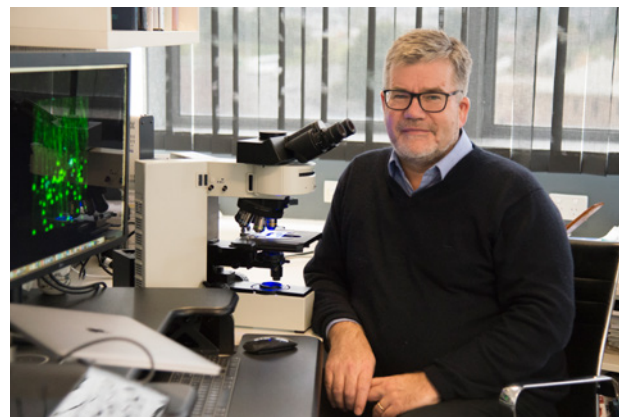
Even though the study was interrupted at times due to COVID-19 restrictions; we were still able to share key dementia risk messages at community events across Tasmania and run expos involving many organisations with the goal of promoting how to optimise brain health and dementia resilience. We are grateful for the support of the Tasmania Masonic Medical Research Foundation and St.Lukes Health for their assistance in running the ISLAND Project. Our analysis of the results of research participants participating in ISLAND revealed significant improvements in reducing exposure to dementia risk. The research and community involvement has also revealed new approaches that we will continue to implement to broaden the reach and impact of key brain health messages in the future.

Furthermore, we are grateful to participants in the project for their engagement with a range of additional research investigations, which have included new online tests for brain function, as well as studies on the presence of protein 'biomarkers' in blood samples. ISLAND is a unique project which has demonstrated the capacity of trialling new approaches through research in Tasmania that has relevance to tackling global health concerns.

The progress made by the Centre in 2023 is a testament to the dedication of its staff, students, and the broader community. The support from funding organisations and philanthropic donors has been instrumental in advancing the Centre's projects, which are crucial for enhancing the understanding and care of people living with dementia.



**Distinguished Professor James Vickers**  
**Director**



# Achievements in 2023



## OUR GRANT FUNDING

Total current project funding	\$16,997,965
Total new or announced funding in 2023	\$13,220,498

## OUR EDUCATIONAL OUTCOMES

Undergraduate study	Graduates to date	Graduated in 2023
Bachelor of Dementia Care (M3S)	364	26
Associate Degree in Dementia Care (M2D)	308	22
Diploma of Dementia Care (M1D)	1,754	268
Diploma of Ageing Studies and Services (M1A)	17	3
Undergraduate Certificate in Aged Care Services (50A)	1	-
Undergraduate Certificate in Dementia Care (50F)	85	11
<b>Total number of graduates</b>	<b>2,529</b>	<b>330</b>

Postgraduate study	Graduates to date	Graduated in 2023
Master of Dementia (M7X)	37	20
Graduate Diploma of Dementia (M6X)	8	3
Graduate Certificate in Dementia (M5X)	57	21
<b>Total number of graduates</b>	<b>102</b>	<b>44</b>

Dementia MOOCs	Enrolments to end 2023	Total enrolled in 2023	Australian enrolments in 2023	International enrolments in 2023	Completion Rates in 2023 %
Understanding Dementia	398,957	47,292	24,458	22,834	32%
Preventing Dementia	237,459	22,695	10,513	12,182	34%
Understanding Traumatic Brain Injury	63,781	21,760	10,585	11,175	34%
<b>Total enrolments</b>	<b>700,197</b>	<b>91,747</b>	<b>45,556</b>	<b>46,191</b>	

We have received MOOC enrolments from 27\* countries to date including 186 UN member states.

\*Countries as included on the MOOC enrolment form as listed in the ISO 3166-1 Standard of 249 interest.



## Our Education

The Wicking Dementia Research and Education Centre has a mission to transform the understanding of dementia worldwide and to build a workforce to lead positive change in ageing and dementia care. Dementia is a condition that affects millions of people across the globe – one that poses significant challenges to their quality of life as well as that of their families and communities.

Our free, Massive Open Online Courses (MOOCs) provide participants with information about the conditions related to dementia, including changes that occur in the brain, behaviours and needs associated with those changes, and the practical strategies necessary to help care for people living with dementia

### Massive Open Online Courses (MOOCs)

Improving dementia literacy, through maximising the reach of our Understanding Dementia, Preventing Dementia and Traumatic Brain Injury MOOCs and evaluating the impacts of these three programs continues to be an important focus for the Centre.

- **Understanding Dementia (UD) MOOC**  
*Anyone can develop dementia, everyone can help.*  
Examines the diseases that cause dementia, how the disease impacts the person with dementia, and the treatments and care practices that enhance quality of life along the disease trajectory, for people with dementia, their families, and caregivers.

- **Preventing Dementia (PD) MOOC**  
*It's never too early or too late to reduce your risk.*

Looks at what you can do to minimise your risk. Offering university-quality education about the latest research in dementia risk and protective factors. The free course provides an opportunity to engage with the perspectives of a global community, without requiring exams or assignments.

- **Understanding Traumatic Brain Injury (TBI) MOOC**  
*Understand the injury and help reduce the risk.*

Aims to raise awareness and build knowledge of TBI to reduce risk and improve management and rehabilitation outcomes for people who have experienced a TBI. The course looks at the causes and consequences of TBI across the spectrum from mild concussion through to severe injuries, as well as at how and when injuries may occur across the lifespan.

## Equip Aged Care Learning Packages – free aged care learning modules

The Equip Aged Care Learning Packages are available for anyone interested in the aged care sector, including personal care workers, nurses, allied health professionals, volunteers and families.

The Equip Aged Care Learning introductory packages offers new starters in the aged care workforce, and those seeking employment in the sector, the opportunity to gain essential knowledge to assist them to launch into their career in aged care and enhance their employment prospects.

The Equip Aged Care Learning refresher packages are a useful resource for aged care workers to keep abreast of current trends in aged care and to maintain their continuing professional development. The program was launched in 2022 with 14 educational modules, and has more than 26,940 enrolments to date.

## The DREAM Project

**Dementia Respite Education and Mentoring – help improve respite care for people living with dementia.**

In August 2023 the Wicking Dementia Research and Education Centre was awarded \$8 million in funding from the Australian Government Department of Health and Aged Care to develop the DREAM project.

The Dementia Respite Education and Mentoring (DREAM) project will deliver education and training to improve aged care provider capability in delivering quality respite care for people living with dementia, including successful transitions in and out of their respite services.

The \$8 million in funding will deliver an integrated program of online learning and professional development, as well as provide face-to-face mentorship across the country in collaboration with Dementia Support Australia.

DREAM aims to improve the quality of care and quality of life for people with dementia, and those who provide care to people with dementia.

DREAM will provide support for growing and empowering the respite care workforce across Australia through:

- A tailored online portal that supports integrated online learning and professional development of aged care workers in respite settings.
- Additional online learning opportunities designed for people seeking access to respite support.
- An accessible, curated program of online learning, including additional learning support materials and opportunities for extended learning.
- Opportunity for engagement in an online community of practice.
- Provision of on-the-ground mentoring.
- Capacity for rapid response and tailored support to teams providing respite care.

*The DREAM Project is scheduled for release in June 2024.*

▼ Wicking Dementia Centre and Menzies MND Research staff and students participating in the 2023 MND event.



## University Award Courses

The Wicking Dementia Centre is leading the way in dementia research and education. Our mission is to transform the understanding of dementia worldwide. We offer online university award courses, based on the latest research, that is suitable for everyone at any stage of their career.

### Diploma of Dementia Care

With an ageing population and increased numbers of people living with dementia, it's becoming essential that personal carers, the aged care workforce and anyone who provides care for people with dementia develop specialised knowledge to provide quality care in homes, communities, health care centres, hospitals, and residential care.

Students learn from experts, lecturers and clinicians from a range of disciplines who are active in dementia research, and learning is supported with the use of real-life case study examples. This course provides graduates with the knowledge to make a difference in the health and community sector in a range of roles which are critical in delivering enhanced capacity to a sector facing enormous challenges.



In 2023, it is estimated there are more than 10,300 people living with all forms of dementia in Tasmania. This figure is projected to increase to more than 16,000 by 2058.

*Source: (Dementia Australia (2023) Dementia Prevalence Data 2024–2054, commissioned research undertaken by the Australian Institute of Health and Welfare.)*

### Bachelor of Dementia Care

The Bachelor of Dementia Care offers Australia's only undergraduate degree in dementia care. The Wicking Dementia Centre continues to offer a degree specifically focused on dementia which allows students to develop specialist knowledge to enable the delivery of best practice in dementia care.

With the rise in prevalence in dementia, it is essential that health care workers in aged care develop specialised knowledge in this field so to make a difference to the lives of people living with dementia.

### Diploma of Ageing Studies and Services

The Diploma of Ageing Studies and Services addresses the need for holistic knowledge of the ageing process and is designed for those working with older adults in the community, aged care, or other sectors, as well as those eager to be part of this expanding workforce. This diploma equips graduates with contemporary knowledge to assist older adults and their families in navigating the complexity of the aged care system and the trajectory of their needs as they age.

### Master of Dementia

Our Master of Dementia course provides a global perspective on the impact of dementia on individuals and societies. It is aimed at graduates and professionals currently working within, or building their expertise in a field related to dementia. The courses offer a comprehensive understanding of dementia from the perspectives of individuals, families, communities, health care systems and governments, and also covers the neurobiology of dementia, including pathology, biomarkers, and therapeutics.

▼ 2023 Mid Year Graduates with Distinguished Professor James Vickers, Professor Anna King and Dr Kathleen Doherty.





# Our Research and Grants

The Wicking Dementia Centre continues to be at the forefront of translational research of relevance to people living with dementia. The Centre focuses on three major research themes of the cause, prevention and care of dementia.

Below is a selection of current projects, to read more about our research see: [utas.edu.au/wicking/research/](https://utas.edu.au/wicking/research/)

## EQUIP Aged Care Learning Modules

Building on our expertise in online learning, the Wicking Dementia Research and Education Centre, College of Health and Medicine, at the University of Tasmania was awarded funding from the Department of Health and Aged Care in 2022 to develop and deliver free online learning packages designed for the (1) Introduction and orientation of staff entering the aged care sector, and (2) Refresher training packages for those already working in the sector. This project encompassed the development, delivery, marketing, and hosting of a series of online educational modules, known as the Equip Aged Care Learning Packages with a view to providing the aged care sector with contemporary education for staff across key topic areas. The final modules were released in August 2023.

For the first time a series of free, curated, integrated educational modules are now available across the following topics:

- The Australian Aged Care System
- Exploring the Role of Nurses, Personal Care Workers and Allied Health Professionals working in Aged Care
- The Aged Care Quality Standards
- Supporting people Living with Dementia
- Palliative and End-of-Life Care
- Person-centred Care
- Promoting Mental Health & Wellbeing
- Prevention of Falls
- Wound Management & Prevention of Pressure Injuries
- Oral Health
- Hearing Health
- Cross Cultural Awareness
- Trauma Informed Care
- Aboriginal & Torres Strait Islander Cultural Awareness

All modules were designed with the close collaboration from subject matter experts, consumers, care providers and the Department of Health and Aged Care. To meet the needs of the audience content was carefully curated and delivered to provide an authentic learning experience.

The modules were delivered on the Wicking Learning Management System. Each module comprised a short captioned video, complemented by links to additional resources and a summary of key content which was provided in a downloadable infographic, together with a downloadable certificate.

The first three modules were launched on the 17 of October 2022 with the final module released on 29 August 2023.

The Wicking Dementia Centre leveraged its relationships with alumni to springboard a comprehensive marketing plan comprising email, print, and social media, and promotion through conference attendance and stakeholder meetings both in person and online. Our ambitious target of 20,000 enrolments was achieved on September 21, 2023, and enrolments continue to grow.

Final evaluation data demonstrates that Equip has been taken up by participants in all states and territories across urban, rural, and regional settings. Participants include experienced and new nurses, personal care workers, allied health professionals, students, volunteers, and managers from residential and community aged care and disability support services, prospective members of the aged care workforce and consumers.

All modules were well received, achieving high levels of agreement that they met the intended learning outcomes. While we had anticipated that more experienced staff would choose the Refresher modules, we found that the Introductory modules attracted more participants than the Refresher modules, and a significant number of participants accessed both.

Evaluation showed that participants found the modules easy to access and of the appropriate length and pitch, including many members of the aged care workforce for whom English is not their first language. Participants indicated that their engagement with Equip translated into improved understanding and care for people receiving aged care services.

Equip Aged Care Learning Packages offer an accessible, free, and user-friendly approach to addressing key training needs for prospective, new, and existing workers in the aged care sector and beyond. It is also a valuable resource for volunteers who are critical providers of care support, and it serves as a means to educate consumers about aged care to improve their engagement with the sector.

# The ISLAND Project

## 3-year results from ISLAND

As we move forward with the ISLAND Project, we are continually assessing and improving our methods of research and education. 2023 was a landmark moment for ISLAND, as we conducted a preliminary analysis of our primary objective – **to reduce dementia risk in the Tasmanian community**. With three years of data, we are starting to see some extremely positive results from the cohort of over 3,000 people who provided their Dementia Risk Profile (DRP) at baseline and again over each year of the study.

Overall, there has been a 25% reduction in the number of high and medium risk levels (see graph below). For example, there was an 82% probability of an ISLAND participant moving from a high-risk level to a low risk level for physical activity, and 70% probability for cognitive activity.

Overall, we found completing the DRP was associated with reduced alcohol consumption, improved adherence to the Mediterranean style diet, increased physical activity, quitting smoking, and improved management of blood pressure, diabetes and cholesterol.

These results suggest our personalised DRP report is achieving efficacy at reducing modifiable risk and supporting dementia prevention in the community. This positive impact was even greater for ISLAND participants that had completed our Preventing Dementia MOOC. This work is the first of its kind around the world and was published open-access in the journal BMC Public Health, accessible here: <https://bmcpublichealth.biomedcentral.com/articles/10.1186/s12889-023-16805-2>.

### DEMENTIA RISK BEHAVIOURS FOR ISLAND PARTICIPANTS SINCE 2019



Shown here are baseline (BL) and follow up (October 2020, 2021, and 2022) proportions of ISLAND participants' adherence to modifiable dementia risk behaviours. We can see over time that participants are, in general, moving towards lower risk categories, particularly in the domains of alcohol, cognitive activity and diet.

ISLAND is a collaborative endeavour between a multitude of inter-disciplinary researchers, including neuroscientists, clinicians, epidemiologists, social scientists, statisticians, laboratory technicians, educational technologists, with over 14,000 Tasmanian participants that make this study possible. We have several ongoing large-scale sub-studies, including TAS Test, ISLAND Resilience and ISLAND Sleep, as well as smaller-scale initiatives in gait assessments, tongue strength and speech analysis. Here we have listed our diverse team members:

Prof James Vickers	Graeme McCormack
Prof Kathleen Doherty	Florence Sward
Prof Anna King	Aidan Bindoff
Dr Jessica Collins	Alex Kitsos
Dr Eddy Roccati	Samantha Bramich
Dr Claire Eccleston	Dr Larissa Bartlett
Dr Duncan Sinclair	Timothy Saunder
Dr Hannah Fair	Chris Parker
Xinyi Wang	Joshua Eastgate
Prof Jane Alty	Julia Giffard
Dr Lyn Goldberg	Amy Coates
Dr Mohammad Hamrah	Getachew Yitbarek
Dr Adam Kane	James Brady

## External collaborators

Prof Frank Rudzicz, Prof Amanda Rebar, Prof Adam Vogel, Prof Quan Bai, Dr Stephanie Alley and Dr Feng Pan.

- Top: Dr Adam Kane meeting ISLAND participants.
- Middle: Professor Anna King promoting Wicking Dementia Centre education
- Bottom: Distinguished Professor James Vickers presenting an ISLAND Project update



## The ISLAND Sleep Study

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The importance of good quality sleep, rather than simply sleep quantity, is becoming more well-known in the general population, and is of particular concern to older Tasmanians. There are numerous sleep disorders that can impact on an older adult's sleep, including obstructive sleep apnoea and insomnia. One lesser-known sleep disorder is isolated REM sleep behaviour disorder (iRBD) which is characterised by 'acting out' vivid dreams. It is considered an early symptom of neurodegenerative disease, as many people with iRBD will develop dementia with Lewy Bodies or Parkinson's disease in later life. Early identification of iRBD thus offers a window of opportunity for early intervention – and it is hoped we may reduce the risk of developing neurodegenerative disease by modifying lifestyle and medical factors or through early recruitment to new clinical trials.

The first step before intervention is to identify who has iRBD, as it is generally under-recognised. Through the ISLAND Sleep Study, we will undertake the first ever prevalence study of iRBD in Australia. We will also study different profiles of movement, thinking and sense of smell in people with iRBD, so that we can try to better understand how to prevent progression to Parkinson's disease or dementia.

In 2022, almost 3,000 ISLAND project participants completed a range of online questionnaires asking about sleep, dreams, pain and other symptoms. We are currently investigating smell loss and 24-hour activity patterns in people with and without iRBD symptoms, and administering specialised sleep studies in participants' own homes.

This project has been funded through a University of Tasmania PhD scholarship, several grants from the Royal Hobart Hospital Research Foundation, Clifford Craig Foundation, Wicking Dementia Research and Education Centre and Parkinson's Tasmania. We are extremely grateful to all the participants taking part. It has led to three publications and several conference presentations so far and is attracting a lot of interest nationally and internationally.

## Objectives

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Adults with iRBD have a high risk of developing dementia or another neurodegenerative disease in later life. However, iRBD is under-recognised. This project will identify iRBD prevalence in Tasmania, characterise its associated features, and offer risk reduction strategies with the long-term aim of decreasing the incidence of other brain diseases.

## Team members

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Samantha Bramich, Associate Professor Jane Alty, Professor Anna King, Professor Sharon Naismith (University of Sydney), Professor Alastair Noyce (Queen Mary University, London), and Distinguished Professor James Vickers, along with other team members from the Wicking Dementia Research and Education Centre, Melbourne collaborators and universities, and internationally.



▲ ISLAND Sleep Study participant, Ron, and Research Assistant, Sonia, showing a home-based sleep study set-up.



▲ Members of the ISLAND Resilience Team.

## ISLAND Resilience Initiative

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Stressful experiences profoundly influence our health and wellbeing as we age. Our brains are particularly impacted by stressful experiences, which can mean increased dementia risk, faster dementia progression and worsening of other dementia risk factors like depression. But how stress impacts the brain to increase our dementia risk and impair our mental health is not fully understood. It's also not clear why some people are resilient (i.e. withstand, bounce back or grow from stressful experiences).

What if we could uncover the psychological, lifestyle, physiological and cellular/molecular factors that underpin resilience, and then leverage these to help all of us manage our stress better, decrease our dementia risk and improve our mental health? These are the goals of the ISLAND Resilience Initiative.

The ISLAND Resilience Initiative is a long-term research sub-study of the Wicking Dementia Centre ISLAND Project. Research activities particularly focus on natural disasters and bushfires, which are stressors predicted to increasingly impact large numbers of older Tasmanians. The study design enables investigation of stress, resilience, dementia risk and cognition over time, as well as broader aspects of physical/mental health and disaster recovery which can have wide-ranging health implications. The ISLAND Resilience Initiative launched in 2021 and is a collaboration between researchers and, of course, participants! Approximately 1300 research participants aged 50+ years from the ISLAND cohort have donated their time, energy and biological samples (hair and saliva). To all our ISLAND Resilience participants- thank you!

Activities conducted and/or currently underway in this study include community consultations to establish research priorities; survey data collection about participants' physical health, mental health, perceived stress, resilience, coping and life experiences; measurement of stress-related biological parameters in hair, saliva and blood; development, testing and optimisation of the Bushfires and Your Health short course, to increase understanding and preparedness for bushfires; and involvement of participants and other stakeholders in co-production of a research plan for post-disaster research.

Two papers from the work have been published so far (<https://doi.org/10.1016/j.ijdr.2023.103919> and <https://doi.org/10.1016/j.ijdr.2023.104227>) with more on the way. This work is/has been funded by the Australian Government Natural Disaster Risk Reduction Grant Program (2021, 2022) and Disaster Ready Fund (2024-2026).

### Objectives

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We aim to understand how traumatic events, chronic stress and stress biology impact mental/physical health, quality of life, cognition and dementia risk of older Tasmanians across time; to identify factors (behavioural, environmental, psychological and biological) that are associated with stress resilience in older age; and to develop strategies for promoting stress resilience, improving stress-related health outcomes and decreasing dementia risk.

### Research Team

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Duncan Sinclair, Cassandra Thomson, James Brady, Kelsey Madden, Adam Kane (Wicking Centre). Collaborators: Kim Norris (School of Psychological Sciences, UTAS), Larissa Bartlett, Penny Jones, Sharon Campbell and Fay Johnston (all Menzies Institute, UTAS).

## Selection of 2023 Publications

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**Title:** Current evidence on the association of tongue strength with cognitive decline in older adults and known risk factors of frailty, sarcopenia and nutritional health: a scoping review protocol.

**Authors:** Yitbarek GY, Alty J, Lawler K, Goldberg L

**Publisher :** *BMJ Journals*

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**Title:** An online, public health framework supporting behaviour change to reduce dementia risk: interim results from the ISLAND study linking ageing and neurodegenerative disease.

**Authors:** Bartlett L, Bindoff A, Doherty K, Kim S, Eccleston C, Kitsos A, Roccati E, Alty J, King AE, Vickers JC

**Publisher:** *BMC Public Health*

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**Title:** Modifiable risk factors for dementia, cognition, and plasma phosphorylated tau 181 in a large-scale cohort of Australian older adults.

**Authors:** Roccati E, Collins JM, Bindoff AD, Alty JE, Bartlett L, King AE, Vickers JC

**Publisher:** *Science Direct*

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**Title:** Does serum neurofilament light help predict accelerated cognitive ageing in unimpaired older adults?

**Authors:** Collins JM, Bindoff AD, Roccati E, Alty JE, Vickers JC, King AE

**Publisher:** *Frontiers in Neuroscience*

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**Title:** A new one-stop interdisciplinary cognitive clinic model tackles rural health inequality and halves the time to diagnosis: Benchmarked against a national dementia registry.

**Authors:** Alty J, Lawler K, Salmon K, McDonald S, Stuart K, Cleary A, Ma J, Rudd K, Wang X, Chiranakorn-Costa S, Collins J, Merl H, Lin X, Vickers JC

**Published:** *International Journal of Geriatric Psychiatry*

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**Title:** Parallel scale de-blur net for sharpening video images for remote clinical assessment of hand movements.

**Authors:** Li R, Huang G, Wang X, Chen Y, Tran SN, Garg S, St George RJ, Lawler K and Alty J, Bai Q

**Published:** *Science Direct*

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**Title:** Multimodal learning of clinically accessible tests to aid diagnosis of neurodegenerative disorders: a scoping review.

**Authors:** Huang G, Li R, Bai Q, Alty J

**Published:** *Health Information Science Systems*

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**Title:** Estimating presymptomatic episodic memory impairment using simple hand movement tests: A cross-sectional study of a large sample of older adults.

**Authors:** Wang X, St George RJ, Bindoff AD, Noyce AJ, Lawler K, Roccati E, Bartlett L, Tran SN, Vickers JC, Bai Q, Alty J

**Publisher:** *Alzheimer's and Dementia : The Journal of Alzheimer's Association*

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**Title:** Investigating the associations between upper limb motor function and cognitive impairment: a scoping review.

**Authors:** Rudd KD, Lawler K, Callisaya ML, Alty J

**Publisher:** *GeroScience*

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**Title:** Pushing through the Barriers: Peer Advice to Increase Physical Activity and Reduce Dementia Risk from Participants in a Massive Open Online Alzheimer's Focused Course.

**Authors:** Abela MR, Maxwell H, Bindoff A, Alty J, Farrow M, Lawler K

**Publisher:** *The Journal of Prevention of Alzheimer's Disease*

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**Title:** Sex-specific protective effects of cognitive reserve on age-related cognitive decline: A 5-year prospective cohort study of older men and women.

**Authors:** Alty J, Bindoff A, Stuart K, Hill E, Collins J, King A, Summers M, Vickers J

**Publisher:** *Neurology*

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**Title:** REM Sleep Behaviour Disorder (RBD): the importance of early identification.

**Authors:** Bramich S, Verdi K, Salmon K, Noyce A, Alty J

**Publisher:** *British Journal of General Practice*

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**Title:** Gender differences in modifiable dementia risk factors in monolingual and bilingual Australian adults.

**Authors:** Hamrah MS, Bartlett L, Kitsos A, Vickers JC

**Publisher:** *Health Promotion Journal of Australia*

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**Title:** Enhancing post-diagnostic care in Australian memory clinics: Health professionals' insights into current practices, barriers and facilitators, and desirable support.

**Authors:** Pavković S, Goldberg L, Farrow M, Alty J, Abela M, Naismith S, Sachdev P, Low, LF

**Publisher:** *Sage Journals*

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**Title:** A mountain of health benefits? Impacts of ecological restoration activities on human wellbeing.

**Authors:** Marsh P, Auckland S, Dudley T, Kendal D, Flies E (2023)

**Publisher:** *Wellbeing, Space and Society*

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**Title:** Relationship between dementia knowledge and occupational strain among staff of residential facilities for older adults: A cross-sectional survey.

**Authors:** Lea E, Robinson A, Doherty K

**Publisher:** *Ageing International (2023)*

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**Title:** The drivers of conversations about dementia risk reduction: A qualitative study.

**Authors:** Fair H, Doherty K, Eccleston C, Edmonds M, Klekociuk S, Farrow M

**Publisher:** *Journal of Health Communication*

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**Title:** Personal and relational changes following deep brain stimulation for treatment-resistant depression: A prospective qualitative study with patients and caregivers.  
**Authors:** Thomson CJ, Segrave RA, Fitzgerald PB, Richardson KE, Racine E, Carter A  
**Publisher:** *PLOS ONE*

---

**Title:** Engaging in Participatory Community-Based Arts: Perspectives of People Living with Dementia.  
**Authors:** Bazooband A, Courtney-Pratt H, Tierney L, Doherty K  
**Publisher:** *Health & Social Care in the Community*

---

**Title:** Instruments measuring change in cognitive function in multiple sclerosis: a systematic review.  
**Authors:** Ezegbe C, Zarghami A, van der Mei IAF, Alty JE, Honan C, Tayloe B  
**Publisher:** *Brain and Behavior Article*

---

**Title:** Functional Neurological Disorder is a Feminist issue.  
**Authors:** Cabreira V, McLouhlin C, Hoeritauer I, Aybek S, Adams C, Alty J  
**Publisher:** *Journal of Neurology, Neurosurgery and Psychiatry*

---

**Title:** Clinicians implicit and explicit attitudes about the legitimacy of functional neurological disorders correlate with referral decisions.  
**Authors:** Begley R, Farrell L, Alty J, Lyttle N, Curran D  
**Publisher:** *British Journal of Health Psychology*

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**Title:** Parkinsonian hand or clinician's eye? Finger tap Bradykinesia interrater reliability for 21 movement disorder experts.  
**Authors:** Williams S, Wong D, Alty JE, Relton SD  
**Publisher:** *Journal of Parkinson's Disease*

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**Title:** Real-time automated detection of older adults' hand gestures in home and clinical settings.  
**Authors:** Huang G, Tran SN, Bai Q, Alty J  
**Publisher:** *Springer Link*

---

**Title:** Distance and grief: Optimising wellbeing for transnational migrants in Tasmania.  
**Authors:** Katczynski A, Marsh P, Hannah C, Ball M, Inyang I, Bridgman H (2023)  
**Publisher:** *Wellbeing, Space and Society*

---

**Title:** Repeated measurement of microglia-dendritic spine interactions using multi-photon imaging.  
**Authors:** Langley RC, Canty AJ, Ziebell JM  
**Publisher:** *Current Protocols*

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**Title:** Microglia directly associate with pericytes in the central nervous system.  
**Authors:** Morris GP, Foster CG, Courtney JM, Collins JM, Cashion JM, Brown LS, Howells DW, DeLuca GC, Canty AJ, King AE, Ziebell JM, Sutherland BA  
**Publisher:** *Glia*

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**Title:** A profile of students in a university-based distance dementia education program: implications for policy and practice.  
**Authors:** Goldberg LR, Jang S, Nugyen H, Bindoff A, Canty A  
**Publisher:** *Australasian Journal on Ageing*

---

**Title:** Hope for brain health: impacting the life course and society.  
**Authors:** Dasgupta J, Furlano JA, Bandler Z, Fittipaldi S, Canty AJ, Yasoda-Mohan A, El-Jaafary SI, Ucheagwu V, McGettrick G, de la Cruz-Góngora V, Nguyen K, Lawlor B, Nogueira Haas A (2023)  
**Publisher:** *Front Psychol*

---

**Title:** Australian nursing students' perception, knowledge, and attitude towards oral healthcare of older people and associated factors: A national cross-sectional survey.  
**Authors:** Bhagat V, Hoang H, Crocombe LA, Goldberg LR  
**Publisher:** *BMC Nursing*

---

**Title:** Pathologically mislocalised TDP-43 in upper motor neurons causes a die-forward spread of ALS-like pathogenic changes throughout the mouse corticomotor system.  
**Authors:** Reale LA, Dyer MS, Perry SE, Young KM, Dickson TC, Woodhouse A, Blizzard CA  
**Publisher:** *Progress In Neurobiology*

---

**Title:** Perspectives on design and conduct of health-related disaster research.  
**Authors:** Sinclair D, Heap A, Norris K, Carey R, Anderson C, Lea E  
**Publisher:** *International Journal of Disaster Risk Reduction*

---

**Title:** Deep brain stimulation and changes in "personality": A catch-all with merits and pitfalls.  
**Authors:** Thomson CJ, Carter A  
**Publisher:** *AJOB Neuroscience*

---

**Title:** From residential aged care worker to Dementia Care Support Worker: a qualitative study of senior aged care staff perceptions of the role.  
**Authors:** Lea EJ, Robinson A, Doherty K  
**Publisher:** *The Australian Journal of Advanced Nursing*

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# The ISLAND Project – Summary

## Positive results from our prospective 10-year cohort study

As a core component of the Wicking Dementia Centre's strategy, this year our ISLAND Study Linking Ageing and Neurodegenerative Disease (ISLAND) has demonstrated efficacy in reducing dementia risk in a large sample of Tasmanians over 50 years of age. This is a big step in the right direction for the overall aim of the ISLAND Project: to have a positive impact on dementia incidence in the state of Tasmania.

ISLAND is a 10-year prospective cohort study investigating the long-term effects of improving modifiable dementia risk behaviours for brain health. Each year, ISLAND participants report their Dementia Risk Profile (DRP) in the annual surveys, receiving personalised feedback of their risk level (low, medium, high) across nine evidence-based modifiable risk factors for dementia.

We continue to engage with our participant base across the state with ISLAND's core research activities: annual surveys, biennial cognitive tests and biennial biomarker sample collections. 2023 marks the second round of blood collection and cognitive test, with a significant proportion of people returning for repeat assessments. This is fantastic news for us, as we are very interested in how positive DRP changes might be reflected in improved biological markers for dementia (for example phosphorylated tau 181, published open-access in *Neurobiology of Aging* here), or improved cognition (measured by the gold standard Cambridge Neuropsychological Test Automated Battery).

We have continued to champion community engagement, conducting a series of presentations around Tasmania in Hobart, Launceston and Burnie. These sessions offered ISLAND researchers the opportunity to engage with participants, present their work and engage with lively Q&A sessions about our interim results and plans for the future. These were all well attended and received overwhelmingly positive feedback. Based on these discussions, we plan to invite ISLAND participants to a Community Reference Group in early 2024, with the goal to collaborate on our research objectives over the next few years of the study. This form of engagement will provide a platform to listen to participant feedback and plan research endeavours in tandem, thereby enhancing the efficacy of our public health dementia risk reduction initiative.

Since the launch of the study in 2019, ISLAND has achieved its initial aim to observe a positive impact on dementia risk reduction. Over the coming years we hope to enhance the efficacy of this exciting result, reaching more Tasmanians and aiming to have a positive impact on dementia incidence in the state. Some of our achievements this year include:



Engaging with over **11,500** Tasmanians through our newsletters



Conducting **14** in-person engagement events including expos and podcasts across Tasmania



Collecting blood biomarker samples in over **1,000** ISLAND participants



Presenting at **4** national and **4** international conferences on ISLAND data



Publishing **8** peer-reviewed manuscripts in scientific journals

## ISLAND Partners

- St.Lukes Health
- Tasmanian Masonic Medical Research Foundation
- Tasmanian Department of Health
- J.O. & J.R. Wicking Trust (Equity Trustees)
- Terry and Maureen Hopkins Foundation
- Print Radio Tasmania

► Dr Eddy Roccati and Dr Adam Kane attending the 2023 Healthfest at the Burnie campus.



## Modifiable Risk Factors for Dementia

### Lifestyle



Smoking



Obesity



Too much alcohol



Head injury

### Medical



Medical



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**TASMANIA**



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**TASMANIA**

Sign-up for our Newsletter

Become an expert in Dementia Care

Equip Aged Care Learning

Study Dementia for free

Study without tuition fees in 2024

Modifiable Risk Factors



UNIVERSITY of  
**TASMANIA**



# Our People

The Wicking Dementia Centre has continued to grow throughout 2023 with 74 staff and 42 PhD students working across many projects. The Executive oversees the strategic and operational direction of the Centre.



**Distinguished Professor  
James Vickers**

*Director*

James Vickers is the founding Director of the Wicking Dementia Centre. He has research interests including neurodegenerative disease (particularly Alzheimer's disease), traumatic brain injury and brain plasticity, and currently leads the ISLAND Project that seeks to reduce risk of dementia in the Tasmanian population.



**Caroline Gray**

*Business Manager*

After 12 years working with the Wicking Dementia Centre, Caroline accepted the role of Director, Strategy and Business Development for the College of Health and Medicine so will maintain a strong ongoing connection with the Wicking Centre.



**Sam Poynter**

*Business Manager*

Sam Poynter was appointed Business Manager in August 2023 and took over the role from Caroline Gray. Sam will continue to oversee the business operations of the Centre and lead major projects and day to day operations around budgeting, resource management, workforce planning, governance, and strategy.



**Professor Anna King**

*Associate Director (Research)*

Anna King is an NHMRC Boosting Dementia Research Leadership Fellow (2018 – 2022) and convenes the Wicking Dementia Centre's Neuroscience research group. Anna also plays a key role in the Wicking Dementia Centre's educational offerings including the Bachelor of Dementia Care, and the Understanding Dementia MOOC and the Centres research governance.



**Associate Professor  
Alison Canty**

*Associate Director  
(Learning and Teaching)*

Alison Canty was centrally involved in leading the development and rapid growth of the Dementia Care Degree Program and has held an education governance role within the Centre for several years. Alison's research focuses on mechanisms of neuroplasticity, degeneration, and trauma – all of which are central to understanding the pathology of dementia.



**Dr Kathleen Doherty**

*Senior Research Lead  
Dementia MOOCs*

Kathleen Doherty convenes the Wicking Dementia Centre's Translational Research group which focuses on education, care and community engagement. She is responsible for delivering the program of research which centres on our massive open online courses and growing knowledge, changing attitudes and behaviours through education and building dementia literacy. She contributes to the education program through the Master of Dementia.

## Wicking Dementia Research and Education Centre – Staff and Students 2023

### Staff

Dr Melissa Abela, Lecturer in Dementia

Dr Mimi Aiyede, Research Assistant

Associate Professor Jane Alt, Neurology

Dr Rachel Atkinson, Research Fellow

Dr Ash Barnes, Junior Post-Doctoral Research Fellow

Lily Bartkevicius, Student & Learning Skills Advisor

Dr Larissa Bartlett, Research Fellow – ISLAND

Dr Azam Bazooband, Academic Lead – Skills Development Program/DREAM project

Sarah Bascomb, Project Manager – DREAM

Monique Belfer, Participation Engagement Officer – Online Education

Dr Bill Bennett, Senior Technical Officer

Aidan Bindoff, Senior Research Fellow – Data Analyst

James Brady, Lecturer

Dr Ellie Bucher, Lecturer

Associate Professor Alison Canty, Associate Professor, Associate Director (Learning and Teaching)

Dr Suanne Chear, Research Assistant

Dr Anisuzzaman (Novel) Chowdhury, Research Assistant

Dr Jessica Collins, Research Fellow

Associate Professor Tony Cook

Dr Kathleen Doherty, Senior Lecturer, Research Lead MOOCs and Masters Course Coordinator

Helen Douglas, Project Manager – ISLAND

Dr Yasmine Doust, Research Fellow

Dr Samuel Dwyer, Research Assistant

Josh Eastgate, Senior Technical Developer

Karin Easton, Team Leader – College Services

Dr Claire Eccleston, Senior Lecturer, Course Coordinator – Bachelor and Diploma of Dementia Care

Dr Hannah Fair, Lecturer

Caroline Gray, Business Manager

Associate Professor Lyn Goldberg, Graduate Research Coordinator

Dr M. Shoiab Hamrah, Research Fellow

Claire Harrington, Engagement Coordinator

Dr Sunny Jang, Lecturer

James Jestrinski, Award Course Administration Officer

Adam Kane, Project Officer – ISLAND Project

Kim Kennedy, Clinic Administrator

Professor Anna King, Associate Director (Research)

Dr Matthew Kirkcaldie, Senior Lecturer

Alex Kitsos, Data Analyst

Dr Shannon Klekociuk, Lecturer

Dr Maneesh Kuruvilla, Lecturer

Dr Emma Lea, Senior Lecturer

Karina Lei, Senior Technical Developer

Dr Jacqueline Leung, Lecturer

Dr Renjie Li, Post-Doctoral Research Fellow

Dr Pauline Marsh, Senior Lecturer

Graeme McCormack, Senior Technical Officer

Dr Scott McDonald, Research Fellow – Neuropsychology

Helga Merl, Nurse Practitioner

Dr Hoang Nguyen, Lecturer

Chris Parker, Manager Digital Futures

Sladana Pavkovic, Lecturer

Dr Sharn Perry, Lecturer

Dr Andrew Phipps, Post-Doctoral Research Fellow

Samantha Poulson, Media Resources Officer

Dr Fiona Proudfoot, Research Assistant

Dr Sam Poynter, Business Manager

Susan Quarmbay, Project Lead – Short Courses

Anthony Ray, Senior Administration Officer – Education Programs

Catherine Robertson, Executive Assistant

Dr Eddy Roccati, Research Fellow – Tasmanian Healthy Brain Project

Dr Chantal Roddy, Coordinator Community of Practice (DREAM Project)

Dr Alice Rota- Bartelink, Lecturer

Dr Katharine Salmon, Coordinator – Dementia and Cognition Clinic

Tim Saunder, Data Analyst

Ian Smith, Senior Technical Developer

Dr Duncan Sinclair, Senior Lecturer, Graduate Research Coordinator

Dr Megan Stronach, Lecturer

Dr Kimberley Stuart, Research Fellow/ Psychologist

Dr Joanna Sun, Lecturer

Dr Jana Talbot, Research Assistant

Dr Laura Tierney, Research Fellow

Dr Cassandra Thomson, Lecturer

Dr Bryony Thorne, Post-Doctoral Research Fellow

Distinguished Professor James Vickers, Director

Helen Watt, Online Education Coordinator

Dr Adele Woodhouse, Senior Lecturer

Dr Emma Wilkinson, Post-Doctoral Research Fellow

Jiazhen (Jenny) Zhu, Educational Technologist

Dr Jenna Ziebell, Senior Lecturer

Florence Sward, ISLAND Project Officer

### PhD Candidates

Funmi Akindejoye

Aidan Bindoff

James Brady

Samantha Bramich

Ellie Bucher – Graduated Nov 2023

Jan-Leng Cheng

Adelene Chiam

Anisuzzaman (Novel) Chowdhury – Graduated Aug 2023

Amy Coates

Nina Daniels

Laura De Paoli

Yasmine Doust – Graduated Aug 2023

Deepika Dixit

Zane Farnum

Muthoni Gichu

Julia Giffard

Guan Huang

Stephanie Hutt

Ensieh Izadi

Oliver Johnstone

Fariha Kabir

Ben Knowles

Yashoda (Yashi) Koirala

Ross Langley

Ignacio Martinez Escobedo

Lyzette Matthews

Helga Merl

Nkoli Mmako – Graduated Oct 2023

Diriba Mulisa

Gongbu Pan – Graduated April 2023

Sladana Pavkovic

Praneet Raorane

Elizabeth Read

Kaylee Rudd

Katherine Silverton

Tara Sinclair

David Stellon – Graduated July 2023

Sharon Stoddart – Graduated Oct 2023

Bao Ngoc Tran

Xinyi Wang

Marlee Wells

Getachew Yitbarek

### Honours Students 2023

Rowan Burchill

Emily Garrett

Serif Sungur

Jessica Stephens

# In The Spotlight: Wicking Dementia Centre Staff



## Dr Hannah Fair

*Dr Hannah Fair is passionate about helping people from all corners of society improve their health and lower their risk of dementia.*

Hannah is deeply involved in the “prevention” theme of the Wicking Dementia Centre’s work and teaches dementia risk reduction across the Centre’s undergraduate and postgraduate education programs. She also researches the impact of dementia risk reduction initiatives, including the Preventing Dementia MOOC and ISLAND program.

Hannah is particularly intrigued by the way people share information about dementia risk with their friends, family and colleagues. Through research she has found that the Preventing Dementia MOOC participants share information with an average of 10 other people. This means that directly educating 100 people in the Preventing Dementia MOOC may lead to 1000 people learning something new about dementia risk. This is really exciting, as it is a step towards reaching people from all corners of society with information about dementia risk reduction.

In 2023, Hannah started her Wicking Dementia Centre academic role, after completing her PhD with the Wicking Centre in 2022. This year has been a year of firsts for Hannah: her first time teaching at a university, her first time receiving a research grant, and her first time supervising a PhD candidate. Hannah has received funding to design and trial conversation “prompts”, and has co-designed calendars, playing cards, and tea towels that contain information about dementia risk reduction. These will be available to a subset of Preventing Dementia MOOC participants in May 2024.

Hannah is also co-leading a team that is seeking to understand key stakeholders’ thoughts on dementia education for high school students. Hannah and her team will be asking for input from high school students, teachers, and parents.

Hannah is just starting out in her research career, and she wants to pursue dementia prevention research that has value in the eyes of people like you.

When she is not sitting at her desk pouring over research data or academic publications, Hannah can often be found reading a novel beside the open fire at her family’s “shacky” shack at Lake Leake; being struck by feelings of awe and wonder while spending days at a time hiking one of lutruwita/Tasmania’s many mountain ranges; or expressing her love for people and place through creative writing.



## **Dr Cassandra (Cassie) Thomson**

*Dr Cassie Thomson is a lecturer, early-career researcher, and registered clinical psychologist who joined the Wicking Dementia Research and Education Centre in January 2023. Her research and clinical interests include older adult mental health, psychosocial interventions for neurological disorders, and supporting carer wellbeing.*

Cassie teaches in the areas of older adult mental health, and health and social care in dementia across the undergraduate and postgraduate programs. Prior to joining the Wicking Dementia Centre, Cassie was a clinical psychologist and program facilitator at Epworth Rehabilitation and Mental Health, working across inpatient, outpatient, and private practice services. There she led the delivery of mental health services for older adults.

In 2020, Cassie completed a doctorate in Clinical Psychology at Monash University. Her thesis explored the lived experience of deep brain stimulation for Parkinson's disease. The research focused on changes in personality, self, and relationships, from the perspectives of Deep Brain Stimulation-recipients, carers, and clinicians.

During her clinical training, Cassie completed an internship through the Swinburne University Wellbeing Clinic for Older Adults. This internship inspired her interest in working with people living with dementia. It involved delivering a therapy program designed specifically for residents living in aged care with dementia, alongside residential staff and family members.

Cassie believes that all individuals, including those living with neurological disorders such as dementia, can benefit from cognitive and behavioural therapies when delivered appropriately. She is passionate about promoting the role of clinical psychologists in aged and dementia care and ensuring that older Australians have equitable access to psychological therapies.

Currently, Cassie co-leads the Venture Out Nature-based Dementia Research Group. This research group aims to improve the quality of life and wellbeing of people living with dementia and care partners by facilitating opportunities to participate in nature-based activities in their community.

When conducting research, it is important to Cassie that the people who are the focus of the research or who might benefit from it have a voice and are included in the process. As such, she thoroughly enjoys working alongside dementia advocates, carers, and nature providers, as well as co-facilitating the Venture Out Community of Practice and ISLAND Resilience Initiative Advisory Group.

## In The Spotlight: Wicking Dementia Centre Staff CONT.



### Dr Rachel Atkinson

*Dr Rachel Atkinson is a Postdoctoral Research Fellow at the Wicking Dementia Centre. Her research focuses on strategies for protecting the nerve cells of the brain and spinal cord from breaking down in diseases such as frontotemporal dementia and motor neuron disease.*

Rachel grew up in the North-West of Tasmania and moved to Hobart for university where she then went on to study for her PhD. She is a wife and proud mother of two children, and while finding the balance of family life and a career in science is challenging, she loves the fulfilment that both give her.

Recently, Rachel was awarded the prestigious Bill Gole Fellowship from Motor Neuron Disease Research Australia. This Fellowship, entitled 'Freezing MND in its tracks', will run from 2024 to 2026, and will support Rachel's salary and project costs. The project focuses on the body's protective response to 'cold stress' to potentially provide new insights into therapeutic approaches to protect neurons in conditions involving damage to motor neurons. When our core body temperature is cooled, our body activates a natural protective mechanism known as the 'cold stress response'. This mechanism helps to protect the nervous system by slowing down metabolism and safeguarding cell structures.

The cold stress response is used by mammals that hibernate during winter and is also activated in humans during therapeutic cooling when used following stroke and spinal cord injury. Rachel will explore whether this ancient and conserved pathway can aid in protecting nerve cells in motor neuron disease. This research will be highly relevant in other neurodegenerative diseases, and Rachel intends to expand her work into other areas.

Rachel works as part of a dedicated team of researchers and PhD students and collaborates with groups in Spain and the UK. Going forward, she will work on her fellowship project and will continue her work using induced pluripotent stem cells to investigate disease mechanisms, as well as examining the adverse metabolic changes that occur in neurodegenerative diseases and how hormones related to obesity may be repurposed to counteract these changes.



## Dr Joanna Sun

*Imagine a world where people living with dementia can confidently navigate their surroundings, find comfort in familiar spaces, and live well. This is the world that Joanna Sun, an environmental gerontologist, tirelessly strives to create.*

Joanna is driven by an unwavering passion and collaborative spirit, her mission transcends academic pursuits; it's a heartfelt dedication to building a more inclusive future for people living with dementia on a global scale.

Joanna's journey began with a clear vision – one where the built environment serves as a supportive backdrop, not a barrier, for people from all cultures living with dementia. This vision fuelled her development of the groundbreaking Singapore Environmental Assessment Tool (SEAT) and its accompanying user guide. This innovative resource provides a common platform and guides diverse stakeholders working on or in facilities across Singapore, providing high levels of care to people living with dementia to have a tangible means of evaluation. It stands as a cornerstone in its disciplinary context, with particular significance in advancing dementia care in Asia by introducing the first validated culturally sensitive dementia environmental assessment tool. This groundbreaking tool has not only addressed a critical gap in research but has become a catalyst for further studies, transforming the landscape of dementia care research and education in the region.

Joanna's impact extends far beyond a single assessment tool. Her insatiable curiosity and commitment to knowledge translation drive her ongoing research across continents. She continues working with researchers from Singapore to Japan and Germany, unearthing best practices and fostering cross-cultural exchange. The insights from this research inform innovative design principles, creating spaces that resonate with diverse cultural nuances and empower individuals to flourish.

Joanna is also a co-lead of the Venture Out Nature-based Dementia Research Group, which investigates nature-connection and dementia in a living lab. The living lab focuses on developing and evaluating nature-based interventions, empowering people with dementia to connect with nature. This project nurtured a blossoming collaboration, the Venture Out Community of Practice. This diverse group of dementia practitioners, advocates, and nature-based organisations fosters community-wide capabilities, working together to enable nature connection for people living with dementia and their care partners. Joanna is also working on the creation of a toolkit for dementia-inclusive outdoor environments, empowering stakeholders to understand the capacity and accessibility of their natural environments for people living with dementia.

# In The Spotlight: Wicking Dementia Centre Students



## Xinyi Wang

*Xinyi commenced her doctoral research with the Wicking Dementia Research and Education Centre in 2021, studying the use of computer technologies to identify new hand movement biomarkers of dementia risk.*

Xinyi completed her undergraduate studies at the University of Melbourne, where the Bachelor of Biomedicine degree not only provided her a comprehensive understanding of the human body but also offered her opportunities to participate in various coding classes. This fuelled her interest in computer science, leading her to pursue a master's degree in computer science at the University of Tasmania. This allowed her to integrate her expertise in biomedicine and computer technologies into a research project.

Around 50 million people worldwide are dealing with dementia. Studies suggest that tackling modifiable risk factors like obesity could prevent or delay up to 40% of dementia cases. This highlights the pressing need for non-invasive, accessible, and affordable early dementia biomarkers. Unfortunately, current biomarkers are often too specialised, expensive, or invasive for widespread use. New findings indicate that changes in motor (movement) function may occur before and during cognitive decline. While walking function has been extensively studied, there's been much less exploration into how hand motor function and cognitive function are connected.

Measuring hand movement has many advantages compared to watching how people walk. You can monitor hand movements while sitting, using everyday computer equipment, like keyboards and mice, and it doesn't come with the risk of falling. Recent research shows that you can reliably measure hand movements using video data from standardised movement tests. Video recording technology is readily available in homes and clinics, making it a cheap and easy to use tool. It is more suitable than previous types of tests for spotting subtle motor function issues in big groups of people.

Xinyi's PhD project is all about getting a better grip on how different hand movements connect with cognitive function. Her career highlights include being invited to present her research by Print Radio Tasmania, the International Women's Day Breakfast program, raising public awareness of dementia research, and the Royal Hobart Hospital Research Foundation Meet the Researchers program.

Alongside her team, Xinyi has published a research paper discussing the association between keyboard tapping and episodic memory in a large community cohort. A notable aspect of Xinyi's PhD journey has been interacting with many of the wonderful ISLAND participants through in-person information sessions in Hobart and Burnie.





## Yashi Koirala

*Yashi commenced her PhD with the Wicking Dementia Centre in December 2021 to evaluate the translation, delivery, and outcomes of the Nepali version of the Preventing Dementia Massive Open Online Course (MOOC) among Nepali-speaking people.*

At 15, Yashi moved to Australia with her family in 2010 and completed her high school and college-level studies in Launceston. She then completed a Bachelor of Nursing Science from the University of Tasmania with Clinical honours followed by a Master of Nursing Practice through Deakin University in February 2020.

After graduating with a Bachelor of Nursing degree, Yashi started working in various healthcare sectors including Hospitals, aged care facilities and community centres. Her interest in learning about dementia started after Yashi started caring for people living with dementia whilst she was working in residential care facilities.

Dementia risk reduction education plays a crucial role in promoting public health and well-being by empowering individuals with knowledge and strategies to reduce their risk of developing dementia. As our understanding of dementia and its risk factors continues to evolve, education becomes a valuable tool in fostering proactive lifestyles and behaviours. An example of such educational intervention is the Preventing Dementia Massive Open Online Course (PD MOOC) developed by the Wicking Dementia Research and Education Centre.

## The Preventing Dementia MOOC

PD MOOC has successfully empowered Individuals, promoted healthy behaviours, raised awareness, facilitated early Intervention, and promoted brain health through education in a large audience base. The positive impact of PD MOOC was known to Yashi and that is why she decided to adapt the course to the Nepali language.

Previous PD MOOC data indicated poorer participation from non-English speaking people including Nepali speakers. Therefore, translating and adopting this dementia risk reduction intervention in the Nepali language has been of exponentiate benefit. The course has reached people from all over the world including developing countries where such interventions are not yet developed.

The main highlight of the project for Yashi, is being able to analyse the dementia risk profile and the dementia risk reduction knowledge of Nepali-speaking people from all around the world. In addition, being able to understand the ways we can improve or enhance the accessibility of dementia risk reduction intervention in the wider population-based audience through feedback surveys is another fundamental highlight of the project.

## In The Spotlight: Wicking Dementia Centre Students CONT.



### Bao Ngoc Tran

*PhD student, Bao Ngoc is interested in discovering the influence of an enriched environment on neuronal epigenome ageing as a potential strategy for enhancing successful ageing.*

Bao Ngoc joined the Wicking Dementia Research and Education Centre in March 2020, and her project focuses on a specific mechanism of brain ageing and how to improve age-related memory decline using environmental enrichment.

It is predicted that between 2015 to 2050, that the world's aged population will nearly double from 12% to 22% of the population. Associated with this increase will be the risk of experiencing negative effects of ageing, including common age-related diseases such as Alzheimer's disease and cancer.

Ageing causes a decline in both the integrity and function of a person's cells. In healthy cells, the 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 associated with DNA, and the study of these processes is known as epigenetics. Proper epigenetic control must be maintained during ageing.

Bao Ngoc's research is looking at the possibility that epigenetic changes due to ageing result in declining learning and memory capabilities. While epigenetic alterations occur across the course of ageing, a high-quality condition of living, called environmental enrichment, can limit epigenetic ageing and rescue age-related memory decline. Surprisingly, existing knowledge of epigenetic alterations in ageing nerve cells in the brain is limited.

The overall aim of her research is to discover how environmental enrichment changes the epigenetic marking in aged nerve cells. To achieve this, mice were aged in standard and environmentally enriched housing, the mice then completed memory and learning tests and the epigenetic marking of nerve cells was examined. Bao Ngoc found that environmental enrichment significantly changed the epigenetic alterations across aging.

Bao Ngoc is also investigating the relationships between age-related epigenetic changes and age-related diseases, such as cancer and Alzheimer's disease. The comprehensive picture of age-environment interactions in animal models may aid in reinstating learning and memory function in neurodegenerative conditions and developing strategies to enhance successful ageing and decrease the incidence of cancer and neurodegenerative conditions.

Bao Ngoc has presented her research at 4 conferences including the European Molecular Biology Organization, Australasian Epigenetics Alliance, Lorne Genome and the Australasian Neuroscience Society (ANS) conference during her PhD journey. Bao Ngoc was selected to present her research at a Data Blitz talk at the ANS conference 2023. She has also presented a seminar of her research in Professor Athony Hannan's laboratory at the Florey Institute of Neuroscience and Mental Health, and is currently casually employed by the University of Tasmania to maintain the Flow Cytometry Facility and support all research groups to perform flow cytometry experiments.



## Ross Langley

*PhD student Ross Langley's project focuses on microglia-synapse interactions and dynamics in-vivo in adulthood, aging and disease.*

Ross started working with the Wicking Dementia Centre as a summer intern during his undergraduate studies in 2017. He was studying biochemistry and food microbiology at the time but after seeing a work colleague develop young onset dementia he decided to shift his focus into neurodegenerative research. Ross' PhD study is looking at attempting to track and characterise the interaction between microglia, the immune cells of the brain, and synapses, the connections that form our neural networks.

Microglia play a key role in the maintenance of our neural connections by both strengthening and removing connections over the course of our life. How microglia decide which connections to strengthen and which to remove is a mystery that we're hoping to uncover. Ross is currently looking at how these connections are managed throughout adulthood and into old age and he is hoping in the future to bring that research across to also look at how that management changes in both disease and injury.

The biggest hurdle Ross had to overcome for this research was exactly how to track these connections. The interactions between microglia and synaptic connections happens incredibly quickly and there weren't any existing methods to track them with the precision required.

This meant that Ross and the team had to develop their own analysis protocol from scratch, something they finally achieved this year when they published their protocol for tracking microglia. This publication was one of Ross' biggest achievements for 2023, and for his PhD, he had started its development on 2018 so to see it in print was a special moment for Ross.

In addition to dementia research, Ross is passionate about science communication, especially talking to kids who thought that science was out of reach for them and helping them find a way to enjoy it. Ross has two highlights for science communication in 2023. The first was being asked to mentor other scientist, through Young Tassie Scientist, in how to effectively talk about science with everyone from small children to adults.

The second highlight was working with The Smith Family's Future Seekers program, where Ross spoke about getting into a career in science with primary school children from socially disadvantaged backgrounds, Ross found the opportunity to meet with these children incredibly special.



## Contact

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[utas.edu.au/wicking](https://www.utas.edu.au/wicking)

A gift to the Wicking Dementia Research and Education Centre can take many forms and no matter the size of the gift it has a real impact. It can be the difference in a student's life, assist in a breakthrough research discovery that will change people's lives, or help create positive outcomes for our community.



Visit [utas.edu.au/wicking/about/donate](https://www.utas.edu.au/wicking/about/donate) to find out more.