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Centre for Healthy Brain Ageing (CHeBA) Sydney Centenarian Study

NEWSLETTER | December 2019

Happy holidays from the team at the Sydney Centenarian Study (SCS). We hope this newsletter finds you in good health.

2019 has been another good year for the SCS. At the beginning of 2019 we welcomed new participants from the Inner West of Sydney. It was an absolute pleasure meeting our new recruits. Throughout the year we also re-visited our existing participants for their regular six-monthly follow-ups and talked to many close family or friends of our participants who gave us further perspectives about their life.

In April we farewelled our previous Study Coordinator - Adam Theobald - who led the study through important milestones and left it in great shape. He is greatly missed by all and we wish Adam well in his new role. In June we welcomed back Fleur Harrison who returned to SCS after taking parental leave to spend time with her baby boy - Sebastian. Fleur brings with her invaluable experience and enthusiasm for both our participants and our research. In November we welcomed a new team member - Julia Riches - who recently moved to Sydney after studying and working in Brisbane. We are delighted to have Julia join us and I'm sure you will enjoy meeting her when she comes to visit.



CHeBA's Co-Directors Professor Permindar Sachdev AM and Professor Henry Brodaty AO wish you all a very happy holiday season.

Scientia Professor
Permindar Sachdev AM

Scientia Professor
Henry Brodaty AO

In other exciting news five of our SCS participants, as well as Chief Investigator Prof Permindar Sachdev, featured in an ABC Catalyst documentary called "Staying Younger for Longer". As well as attending a day of filming at the beach, the participants and their families were also invited to enjoy a private screening in Chippendale before it went to air. For those who missed it, the program is still available to watch on ABC iView.



During the year we developed new collaborative partnerships with other research groups who share our interests in determining factors that promote healthy ageing. We presented findings at conferences and have published scientific papers in respected journals.

Thank you to all our participants and informants for your ongoing support. We appreciate your generous gift of time and we look forward to visiting you again in 2020. From all the staff at the Sydney Centenarian Study we hope you have a wonderful holiday period and wish you and your family a very happy and healthy year ahead.

Dr Catherine Browning, PhD
Study Coordinator, Sydney Centenarian Study



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The Sydney Centenarian Study staff share some thoughts about working for the study.



JULIA RICHES, Research Assistant

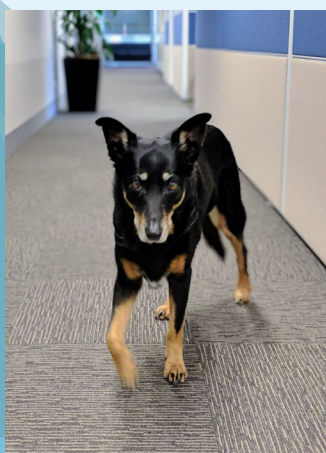
Joined the Sydney Centenarian Study team in November 2019

I'm thrilled to be involved in the Sydney Centenarian Study and the research looking at such an exceptional group of individuals. As older adults are the fastest growing proportion of Australia's population, I think it's extremely important to talk to our centenarians and shed more light on the determinants of successful ageing. I look forward to meeting more of our SCS participants in the future, and to be given the privilege of learning about their remarkable lives.

FLEUR HARRISON, Research Assistant

Joined the Sydney Centenarian Study Team in April 2017

I was extremely happy to return mid-year to my role as Research Assistant on the Centenarian Study, after taking 12 month's maternity leave to have my first child, Sebastian. It has been such a privilege and responsibility to care for a child and to see the world anew through his eyes. It's difficult not to turn to clichés to describe parenthood! I'm sure many parents would agree that one of the most amazing aspects is seeing your child learn and develop new skills, in front of your eyes. Similarly, I feel privileged to spend time with our Centenarian Study participants. Many of our participants have lifelong interests, hobbies and employment in which they remain immersed, as well as managing to keep up with technology which is a battle for all of us! So both at work and while caring for my son, I am reminded of the importance and the value in enjoying life, maintaining interests and passions, trying new activities and generally living life to the fullest. Science backs this up: there is strong evidence that lifelong social, physical and mental activity helps to maintain our health and delay cognitive decline and dementia.



ELLIE, the CHeBA Office Hound

Joined CHeBA in September 2019

Ellie's role is to sleep, eat, provide cuddles and social support to the humans in the CHeBA office.

DR CATHERINE BROWNING, Study Coordinator
Joined the Sydney Centenarian Study team in June 2018

Working as Coordinator of the Sydney Centenarian Study is a privilege that I remind myself of every day. The highlight of my work is visiting our participants. Although I started my working life as a Chartered Accountant, it seems that I've been training for this role from my childhood. When I was in high school, I volunteered to visit older adults in my home-town community. I must admit it was initially a ruse to get out of school sport! However, the experience profoundly shifted my outlook on life. It showed me that despite our differences, we are essentially the same; it highlighted the inaccurate stereotypes of ageing. My husband Graeme and I are the parents of two young adults – my daughter Emma is a teacher who works with children with autism, and my son James will be studying medicine next year. When I return home from work hopefully I model the optimism, wisdom, and enthusiasm for life that I have witnessed in our participants. As for my side-track into Chartered Accountancy? It had a silver lining – I met Graeme and next year we will celebrate our 30th wedding anniversary. Meanwhile, despite the research that supports the idea that physical activity is good for our physical and cognitive health, I'm still trying to dodge sport!



Pictured: SCS Team – Julia Riches, Dr Catherine Browning and Fleur Harrison.

2019 Research Findings

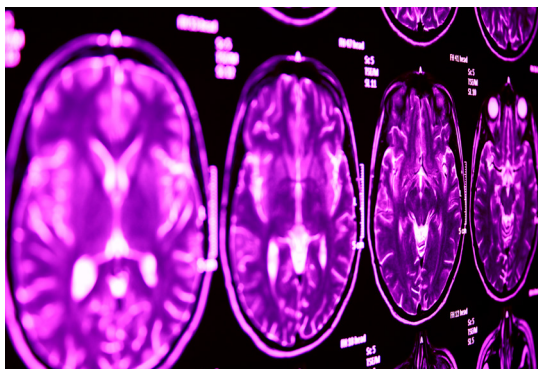
Significant Highlights:

Exceptional Longevity and Genetic Risk for Cardiovascular Health

Genetic studies have linked cardiovascular health with longevity. Recently the genetic profiles of centenarians and near-centenarians from the Sydney Centenarian Study (95+ years) were compared to those of a younger cohort from the Hunter Community Study (55-65 years). As expected, higher genetic risk for longevity was associated with living to an exceptional age. Although genetic risk for cardiovascular health (e.g. heart disease) was nominally associated with longevity, a larger sample size is needed to explore this further. Revelas, M et al. (2019). Exceptional longevity and polygenic risk for cardiovascular health. *Genes*, 10(3), E227.



Stronger Resting State Brain Connectivity in the Oldest Old



Previously, ageing studies that use MRI brain imaging have shown altered connectivity in brain regions that work together. Until now however little was known about how this works in the oldest old - centenarians and near-centenarians (95+ years). One network of interest is known as the default mode network which is activated during rest (i.e., when an individual is not doing anything specifically). Studies have shown a deficit of this network in Alzheimer's Disease. Using MRI imaging of Sydney Centenarian Study participants, this study compared the resting state brain network to that of a younger cohort – the Sydney Memory and Ageing Study (76-79 years). We found it was stronger

in centenarians to that of the younger group. This may suggest a compensative process in centenarians and highlights the importance of the default mode network in ageing.

Jiang, J., Sachdev, P. S., Liu, T., Theobald, A., Brodaty, H., & Wen, W. Stronger functional connectivity in the oldest old. (2019). *Organisation of Human Brain Mapping (OHBM) annual meeting*.

Your Brain. Your Life

Watch this space -
date to be confirmed.

We value you! In May 2020 we will be hosting an exclusive invite-only research forum for CHeBA's study participants.



Cognitive Reserve as a Protective Factor for Late-Life Cognition in near Centenarians and Centenarians



Pictured: CHeBA student Ashwini Kumar

Ashwini Kumar, a fourth-year medical student has spent the year working with Dr Nicole Kochan and Dr Yvonne Leung to explore whether cognitive reserve is protective for cognition in Centenarians.

Cognitive reserve refers to a dynamic process whereby an individual's background and lifestyle choices such as education and occupation, vocabulary and mentally stimulating leisure activities can influence the likelihood of maintaining good cognitive function in later life.

The cognitive reserve hypothesis may explain instances where we see well-preserved cognitive function in individuals who show significant changes in the brain associated with disease such as Alzheimer's disease. Indeed, evidence from several research studies supports the idea that cognitive reserve built throughout a person's lifetime can reduce the risk of dementia. However, given that dementia risk increases with age it is not known whether cognitive reserve remains protective

in centenarians. Therefore, Ashwini's study aimed to examine the relationships between cognitive reserve and performance on cognitive tests as well as rates of dementia in SCS participants. Education, occupational attainment, engagement in mental activities through life and reading vocabulary were used as proxy measures of cognitive reserve.

It was expected that higher cognitive reserve would be associated with better cognitive test performance and lower likelihood of having dementia. Indeed, the study found that almost all the cognitive reserve measures were associated with higher test scores, except for years of education. This is interesting as education in other studies was protective of cognition. This may be an older-birth cohort effect since participants in SCS were born about 1910 to 1912 and the Great Depression occurred during the years that they might have otherwise attended university or started their working lives. Furthermore, the quality of education in general was likely lower compared to that which is offered today.

The study also found that mental activities and reading vocabulary combined together had a stronger association with cognitive performance than the combination of occupation and education. The implication of this result is encouraging since those cognitive reserve predictors that can be built throughout life like mental activities and literacy had the strongest protective effects on late-life cognition in near Centenarians and Centenarians.

In summary, Ashwini's work suggests continuing effects of cognitive reserve on cognitive performance at the end of the age spectrum. That is, cognitive reserve is always building through the lifespan and it's never too late to get involved in mentally stimulating activities!

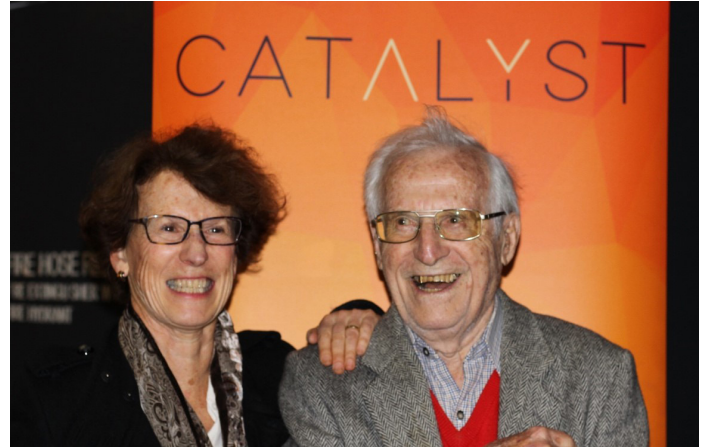


Pictured: Dr Nicole Kochan, CHeBA Senior Research Fellow

Sydney Centenarian Study on ABC's Catalyst

Recently retired ABC newsreader Ian Henderson set out on a quest to find the secrets of ageing healthily and found his way to the Sydney Centenarian Study and some of our extraordinary centenarian participants! He discovered that a new understanding of how the trillions of cells in our bodies age could keep us all younger for longer. He met Australian scientists working at the cutting edge of ageing biology, including CHeBA Co-Director Professor Perminder Sachdev AM and learned that their research isn't just about making us live longer, but also about keeping us healthier into old age — improving our 'healthspan'.

View **ABC Catalyst's Staying Younger for Longer: Body** here: <https://www.abc.net.au/catalyst/staying-younger-for-longer-body/11287578>



Pictured: Sydney Centenarian Study participant Fred Lax and his daughter Ruth Lax attending the exclusive screening of Catalyst's documentary that Fred was interviewed for.

Tale of the Century



Pictured: SCS participant Mr Peter Singleton and SCS Coordinator Dr Catherine Browning

This article was originally published in Montefiore LIFE, Rosh Hashana 2019: <https://www.montefiore.org.au/about-us/publications/>

The full version can also be found on the CHeBA Website: <https://cheba.unsw.edu.au/blog/tale-of-the-century>

Every year, the likelihood of living to 100 and beyond increases. The possibility of achieving this exceptional age is on the one hand exciting – after all, throughout history, humankind has been intrigued by the fountain of youth concept. However, longevity can come with significant challenges.

Sydney Centenarian Study Coordinator Dr Catherine Browning says we know that genes play a significant role in longevity, but lifestyle and environmental factors can influence the way they behave.

“The Study is interested in shedding light on these lifestyle factors so we can take charge of the way our bodies and brains age,” she explains.

To date, over 400 participants have been involved in this study, including many Montefiore residents such as Peter Singleton.

“When I’m asked to do something that I think may help then I’m always happy to be involved,” says the 96-year-old, who has enjoyed taking part in the study. Peter has lived at Woollahra for three years and remains active through long walks, and regular exercise sessions at Randwick.

Catherine says that one of the most enjoyable aspects of the project for CHeBA researchers, is meeting extraordinary people like Peter and learning about their interesting lives. “We hear about their history, their children and grandchildren, and look forward to their 100th birthday celebrations when they reach that milestone.”

And to all the people considering joining the study? Peter Singleton says: “Just do it!”

Wipeout Dementia



With the number of people with dementia worldwide continuing to increase, CHeBA ran its first ever inter-generational Wipeout Dementia with a vision of inspiring societal change across the lifespan. The inter-generational event held on 25 May 2019 at



Queenscliff, boasted 16 inter- teams comprised of father-son, father-daughter combinations aged between 10 and 70 years of age.

“Our vision is for the younger generation to have long and fulfilling lives characterised by physical, mental and cognitive well-being,” said CHeBA’s Co-Directors.

Then, in November and at a time in Australia’s history when we are closing the gap on the United Kingdom where dementia is the leading cause of death, 45 heavy hitters from across Australia’s property industry led the most successful Wipeout Dementia to date, raising over \$210,000 for CHeBA’s research.

Sydney Centenarian Study Coordinator, Dr Catherine Browning, was an enthusiastic volunteer at the event.

Wipeout Dementia fundraising has been the launch pad for a significant number of priority research projects across CHeBA’s international consortia spanning more than 30 countries, with the following projects receiving a funding boost as a result of the November event:

- The relationship between education, certain genes and cognitive impairment;
- Nutrition and cognitive health in the older population;
- The relationship between blood pressure and risk of cognitive decline;
- Development of novel dietary supplements to protect against dementia.

Many of the participants in Wipeout Dementia have personal stories to share which inspire CHeBA’s academics to continue to expand their research across the full spectrum of the disease beyond drug treatments, to include early diagnosis and prevention strategies in mid-life to reduce modifiable risk factors associated with dementia.



Pictured: Dr Catherine Browning with fellow volunteers and Wipeout Dementia Ambassador, 1978 World Surfing Champion Wayne “Rabbit” Bartholomew.

Brain Donation

In our quest to understand and promote healthy brain ageing, discovering what differentiates a healthy brain from one with a disease like dementia is essential and requires examination of brain tissue. Like organ donation, donating brain tissue after your death can leave a legacy for future generations by providing the resource that researchers need to understand how the brain works and to fight dementia.

The Centre for Healthy Brain Ageing collaborates with the Sydney Brain Bank and participants in the Sydney Centenarian Study are able to donate their brain to this program. By comparing brain tissue to the huge volume of information we have collected over the course of our study 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 donor, please contact study staff on (02) 9385 0433.



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