

## 2021 Dementia Grants Program

### Faye Williams Innovation Grant\*

LEAD INVESTIGATOR	PROJECT TITLE	INSTITUTION
Associate Professor Clare Anderson	Elucidating the role of sleep in Alzheimer's disease pathology: innovation in sleep technology and biomarkers	Monash University
Professor Michael Parker	A new approach to tackle Alzheimer's disease	St Vincent's Institute of Medical Research

\* Valued at \$375,000 over 3 years. Funding commences in 2022.

## Innovation Grant Summaries

### Associate Professor Clare Anderson, Monash University

*Elucidating the role of sleep in Alzheimer's disease pathology: innovation in sleep technology and biomarkers*

Alzheimer's disease currently affects more than 480,000 Australians, with future growth predicted. Identifying ways to minimise the risk of this disease is critical and enhancing sleep has been identified as potentially transformative in the fight to promote brain and cognitive health in older adults. But not all sleep is the same. Slow wave sleep, the deepest form of sleep, protects the brain and is critical for cognition. This form of sleep however declines significantly with age, particularly in those at risk of Alzheimer's disease. This project utilises a new sleep technology which delivers perfectly timed acoustic tones to enhance slow wave sleep in older adults. It will examine the effect of sleep enhancement on the clearance of Alzheimer's-related toxins by using innovative blood collection techniques, and memory function through cutting-edge cognition measures. This study has potential to reveal a novel target for reducing Alzheimer's disease risk, by demonstrating the causal role of slow wave sleep in Alzheimer's disease pathology. Importantly, it will also demonstrate the benefit of a novel sleep therapeutic in protecting the brain and promoting cognitive function in all older adults.

## **Professor Michael Parker, St Vincent's Institute of Medical Research**

### *A new approach to tackle Alzheimer's disease*

Alzheimer's disease is characterised by the failure of cognitive functions such as language, loss of memory and perception of reality. It is estimated that approximately 480,000 Australians live with dementia costing an estimated \$15 billion annually. These figures are projected to increase drastically over the coming years, due to our aging population. The predominant strategy to treat Alzheimer's disease has focused on removal of amyloid plaques in the brain. Over the past 30 years, pharmaceutical companies have poured billions of dollars into treatments that clear the brain of plaques, in the hope that it would stop the damage that is driving memory loss. Despite this, no drugs have succeeded in stopping or reversing dementia, and the few Alzheimer's disease treatments that have been approved, only ease symptoms rather than altering the course of the disease. We recently developed a new treatment and have generated exciting preliminary data to show that we can successfully remove toxic amyloid without the negative consequences that have plagued drug trials. We now propose to test the ability of our innovative treatment to lower amyloid burden and arrest cognitive decline in mouse models of Alzheimer's disease.