CURRICULUM VITAE
PROFESSOR RALPH MARTINS PhD AO

Professor Ralph Martins has dedicated the last 33 years to Alzheimer's Disease (AD) research. He is well-known and highly respected internationally as a prominent researcher in the field. His insight into this devastating disease has led to a number of ground breaking discoveries including the pioneering discovery of Beta-amyloid and its precursor the amyloid precursor protein (APP), an important protein found in the brains of Alzheimer's patients now universally acknowledged as being fundamental to the pathology of this disease. His identification of oxidative stress in the Alzheimer brain has also been described as a significant landmark in the history of the disease. Professor Martins and his team have been at the forefront globally in developing non-invasive and cost-effective early diagnostics for pre-clinical AD. They are also progressing a highly innovative program of therapeutic strategies and preventative interventions in pre-clinical AD.

Current Key Professional Appointments: Joint Appointment – Professor in Biomedical Sciences (Macquarie University) and Foundation Professor and Inaugural Chair in Ageing and Alzheimer's Disease (Edith Cowan University); Director of Research & Founder, Australian Alzheimer's Research Foundation; Australia Day Ambassador; Rotarian Action Group Board member; Board Member of Co-Operative Research Centre for Mental Health; Board Member of the International Federation on Ageing (IFA) which is an influential and prominent non-governmental organisation working closely with the United Nations and the World Health Organization (Martins is the only researcher representing the Australian research community); Board member of the Maggie Beer Foundation.

Peer-Reviewed Publications: H-index 59 (as at 18 Aug 2017) and 14,438 citations. 179 publications in the past 5 years (~370 in total) in mid to high impact journals such as *the Journal of the American Medical Association; Molecular Psychiatry* and *Neurology*. In the past 5 years, his articles have been cited more than 4,086 times.

Prizes and Awards: Melvin Jones Award from Lions Club International Foundation USA in 2010 (which is the highest Award that Lions can bestow recognising outstanding service to the community and being one of only two recipients of this award by the Club in the last 25 years), the Western Australian of the Year in 2010, the Western Australian Citizen of the Year in 2011, the Paul Harris Fellow by the Rotary Club in 2011, Member of the Order of the Knights of St John of Jerusalem (KSJ) in 2013 and the Officer of the Order of Australia (AO) in the General Division in 2013.

Grants: In the past 5 years CI Martins has received ~$30 million in funding including 5 NMHRC grants (4 CIA, 1 CIG) totalling $2.3 million, Co-Operative Research Centre (CRC) Program grant from ($23 million over 7 years) and funding from the WA state government ($2.2 million).

Patents: Eight in total and some recent examples include: Provisional patent filed, 2013 (PCT 2013904077); "Beta amyloid modulating peptides"; PCT 2010901633; "A pharmaceutical composition and Method for Treating or Preventing Beta amyloid Diseases; PCT 2010900640 Alzheimer's Disease Biomarkers and Method.

Higher Degree Research Student Supervision: Martins has supervised and co-supervised more than 60 higher degree research students to successful completion over the past 25 years (27 since 2011) and has employed more than 25 postdoctoral fellows, with 10 currently active.

Key Collaborations: Throughout his career, Martins has established numerous collaborations with prestigious state, national, and international institutions:

* Martins is the recipient of two National Institute of Health (NIH) grants, one with Professor Sam Gandy from Mt Sinai School of Medicine, New York (from 2005 to 2009), who is a long standing collaborator spanning two decades; and one with Professor John Morris from Washington University, St. Louis, Missouri, for the Dominantly Inherited Alzheimer's network (DIAN) study in 2010 while Martins' team is one of only 10 laboratories world-wide participating in the study investigating inherited Alzheimer's disease. This study has already led to the implementation of prevention trials in this population of people affected in early life by Alzheimer's disease.
* In 2006, Martins was instrumental in bringing together researchers in different disciplines, including prominent clinical researchers, leading exercise physiologists, experts in state-of-the-art brain imaging and experts in dementia and palliative care, from 4 WA universities, 3 teaching hospitals and 2 aged care providers to establish the WA State Government funded Centre of Excellence for Alzheimer's Disease Research and Care of which he is the director.
* Australian Imaging, Biomarkers and Lifestyle (AIBL) study on ageing is a foremost multi-centre prospective longitudinal study initiated in 2006, and Martins brought together Australia's leading researchers including Professor Colin Masters and Professor Chris Rowe in Alzheimer's disease in partnership with the Commonwealth Scientific and Industrial Research Organisation (CSIRO) and places Australia at the forefront of the field globally. The study is aimed at improving awareness of the causes of AD and understanding its diagnosis, in order to develop preventative strategies.

* In 2006 Martins was a joint recipient of a Dementia CRC headed by Professor Marc Budge from ANU in collaboration with Professor Colin Masters, Professor David Ames and Alzheimer's Association of Victoria. In 2010, the Dementia CRC was successful in receiving renewal funding.
* In 2010 Martins was a joint recipient of a successful Cooperative Research Centre (CRC) Program grant funding bid to the Australian Commonwealth Government, with $23 million awarded for mental health research. The CRC represents an investment of some $70 million into Australia's mental health research effort over 7 years. The CRC for Mental Health is comprised of 20 different organisations, all working together to find early diagnosis and treatments for mental health illnesses.
* In 2012, Martins fostered collaborations with Professor Paul Fraser (University of Toronto) with the potential for obtaining a world first in early preclinical diagnosis of type 2 diabetes, a precursor of dementia.

Top 5 High Profile Publications

1. Bateman RJ, Xiong C., Benzinger TLS., Fagan AM., Goate A., Fox NC., Marcus DS.,Cairns NJ, Xie X., Blazey TM., Holtzman DM, Santacruz A., Buckles V., Oliver A., Moulder K., Aisen PS., Ghetti B., Klunk WE, McDade E., **Martins RN**., Masters CL., Mayeux R., Ringman JM., Rossor MN., Schofield PR., Sperling RA., Salloway S., Morris JC. Clinical and biomarker changes in Dominantly Inherited Alzheimer's disease. The New England Journal of Medicine. Published July 11, (2012) pg. 1 - 10. Autosomal dominant Alzheimer's disease was associated with a series of pathophysiological changes over decades in CSF biochemical markers of Alzheimer's disease, brain amyloid deposition, and brain metabolism as well as progressive cognitive impairment.

2. Doecke JD, Laws SM, Faux NG, Wilson W, Burnham SC, Lam CP, Mondal A, Bedo J, Bush AI, Brown B, De Ruyck K, Ellis KA, Fowler C, Gupta VB, Head R, Macaulay SL, Pertile K, Rowe CC, Rembach A, Rodrigues M, Rumble R, Szoeke C, Taddei K, Taddei T, Trounson B, Ames D, Masters CL, **Martins RN**, and the AIBL Research Group. Blood-based protein biomarkers for diagnosis of Alzheimer's disease. Archives Neurol (2012) 69: 1318-1325. One of the first large scale peripheral blood biomarker studies in AD and the first that cross validated findings across the two most highly characterised longitudinal cohorts, the AIBL study and ADNI cohorts.

3. Thomas JB, Brier MR, Bateman RJ, Snyder AZ, Benzinger TL, Xiong C, Raichle M, Holtzman DM, Sperling RA, Mayeux R, Ghetti B, Ringman JM, Salloway S, McDade E, Rossor MN, Ourselin S, Schofield PR, Masters CL, **Martins RN**, Weiner MW, Thompson PM, Fox NC, Koeppe RA, Jack CR Jr, Mathis CA, Oliver A, Blazey TM, Moulder K, Buckles V, Hornbeck R, Chhatwal J, Schultz AP, Goate AM, Fagan AM, Cairns NJ, Marcus DS, Morris JC, Ances BM. Functional connectivity in autosomal dominant (ADAD) and late-onset Alzheimer disease (LOAD). JAMA Neurol. (2014) 71 (9):1111-22. The study shows that disease process of ADAD may be an effective model for the LOAD disease process.

4. Goozee K, Chatterjee P, James I, Shen K, Sohrabi HR, Asih PR, Dave P, ManYan C, Taddei K, Ayton SJ, Garg ML, Kwok JB, Bush AI, Chung R, Magnussen JS, **Martins RN**. Elevated plasma ferritin in elderly individuals with high neocortical amyloid-β load. Mol Psychiatry. 2017 Jul 11. doi: 10.1038/mp.2017.146. This paper demonstrates that iron metabolism is altered in subjects with preclinical Alzheimer's disease.

5. Brown BM, Sohrabi HR, Taddei K, Gardener SL, Rainey-Smith SR, Peiffer JJ, Xiong C, Fagan AM, Benzinger T, Buckles V, Erickson KI, Clarnette R, Shah T, Masters CL, Weiner M, Cairns N, Rossor M, Graff-Radford NR, Salloway S, Vöglein J, Laske C, Noble J, Schofield PR, Bateman RJ, Morris JC, **Martins RN**; Dominantly Inherited Alzheimer Network. Habitual exercise levels are associated with cerebral amyloid load in presymptomatic autosomal dominant Alzheimer's disease. Alzheimers Dement. 2017 May 11. pii: S1552-5260(17)30147-4. doi: 10.1016/j.jalz.2017.03.008. This paper demonstrates that exercise can lower brain amyloid pathology even in people with aggressive autosomal dominant mutations.

5 Key Discoveries or Contributions to Health and Medical Research and/or Translation

1. Seminal discovery of the beta amyloid protein, found in brains of Alzheimer's patients which is now widely recognised as being fundamental to the molecular pathology of Alzheimer's disease.
2. Seminal discovery that the Alzheimer's disease brain is undergoing oxidative stress, which is now recognised as a key event in the neurodegenerative process that occurs in the Alzheimer's disease brain. His identification of oxidative stress in the Alzheimer brain has been described as a major landmark discovery in the history of the disease. Targeting beta amyloid and oxidative stress is now the central focus of Clinical Trials into prevention and treatment, and is one of the main targets of the global pharmaceutical industry.
3. Discovery that testosterone and its stimulating hormone, Lutenizing hormone have key roles in Alzheimer's disease pathogenesis by regulating beta amyloid levels. This research has translated to now undertaking human clinical trials to assess the benefits of testosterone in slowing the progression of beta amyloid accumulation in the brain.
4. Professor Martins has pioneered the scientific field in identifying the role of APOE ε4, the major genetic risk factor of Alzheimer's in the Australian population. His team was the first in Australia to show that APOE ε4 is associated with about 50% of late-onset AD cases. Furthermore, his team showed that the amount of ApoE produced also impacts on the risk of AD.
5. Over-production of Aβ and the impaired clearance of this toxic protein from the brain plays a key role in its accumulation in the AD brain and the resulting neurodegeneration. Professor Martins and his team are also investigating the effects of novel peptides in reducing the accumulation of amyloid and its clearance by peripheral organs such as the liver. Preliminary studies demonstrate that the peptide binds Aβ and neutralizes its toxicity. This work has been filed as a provisional patent and published in a high impact journal.