

Sydney Memory and Ageing Study

Healthy Brains. Positive Ageing

Newsletter

January 2018

Happy new year from the Sydney Memory and Ageing Study! We hope this newsletter finds you in good health. We would like to take this opportunity to share some updates about the study and highlight some of our recent research findings with you, our research participants and your relatives and friends.

The Sydney Memory and Ageing Study began all the way back in 2005 with 1037 residents of Sydney's eastern suburbs aged between 70 to 90. Unfortunately 298 participants are known to have passed away and 235 have been unable to continue with the study due to poor health or other difficulties. However, we are pleased to report that 504 of our valued participants as well as 415 of your relatives and friends are still involved with the study and continue to give your time towards this important project.



Professors Henry Brodaty & Perminder Sachdev

As we embark upon 2018 the study has almost completed it's 10th year of follow-up interviews. 11-year telephone interviews are already underway and we have no plans of slowing down with 12-year follow-up interviews due to commence in March. The 12-year follow-up interview will involve another face-to-face assessment that includes some questions about your health, memory and lifestyle, completion of several memory puzzles and a brief medical and oral health examination. As always, we are happy to come to your home for these assessments or we can offer transport to and from UNSW. We can also make adjustments to the length of the interview if requested.

Thanks to your generous participation in our research the Sydney Memory and Ageing Study team have accumulated a mammoth amount of data on all aspects of ageing including memory and cognition, physical health, genetics, brain structure and mortality. These data have led to the publication of over 120 scientific papers in respected, international medical journals. Some of our recent findings are detailed on Pages 3-6. A complete list of our published research can be found on our website:

<https://cheba.unsw.edu.au/project/sydney-memory-and-ageing-study>

To all of our participants and your relatives and friends that have contributed to our research, thank you for all the time you have given us thus far. We wish you a happy and healthy 2018 and we look forward to working with you for many years to come.

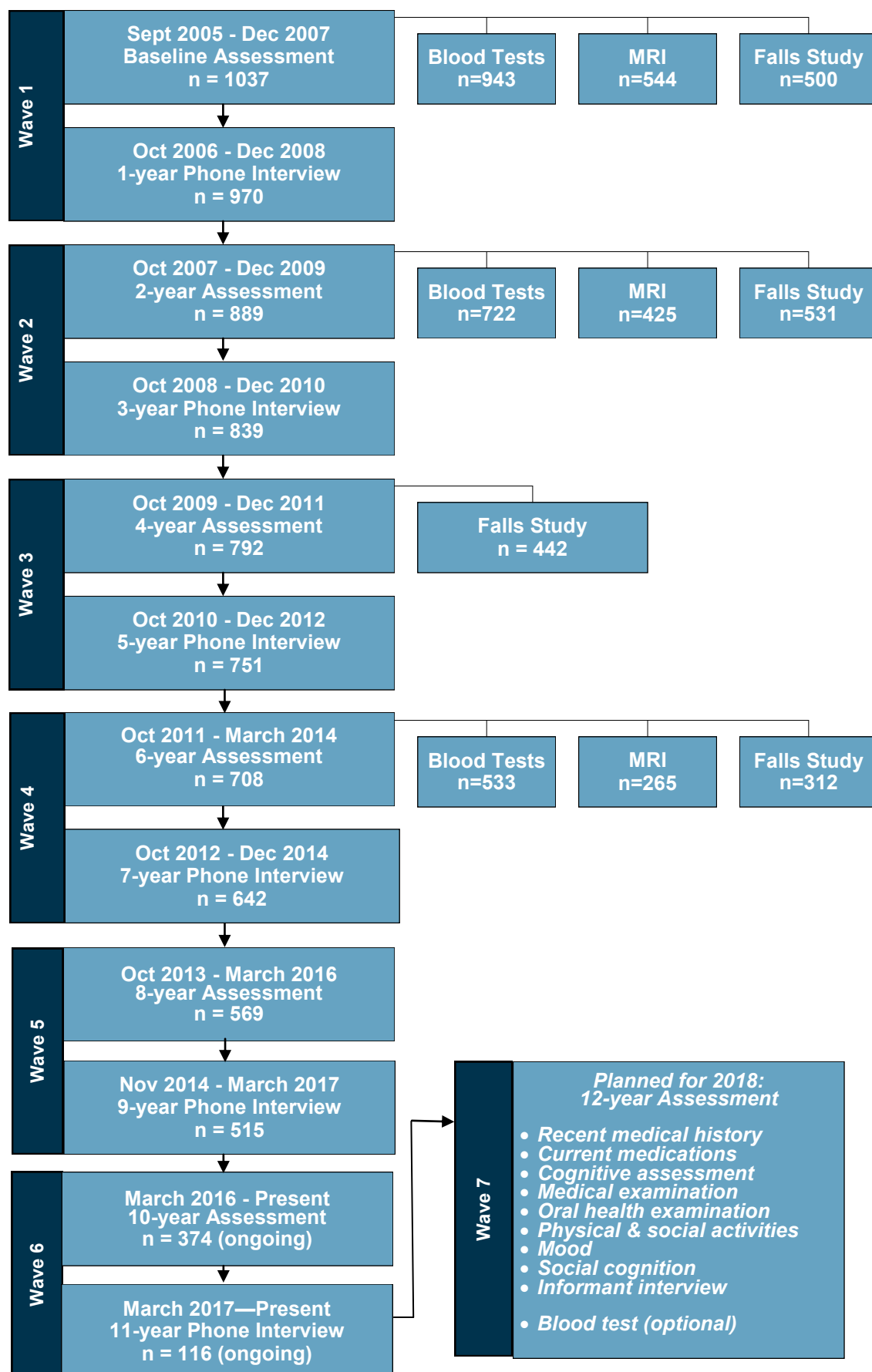
Professors Henry Brodaty & Perminder Sachdev

Co-Directors, Centre for Healthy Brain Ageing (CHeBA)



Progress to Date

504 of
you
have
been a
part of
the
study
since
2005!



Research Highlights

A new tool to assess complex everyday activities in people with cognitive impairment

A new instrument to assist in research and clinical assessments has been developed by Dr Simone Reppermund and her colleagues at the Centre for Healthy Brain Ageing.

This tool is designed to assess instrumental activities of daily living (IADL), which are complex everyday functional skills necessary for independent living such as managing medications, shopping, or handling finances. Preserved IADL is one of the defining features distinguishing mild cognitive impairment (MCI) from dementia.



Dr Simone Reppermund

While many researchers and clinicians rely on measuring IADL to monitor cognitive function, surprisingly there is no “gold-standard” instrument that is time-efficient and can be easily administered to assess complex everyday activities. Self and informant-ratings of IADL performance are the most popular because of their brevity and ease of administration. However, subjective measures have limitations. Self-reports are prone to underestimate IADL deficits due to cognitive decline and lack of insight, whereas informant reports are prone to overestimate IADL deficits due to caregiver burden and depressive symptoms, or limited time that the informant spends with the patient.

Dr Simone Reppermund said that the new performance-based instrument, called the STAM (Sydney Test of Activities of daily living in Memory disorders) will assess everyday activities in a time-efficient and reliable way. It has the advantage of objectively scoring individuals on their ability to perform everyday activities rather than relying on subjective self-ratings or second-party judgements.

“With an average administration time of 16 minutes, the STAM has the potential to be used widely in research as well as in clinical assessments,” said Dr Reppermund.

“It can be used to determine the level of functional impairment. This will be important in helping clinicians to diagnose dementia more reliably. It will assist with diagnostic classification for the detection of IADL impairment in the early stages of dementia.”



“A major advantage is STAM's strong value to distinguish groups with normal cognition, MCI and dementia,” said Dr Reppermund. “In particular, we are able to distinguish between MCI and dementia with high sensitivity and specificity, whereas other performance-based instruments have been shown to have ceiling effects.”

Future work requires replication of the validation in an international sample.

Research Highlights

Sydney Memory and Ageing Study identifies core risk factors for mild cognitive impairment, dementia and mortality in late life

A core group of late-life risk factors have been identified for mild cognitive impairment (MCI), dementia and mortality by researchers at the Centre for Healthy Brain Ageing (CHeBA), UNSW Sydney. The findings were published in the *Journal of the American Medical Directors Association*.

The longitudinal study examined changes in cognitive status, particularly the development of MCI or dementia, as well as death, over a six year period for 873 community-dwelling individuals aged 70-90 years in CHeBA's Sydney Memory and Ageing Study. Baseline factors associated with having MCI and dementia after 6 years were: older age, MCI at baseline, poorer smelling ability, slower walking speed and being an ApoE $\epsilon 4$ carrier, a known genetic risk for Alzheimer's disease. All factors except ApoE $\epsilon 4$ carrier-status were also associated with mortality.



Lead author CHeBA researcher Dr Darren Lipnicki said the findings provided exciting new insights into risk factors to inform early diagnosis and promote healthy ageing.

"Risk factors indicative of physical and mental frailty were significantly associated with dementia, MCI and mortality. This means that relatively straight-forward tests like walking speed and smelling ability may help screen for cognitive decline," explained Dr Lipnicki.

Co-author and CHeBA Co-Director, Professor Perminder Sachdev, said that large, longitudinal studies like the Memory and Ageing Study are vital for determining risk factors over time.



"Studies like this highlight the complexity of dementia aetiology, but also that identifying risk factors is possible. At CHeBA, our goal is drawing on both local longitudinal studies and large-scale international cohorts to improve our understanding and, ultimately, inform diagnostic and intervention strategies.



Dr Darren Lipnicki

Research Highlights

Researching epigenetics to uncover secrets to longevity

A study led by the Centre for Healthy Brain Ageing (CHeBA), UNSW Sydney, has examined epigenetic factors across individuals aged 34-103 years to better understand the secrets to healthy ageing.

Dr Mather, Head of the CHeBA Genetics and Epigenomics Group and a lead author on this paper published in *Future Medicine*, said that this work investigates exceptionally long-lived individuals who can be seen as exemplars of successful ageing as many have escaped disease or delayed illness until very late in their lives.



Dr Karen Mather

While our DNA blueprint does not change with age, ageing and other factors can leave its mark on the DNA in the form of a chemical change called methylation that can alter the activity of our genes. DNA methylation is one example of an epigenetic marker. The biological age of an individual, known as the 'Epigenetic clock,' can be calculated from these epigenetic markers.

There are a number of different epigenetic clocks described in the literature, depending upon which markers are used. The Horvath and Hannum et al epigenetic clocks are the best known and this study examined the relationships between these two clocks and exceptional ageing.

Co-Director of CHeBA and co-author on the paper, Professor Perminder Sachdev, said the epigenetic clocks under-estimated the ages of very old individuals (95 years and over) participating in CHeBA's Sydney Centenarian Study. "This finding supports the view that these individuals are biologically younger than their chronological ages would suggest," said Professor Sachdev.

"Understanding the reasons for this may well reveal the secrets to their longevity," he said.

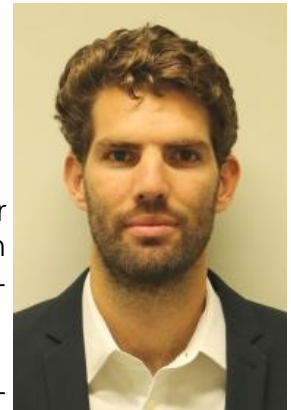


Dr Mather said that future work in CHeBA cohorts will be undertaken to better understand the molecular underpinnings of exceptionally long-lived individuals, which may be useful to design strategies to promote healthy ageing in the general population.

Research Highlights

Functional brain network study explores healthy brain ageing

The brain functional connectivity patterns of healthy older adults have been studied by the Centre for Healthy Brain Ageing's (CHeBA) Dr Alistair Perry. The research was published in the July issue of the journal *Human Brain Mapping*.



Dr Alistair Perry

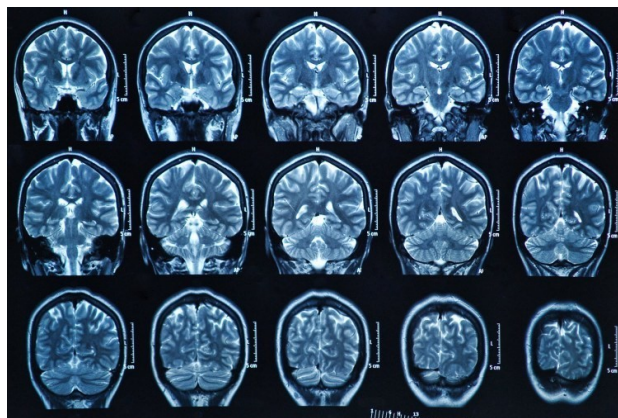
Functional connectivity studies examine the neural interactions, or connections, between different regions of the brain and have been made possible by significant advances in neuroimaging technology in the last decade. They can be undertaken while the participant is either at-rest or engaged with a task, and allow better understanding of the different brain circuits involved in cognitive processes. This approach provides an invaluable resource for comparing and understanding the changes involved between healthy brain ageing and neuropathological conditions, such as dementia.

"Healthy ageing is accompanied by a constellation of changes in cognitive processes and alterations in functional brain connectivity," said lead author Dr Perry.

"However, the complex relationships between changes in brain connectivity and cognitive processes during ageing in later life are poorly understood. How environmental factors in earlier life - such as educational history - provide a protective influence on ageing processes is also unknown."

Dr Perry said that the current research identified that age and educational attainment confer independent influences on brain patterns supporting cognitive processes. "It implies that age-related changes may be resistant to positive lifestyle factors that modify the risk of cognitive impairment such as educational attainment."

The study examined the brains of 101 healthy, community-dwelling adults aged 70 to 90 years from CHeBA's Sydney Memory and Ageing Study using magnetic resonance imaging (MRI).



Co-author and CHeBA Co-Director Professor Perminder Sachdev said Dr Perry's research is a valuable contribution to understanding age-related cognitive changes.

"Better understanding of the complex pathways involved in cognition as we become older may also have implications for behavioural interventions targeting healthy ageing," said Professor Sachdev.

Fundraising

Kids4Dementia team raises \$15K at the Sydney Running Festival

The Centre for Healthy Brain Ageing (ChEBA) at UNSW Sydney has partnered with Kensington Public School to support Kids4Dementia (K4D), an education program improving students' understanding of the condition to help create a more dementia-friendly society.

Dementia is the single largest cause of disability in older Australians (aged 65 years or older) and the third leading cause of disability burden overall. The number of Australians living with dementia is projected to almost triple from 413,000 now to 1.1 million by 2050.

The impact of having a family member with dementia on children is often overlooked and community knowledge of the disease remains poor, with significant social stigma attached to the illness. Currently, a third of young people know someone living with dementia, a figure set to increase rapidly.

K4D is an innovative, classroom-based program designed to improve young peoples' social awareness by learning that a person with dementia is "still a person", and not someone to fear, laugh at or ignore.

The evidence-based program for 9-12 year-olds was developed with a grant from the UNSW Dementia Collaborative Research Centre by research psychologist Dr Jess Baker. Dr Baker hopes that one day all young Australians will understand what dementia is and how they can be supportive of people living with dementia before they leave primary school.

"They are our future citizens who will grow up to be the doctors, teachers and leaders of tomorrow," says Dr Baker. "Educating children about dementia is the foundation for a dementia-friendly society."

Kensington Public School's Year 6 students took part in the K4D program in early 2017. Students learnt about what causes dementia, how it feels to have dementia, how to keep the brain healthy and what happens in an aged care facility.

13 teams of kids, parents, grandparents and friends participated in the Sydney Running Festival on 17 September 2017. They raised an incredible \$15,000 which will go towards rolling the program out across 30 NSW schools.

Schools interested in implementing the K4D education program can contact Dr Jess Baker, at kids4dementia@unsw.edu.au



Brain Donation



Brain imaging technology has improved markedly over the past few decades. However, even the most sophisticated imaging techniques cannot answer all our questions. To understand cellular changes in both healthy and disease-affected individuals researchers need to examine brain tissue.

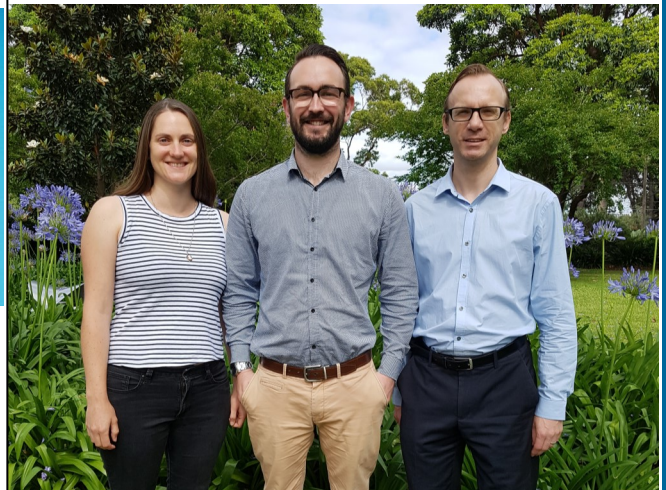
The Centre for Healthy Brain Ageing collaborates with the Sydney Brain Bank. Participants in the Sydney Memory and Ageing study are able to donate their brain to this program if they wish.

By comparing brain tissue to the huge volume of information we have collected over the last 12 years, we hope to gain new insights into the neurobiological basis of ageing and dementia.

If you would like more information about brain donation or would like to register as a brain donor, please contact our friendly staff on **(02) 9385 0425**.



Meet the Team



Kate Maston, Study Coordinator (L)

Kate has a Masters in Clinical Psychology and practiced as a Clinical Psychologist with children and adolescents before moving into Ageing Research at UNSW in 2011. She's had the pleasure of meeting with hundreds of Memory and Ageing Study participants over the past 7 years.

Paul Strutt, Research Assistant (Centre)

Paul recently completed his PhD in social cognition at the University of Newcastle and is currently completing a Masters in Clinical Neuropsychology at Macquarie University. Paul started working with the Memory and Ageing Study at the beginning of 2016.

Adam Bentvelzen, Research Assistant (R)

Adam has a PhD and Masters in Clinical Neuropsychology from Macquarie University. Before joining the Memory and Ageing Study team at the beginning of 2017 he worked with Prof Henry Brodaty on various research projects at the UNSW Dementia Collaborative Research Centre.

Farewell to Kate Maston

Some of you have met Kate personally but behind the scenes all of you have had Kate managing your appointments and data. After 7 years as a Research Assistant and over 3 years as Study Coordinator for the Memory and Ageing Study, Kate is leaving to take on new challenges at the University of Sydney in trying to improve quality of life as people get older. We will miss Kate's expertise, quiet efficiency, attention to detail and caring manner. We wish her well in her new role.

