Australian Alzheimer's Research Foundation

BRAINWAVE

April 2020

From everyone at the Australian Alzheimer's Research Foundation we hope you are staying well and taking care of yourself during the COVID-19 outbreak.

Age is the biggest risk factor for COVID-19 as it is for Alzheimer's disease and it is most important that we take care of the most vulnerable people in our community.

Our research work into combating Alzheimer's disease must continue. But the safety and health of our staff, researchers and volunteers is always of utmost importance and we have taken a number of additional measures at our facilities to ensure the safety of everyone.

- Some of our clinical trials have been put on hold to reduce the need for people to leave their home and come into the Foundation.
- We have implemented telethealth to stay in touch with our study participants and ensure they are safe and well and we are delivering clinical trial medication to their home where possible.
- For some of our clinical trials we are now doing home-visits.
- Additional cleaning measures have been instigated throughout our facilities.
- Additional hand sanitizers or soap dispensers have been placed at our facilities.
- Distancing of chairs in waiting rooms and meal areas has been implemented for staff and visitors.

We hope this newsletter provides you with some interesting reading while you're isolated at home.

An important goal of the Foundation is to support the developing scientists in this field and we have included a summary of some of the student research projects in this newsletter.

Please wash your hands

Personal hygiene is one of the most important preventative measure we can take. You might be interested to know that washing your hands isn't just about hygiene, soap actually destroys the coronavirus.

Soap is extremely destructive when it comes to microorganisms. Ordinary soap in water is enough to rupture and kill many types of bacteria and viruses, including COVID-19. This is because COVID-19 particles are wrapped in a lipid (fat) layer and soap molecules are attracted to fat and repelled by water.

The soap is drawn to and penetrates the fatty shell of the virus which tears open the chemical bonds holding the virus together.

Once the virus is split apart it disintegrates in the water and is washed away.

So as you wash your hands, you're destroying COVID-19 and helping stop the spread of this outbreak.

Thank you. Your support is helping fund ground breaking research into Alzheimer's disease. In 2019, 82% of our income was used to fund research activities to ensure we all have a better future. The work we do is only possible because of you. Thank you for sharing our vision of an Alzheimer's free world. We look forward to your support in 2020.

Stay at home.

Limit all your non-essential travels.

Unless you're going out for food, medicines or other essentials.

Wash your hands.

Practice good hand hygiene by washing your hands with soap and water or using alcohol or hand sanitizer.

Watch for other symptoms.

Aside from fever, Covid-19 symptoms include cough, difficulty breathing, and fatigue.

Practice social distancing.

If you need to go out, maintain at least 1 meter (3 feet) distance from others.

WA Memory Study (WAMS)

The Western Australia Memory Study (WAMS) is a longitudinal project examining the relationship between self-reported worries about memory and cognitive functions and actual decline in such abilities.

The WA Memory Study provides critical information of the factors influencing cognitive decline as we age and the biological and clinical changes that can be used for screening those at higher risk of Alzheimer's disease.

We are now moving into a phase of validating some of the measures which may enable us to identify those at earliest risk of future dementia and cognitive impairment.

The team have also developed a measure of olfactory memory to assess human's memory for odour. It is thought that smell memory may be highly sensitive to the early signs of Alzheimer's disease. We are currently testing this measure further to see if it can be used to identify those at higher risk of developing Alzheimer's disease.

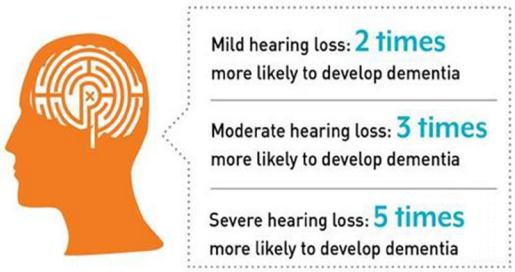
Our hearing and dementia collaboration with Ear Science Institute has been very promising with a new PhD student focused on this research to further investigate the link between hearing and cognitive function. Hearing loss has been identified as a significant midlife modifiable risk factor for dementia.

The WAMS' team is very grateful to our participants, donors, volunteers and students for the critical contribution to this study. If you are interested in participating in the WA Memory Study, please contact Jo Shaw on (08) 6457 0264 or email j.shaw@ecu.edu.au.

The WA Memory Study also provides an important platform for students to gain skills in neuropsychological assessments and to investigate new hypotheses on cognitive ageing and risk of dementia.

A/Prof Hamid Sohrabi

Dementia & Hearing Loss



STUDENT PROFILE:
Rasangi Seneviratne PhD Candidate, UWA

Supervisors:
A/Prof Michael Weinborn, UWA
A/Prof Hamid Sohrabi, Murdoch University
Prof David Badcock, UWA
Prof Ralph Martins, ECU

My research is looking at smell memory and how it relates to your brain, cognition and behaviour. We think smell memory might be more sensitive to early signs of disease than just labelling or detecting a smell. To examine this further, we developed a new, comprehensive test that looks at how people can learn smells over time, and how people can remember smells after a short and long delay period. We also looked at the benefits of cues and prompts. This test was found to be very reliable, and we found that it relates to other measures of memory (e.g. verbal and visual), and even predict a decline in brain health and daily life after 18 months. Overall, our results suggest that this new measure of smell memory could be used to help detect and predict changes in your brain, thinking abilities and daily life.

STUDENT PROFILE:
Hadeel Tarawneh PhD Candidate, UWA

Supervisors:
Dr Dona Jayakody, ESIA
A/Prof Wilhelmina Mulders, UWA
Prof Ralph Martins, ECU
A/Prof Hamid Sohrabi, Murdoch University

There has been a strong association between auditory function and cognitive function. In fact untreated hearing loss has been identified as a modifiable risk factor for developing dementia. Changes in the way the brain processes sound have been tied to changes in cognitive function that are associated with Alzheimer's disease (AD). Therefore, by looking at changes in auditory functions in individuals at risk of developing AD, we could be able to differentiate between those who are at high risk of developing AD. In this project I will be investigating auditory functions in populations at risk of developing Alzheimer's disease using non-invasive measures of the brains electrical responses to sound. I will be investigating the measures of electrical responses to sound in relation to biological markers of AD, obtained using genetic testing, blood biomarker testing and neuroimaging. Through this research we are better able to establish whether using these objective measures of auditory function can be used as a quick, non-invasive, and inexpensive screening tool for early Alzheimer's disease.

STUDENT PROFILE:

Rachael Mumme PhD Candidate, UWA

Supervisors:
A/Prof Michael Weinborn, UWA
A/Prof Stephanie Rainey-Smith, ECU
Prof Romola Bucks, UWA
Paul Maruff, Cogstate Ltd

Improving our ability to detect Alzheimer's disease in its earliest stages is an exciting research avenue that holds promise for early disease identification and the ability to trial new intervention methods. Currently, we most commonly use a person's average level of performance on tests of memory (or other thinking skills) to detect a decline in their thinking ability. A new method, which my research focuses on, is looking instead and the variability of their performance. It is thought that this new way to look at a person's test performance may appear earlier in disease progression than a drop in their average level of performance. To explore this theory, my research is investigating the ability of performance variability to predict those who will later develop Alzheimer's disease, as well as, whether this variability has a relationship with the long term build-up of amyloid in the brain, a common feature of Alzheimer's disease.

STUDENT PROFILE:

Pamela Lam Masters Student, ECU

Supervisors:
Dr Craig Speelman, ECU
A/Prof Hamid Sohrabi, Murdoch University
Prof Ralph Martins, ECU

My research project is exploratory in nature. It focuses on assessing if there are any differences between participants who experience mild cognitive impairments, and participants who do not. Specifically, I am looking to see if there is a difference in the rate of decline between the two groups in specific subdomains; such as attention, learning, memory encoding and memory retrieval. I hope this will yield greater understanding in the area of cognitive decline in Australia's rapidly ageing population.

Testosterone Supplementation Study Update

A 56 week study to evaluate the efficacy of Testosterone, with and without DHA (Omega 3) on brain amyloid load and cognition in men with subjective memory complaints.

We currently have 35 men enrolled in the study with a waitlist of people who are keen to join the study following a recruitment program we conducted in late 2019. Unfortunately, we are currently unable to have new participants commence on the study due to the COVID-19 outbreak.

Those people who are already in the study are having telehealth appointments with our research team to ensure they are well.

We look forward to re-opening the study as soon as the COVID-19 pandemic is over.

Please contact Shane Fernandez if you would like to know more about this study on (08) 6304 3966 or email s.fernandez@ecu.edu.au

Public Lectures

The Foundation holds Public Lectures each year during September, World Alzheimer's Month. These lectures enable the Foundation to inform our research participants as well as the general public on the latest research being undertaken into Alzheimer's disease. Our lectures also provide everyone in attendance with the opportunity to meet some of WA's top Alzheimer's researchers. In 2019, over 400 people attended our lectures eager to hear the latest developments in Alzheimer's research.

Due to the COVID-19 pandemic it may not be possible for us to host our Public Lectures at the State Library and Harry Perkins in September. Therefore we are working on a live streaming delivery and will keep you updated in the coming months.

With thanks and appreciation to all our partners

Wesfarmers lotterywest ECU Edith Cowan University

Government of Western Australia Spheria Asset Management Pinnacle Charitable Foundation The University of Western Australia Macquarie University

Blood Biomarkers for Alzheimer's disease

A major area of focus in Alzheimer's disease research is the development of a low cost, readily available blood biomarker (blood test) to diagnose people with Alzheimer's disease.

It has been shown that Alzheimer's disease can develop many years before symptoms appear. A major barrier to the effective conduct of clinical trials of new disease-modifying candidates for Alzheimer's disease is to identify people at the early part of the disease when the potential treatment may be most effective. Two of the research programs focus on this are described below.

Dr Florence Lim

Lipidomics

Lipids play an essential role in all mammalian systems. Previous lipidomics studies have identified multiple lipid classes and species that may be involved in Alzheimer's disease.

The Australian Imaging, Biomarker and Lifestyle (AIBL) study of Ageing is a study of over 2,500 people, some of whom have been followed for over 8 years. The AIBL study has enabled us to examine lipid metabolism in Alzheimer's disease. We together with Professor Peter Miekle and Kevin Huynh from the Baker Heart and Diabetes Institute investigated whether altered lipid metabolism associated with increased age, gender and APOE genetic status may contribute to the development of Alzheimer's disease by examining these risk factors in the plasma of healthy controls and also clinically diagnosed Alzheimer's disease individuals.

This study extends our existing knowledge of the relationship between lipidome and Alzheimer's disease and highlights the complexity of the relationships between lipid metabolism and Alzheimer's disease at different ages and between men and women. This has important implications on how we assess Alzheimer's disease risk and also for potential therapeutic strategies involving modulation of lipid metabolic pathways.

The study is now being expanded to examine platelet lipidomics and its association with Alzheimer's disease using the data collected from the AIBL cohort of participants.

Dr Eugene Hone, PhD

Mr Steve Pedrini

Blood Biomarkers – Proteomics

The primary objective of our research is focused on uncovering a specific blood-based signature that can detect Alzheimer's disease in the early stages or even before the clinical onset. Recent studies have indicated that in the brain, biochemical changes take place years before the appearance of the earliest symptoms, but the current methods to detect such changes are either expensive or invasive and cannot be used on a daily basis.

The development of a blood-based biomarker panel for the early diagnosis of the disease would allow for early treatment of patients in the initial phases of the disease, when therapies are said to be more effective.

Our research team has recently published a study examining inflammatory molecules in the journal Scientific Report. We measured a broad spectrum of inflammatory molecules in the blood of participants who were either healthy, or had mild cognitive impairment, or were Alzheimer's affected. We found that two of these inflammatory molecules belonging to the class of cytokines (IL-10 and IL-12/23p40) were associated with the disease. Our study indicated that these two molecules displayed differences between the groups of participants. However, our work also showed that we need to identify other biomarkers to improve the sensitivity of the test. Our data also indicate that we need those additional blood biomarkers of Alzheimer's disease to ensure that the test is accurate and produces a reliable result to aid with the diagnosis of the disease. Our ongoing research is committed to identifying the optimal set of blood biomarkers in our quest to make the diagnosis of Alzheimer's disease more accurate, less costly, faster and less stressful.

Wine & Horses

Wine and Horses in Perth Hills held their annual charity ride on 12 & 13 October.

Approximately 45 horses and riders trekked along the CY O'Connor Pipeline and Kep Trail to Northam.

Over 150 people attended the fundraising event after the ride, where dinner, an auction, hot showers and live music were enjoyed by all. The auction comprised of over 100 items for sale including holidays, restaurant vouchers and jewellery which were all donated by local businesses.

Liza Dunne, our CEO, also had the pleasure of attending the event and speaking to the audience about the disease and things we can do to reduce our risk of developing Alzheimer's.

Liza said: "it was wonderful to be able to share the evening with such a fabulous group of people who have given so much of their time to raise funds for research into Alzheimer's disease. A special shout-out to Maryanne for her tireless energy in organising the event."

This event raised over $30,000 for Alzheimer's disease research.

Rockingham Beach Cup

Rockingham Beach Cup held their annual charity event on Sunday 17 November.

The Australian Alzheimer's Research Foundation is one of the beneficiaries of this prestigious event and would like to say a huge thank you to the Rotary Club of Palm Beach WA Inc, City of Rockingham and the Rockingham Beach Cup committee for their amazing efforts.

Representatives from the Foundation were in attendance on the Day to bring much needed awareness to Alzheimer's disease.

Leon Pericles 'Etching for Moi'

Internationally acclaimed artist Leon Pericles produced a beautiful etching called 'Etching for Moi' to raise money for the Foundation and bring greater awareness to Alzheimer's disease.

The etching was exhibited at Leon's 50 Year Retrospective at the Linton & Kay Gallery and all 150 etchings have been sold. Beautiful reproductions of 'Etching for Moi' have now been produced and are available for sale, supplied ready to frame with a matt board and backing fitted for a damage free delivery. The artwork is 23cm high x 14cm wide and the matt board is 29.6cm high x 21cm wide. This reproduction edition is limited to only 500 and can be purchased online at: https://leonpericles.com.au/shop

Please help raise funds for the Foundation with a purchase of a Leon Pericles art work of your very own.

We would like to thank Leon, his family, Linton & Kay Gallery and everyone behind the scenes for their tremendous support.

Please consider including the Australian Alzheimer's Research Foundation in your Will

Alzheimer's disease is not a normal part of ageing and there is currently no cure.

By including a Gift in your Will you will be helping researchers discover solutions to diagnose the disease earlier, develop treatments to slow disease progression, better understand preventative strategies and develop and test potential cures for Alzheimer's disease. Imagine a world where grandparents grow old gracefully, where grandchildren can enjoy the memories and experiences of the elderly, share happy times and benefit from the wisdom of their past.

Imagine growing old without fear of the world becoming a lonely, frightening place and family members becoming strangers.

A bequest to the Australian Alzheimer's Research Foundation will enable vital research into this devastating disease to continue and give hope that a world in which Alzheimer's no longer exists can be created. If you would like to talk to us about a gift please contact Caren on (08) 6457 0253 or email info@alzheimers.com.au

Thank you

We understand that this is a very challenging time and receiving donations from you during this period may not be possible. Sincerest thanks to all our supporters and donors who share our vision of an Alzheimer's free world.

Contact us

Australian Alzheimer's Research Foundation
PO Box 963, Nedlands WA 6909
T: (08) 6457 0253
E: info@alzheimers.com.au

Follow us on Facebook to stay up to date with the latest research and events.

HBF Run for a Reason

The Australian Alzheimer's Research Foundation supports and respects the decision made by HBF to cancel the 2020 Run for a Reason to protect the health and wellbeing of the community and minimise the impact of COVID-19.

We would like to say a big thank you to all of you who registered for this event to support Alzheimer's research. We are passionate about making a difference in Alzheimer's disease and we need your support. Over the years your fundraising for the HBF Run for a Reason has made a huge difference to our research. We have kept our fundraising page open for those of you who would still like to support our cause by participating in either a 4km, 12km or the challenging 21km half marathon on your treadmill, cross trainer, or exercise bike.

To help save memories please donate directly to the Australian Alzheimer's Research Foundation at https://nfp.everydayhero.com/au/australian-alzheimers-research-foundation

Don't forget to send us some photos of your run, walk, or bike ride so we can showcase them on our Facebook page.

Yes I will join the fight for memories!

Make a donation by:

- Calling **(08) 6457 0253**
- Visiting our website: **alzheimers.com.au**
- Mailing the completed form to:
  Australian Alzheimer's Research Foundation
  PO Box 963, Nedlands WA 6909

Title _____ First Name _____

Surname _____

Address _____

Suburb _____ Post Code _____

Phone _____ Mobile _____

Email _____

I would like to make a donation of:

☐ $25 ☐ $50 ☐ $75 ☐ $100 **OR** $ _____

OR I would like to make an ongoing credit card donation of:

$ _____ every _____ month/s

☐ Credit Card (Visa/Mastercard) ☐ Cheque

Cheque made payable to Australian Alzheimer's Research Foundation

Card Number: _____

Card Holders Name: _____

Expiry: M M Y Y Signature: _____

☐ Please send me more information on leaving a gift to Australian Alzheimer's Research Foundation in my Will.

☐ Please unsubscribe me from your mailing list.

Thank you! A receipt will be sent to you. All donations over $2 are tax deductible.