Alzheimer's Australia Research

Annual Report 2006/2007

Alzheimer's Australia Research Limited

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Information about Alzheimer's Australia Research Ltd. can be found on the Research section of the Alzheimer's Australia website www.alzheimers.org.au

Acknowledgment of support

Alzheimer's Australia Research would like to thank the many individuals and organisations that support our research programs through donations, gifts and bequests.

In particular, Alzheimer's Australia Research would like to extend special thanks to Mr Robert Bulley, Miss Ann Miller, Neville and Denise Odell, Creative Memories Australia, the Jack & Ethel Goldin Foundation, Janssen-Cilag Pty Ltd., the J.O. & J.R. Wicking Trust, the Rosemary Foundation for Memory Support Inc., Sherrin Hire and Mr Michael Sherrin, as well as the many people who have donated to AAR through the Hazel Hawke Fund or the Peter Collett challenge, for generously supporting AAR's Dementia Research Grants Program.

Alzheimer's Australia Research would also like to thank payroll giving partners including ADP Employer Services, Allens Arthur Robinson, ANZ Banking Group, Australian Unity, Baycorp, Australian Government Department of Health and Ageing, Dunn & Bradstreet, Institute of Chartered Accountants in Australia, IMA, Lucent Technologies Australia, Suzanne Grae, Travelex, Westpac Banking Corporation and Workcover.

Front cover photographs: top left, Megan Steele, 2006 Hunter Postgraduate Research Scholarship winner; bottom right, courtesy of the Office for an Ageing Australia Positive Images Public Gallery. Background: 'Dissolution of Huntington's Disease Brain', by Tarja-Brita Robins Wahlin, University of Queensland.

Other photographs in the report provided by Creative Memories Australia, Dr Adrienne Withall, Dr Victor Villemagne and Professor Christopher Rowe, Megan Steele, Tong Chen, Amee George, Adele Woodhouse, Associate Professor Adrian West, Dr Nicolas Cherbuin and the Ageing Research Unit (ANU), and Associate Professor Pradeep Nathan.

Creative Memories Consultants attending Creative Memories Australia's 10th Anniversary gathering in Sydney, 17th February 2007

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About AAR

Alzheimer's Australia Research (AAR) is the research arm of Alzheimer's Australia, established as a separate not-for-profit company to encourage and support Australian dementia research.

Why is Research Important?

Research has real potential to lessen the impact of dementia, through reducing the number of people who develop dementia and by creating a better quality of life for those who are living with dementia. Most of our current knowledge of dementia has been discovered by researchers in the last 15 to 20 years. The next 15 to 20 years could yield significant progress in many areas of dementia research.

We must invest in dementia research now, to help reduce the present and future impact of the dementia epidemic in Australia. Currently it is estimated that less than 0.8% of the total annual cost of dementia care in Australia is spent on research. A research investment of only 3% of the total costs of dementia each year, or $133 million per annum, would be money wisely invested as the number of people diagnosed with dementia will significantly increase in the future. Resultant research may lead to the prevention or cure of dementia as well as improvements in dementia diagnosis, management, and care.

The Role of AAR

AAR aims to support the research effort in Australia through directly funding research, advocating for increased research spending, distributing research information and publicising research findings.

Research Grants

AAR actively encourages dementia-related research in Australia by providing annual grants and scholarships in many areas of dementia research, including biomedical research and dementia care. Some AAR grants are allocated to specific research areas according to donors' requests, such as the pledge of the Jack & Ethel Goldin Foundation to help develop a cure for Alzheimer's disease.

Supporting New Researchers

A key priority is to support emerging Australian researchers to become involved in dementia research. AAR provides new investigator grants, postgraduate research scholarships and travel grants to new researchers on a competitive basis.

Research Collaborations

AAR welcomes research collaborations and partnerships to promote Australian dementia research. In this financial year, AAR has continued partnerships with the National Health and Medical Research Council and the Australian National University in order to provide joint research fellowships. In addition, AAR has developed extended partnerships with the Dementia Collaborative Research Centres, part of the Dementia National Health Priority Initiative of the Australian Government, and is seeking a partnership with the Sylvia and Charles Viertel Charitable Foundation.

Distributing Research Information

AAR works to increase the information available to consumers to further awareness of the importance of research and the quality of Australian dementia research. Providing the public with a reliable source of information about dementia research and promoting responsible reporting by the media and scientific community are central roles.

Promoting Australian Dementia Research

AAR aims to increase the profile of dementia research in Australia through publications, fundraising activities, media events and Dementia Awareness Month.

Mission Statement

Our mission is to promote, disseminate, and fund research in Alzheimer's disease and related disorders causing dementia.

Board

Scientific and Medical Panel

Alzheimer's Australia Research and Alzheimer's Australia have established a Scientific and Medical Panel chaired by Professor Henry Brodaty. The role of the Panel is to advise on research priorities and on the latest developments in dementia research worldwide, as well as assist in the assessment of grant applications.

Chairman's Report

Advocacy for dementia research is undertaken by Alzheimer's Australia Research in partnership with Alzheimer's Australia. An important feature of that advocacy in recent years has been to invite an eminent overseas researcher to Australia as part of Dementia Awareness Month.

In Dementia Awareness Month 2006 the guest was Professor Marilyn Albert from John Hopkins University in the United States. Professor Albert not only had the opportunity to speak to large audiences in most state capitals about dementia research but also to meet with the then Minister for Ageing, Senator Santo Santoro and to address Parliamentary Friends of Dementia.

Dr Albert was optimistic about the possibility that treatments might become available in the next 10 years that could delay the onset of dementia for those most at risk. This is important because the modelling done by economists shows that even modest delays in the average age of onset of dementia could reduce significantly the number of people with Alzheimer's disease.

The increased investment needed in dementia research to find more effective treatments has to come from both the community and from governments. As a consequence of decisions taken in the 2005 Budget increased funding for dementia research is starting to flow to Australian researchers and that is good news.

The grants and scholarships provided through Alzheimer's Australia have increased to a record level of $266,645. Importantly, AAR has continued to refine the assessment processes that underpin the approval of research applications on a competitive basis. The 2007 grants program received 61 applications (compared to 41 in 2006) which came from 59 individual applicants located in six states and the ACT. These were assigned to be reviewed by 90 researchers and clinicians (compared to 52 in 2006).

This level of activity has been made possible by the higher level of donations received, reaching $580,130 in 2006/2007. I would like to acknowledge an excellent financial stewardship of AAR by Glenn Rees with advice from Gordon Robinson and David Scarlett.

The work of AAR is only possible because of the great support it receives from the members of the Scientific and Medical Panel. I would like again to extend my warmest thanks to Associate Professor Kaarin Anstey, Professor Lynn Chenoweth, Associate Professor Peter Dodd, Professor Leon Flicker, Professor Colin Masters, Professor Rhonda Nay and Professor James Vickers.

Finally I thank the Board for their work during the year and Ms Susanna Park, Dr Anna Conn and Mr Glenn Rees for the excellent support they have given to the Board and myself.

Professor Henry Brodaty
Chairman

Company Secretary's Report

In addition to ensuring that Alzheimer's Australia Research (AAR) operated effectively during the current year we have also been working hard to ensure that AAR is positioned to continue its advocacy and support for dementia research in the coming year.

Three initiatives in particular stand out.

Firstly, Alzheimer's Australia Research have secured from the J.O. & J.R. Wicking Trust (administered by ANZ Trustees—Philanthropy Partners) a grant to undertake work that will assist a better understanding of the Australian dementia research effort and the priorities that should be set for the future. Through the Primary Dementia Collaborative Research Centre at the University of New South Wales headed by Professor Henry Brodaty, Alzheimer's Australia has commissioned a report that will include:

1. A summary of Australian dementia research, its gaps in knowledge, strengths and priorities.
2. An analysis of Australian dementia research spending, compared to research spending on other chronic diseases relative to the disease burden and economic costs. An assessment to the level of dementia research spending relative to the research funding in Canada, UK and USA.
3. Recommendations regarding future research funding and research directions.

It is expected that the Report will be released in the second half of 2007.

Secondly, Alzheimer's Australia Research has provided a travel scholarship to Dr Colleen Doyle to prepare a report on Australian and overseas experience of consumer involvement in dementia research. Together with the Dementia Collaborative Research Centre Social and Consumer Research AAR is planning to hold a seminar in 2008 with consumers and researchers on strategies that might more effectively involve consumers in dementia research.

Thirdly, the regular circulation of Dementia News brings within the reach of a great number of non scientists information about the latest outcomes in dementia research.

In these ways and others it is hoped to involve the Alzheimer's Australia National Consumer Committee and others in supporting a national research effort in the cause, cure and care of dementia.

Glenn Rees
Company Secretary

2006/2007: A Year in Review

Alzheimer's Australia Research 2006/2007 Highlights

The year 2006/2007 has brought a number of highlights for AAR, including:

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- Forging new partnerships with Universities and Dementia Collaborative Research Centres,
- An increased role of the Scientific and Medical Panel in providing leadership and expertise on a range of issues,
- Increased number of research grants available in the 2006 Dementia Grants Program,
- Record number of applications received for the 2006 Dementia Grants Program, and
- Broadening the types of grant funding on offer to include postgraduate and postdoctoral funding.

Collaborations

Dementia Collaborative Research Centres

The Australian Government has made dementia a National Health Priority in recognition of the need for support, quality care and continuing research for the increasing number of Australians affected by dementia. In 2006 a network of three Dementia Collaborative Research Centres (DCRCs) were established, which work to improve quality of life for people with dementia, their carers and families.

An AAR partnership with the Queensland University of Technology-based DCRC working on Consumers, Carers and Social Research allowed a Joint AAR/CRC Scholarship to be offered to Ms Patricia Shuter in 2006; another is planned for 2007. AAR has also commissioned a report from the Primary DCRC at the University of New South Wales that will include a summary of Australian dementia research, an analysis of Australian dementia research spending relative to the research funding in other developed countries and recommendations regarding future research funding and directions.

Other Partnerships

Additionally, in 2007 AAR applied for research funding management to the Sylvia and Charles Viertel Charitable Foundation, and hope for a fruitful partnership with the Foundation in future.

In April/May 2006 in collaboration with the Centre for Mental Health Research (CMHR) at the ANU, AAR was able to award a joint two-year research fellowship to Dr Nicolas Cherbuin. Since 2004, AAR has also been involved in a funding partnership with the National Health and Medical Research Council (NHMRC), which committed to support a Biomedical Career Development Award (the R.D. Wright Fellowship) for five years, a fellowship which was awarded to Associate Professor Pradeep Nathan.

The Jack & Ethel Goldin Foundation has pledged $250,000 over three years for biomedical research specifically focused on developing a cure for Alzheimer's disease. In 2006 this enabled AAR to award the Research into a Cure for Alzheimer's Disease Grant to researchers from the NeuroRepair Group at the University of Tasmania's School of Medicine.

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Primary Dementia Collaborative Research Centre, University of New South Wales. From left to right: Dr Victor Vickland, Ms Rosi Benninghaus, Dr Adrienne Withall, Dr Lee-Fay Low, Professor Henry Brodaty, Ms Lisa Gomes, and Ms Alexandra Dunbar. Provided by Dr Adrienne Withall.

AAR Research Programs

2005 Dementia Grants Program

Four grants were awarded in the 2004 Dementia Grants Program to emerging researchers examining a variety of research topics. In 2005, AAR was pleased to offer more than double the number of research grants than in 2004. The 2005 successful projects are of a high quality and cover a wide range of research areas, from basic biomedical research to studies into improving quality of life for people living with dementia. Below are summaries of the progress to date in the 2005 Dementia Grants Program projects.

New Investigator Grants

The New Investigator grants focus on emerging researchers who have never received a grant worth over $15,000 as a Chief Investigator. The aim of the New Investigator grants is to facilitate the involvement of new researchers in the field of dementia research and to strengthen future Australian research capacity.

Structural Changes of Amyloid-beta protein in familial Alzheimer's Disease

2005 AAR Dementia Research Grant
Dr Deborah Tew—University of Melbourne
Characterisation of the wild-type and familial mutant forms of amyloid-beta

Dr. Tew used the Synchrotron (a facility for scientific and industrial research in Daresbury, UK) in her study of amyloid-beta (Aβ), a naturally occurring protein which can become misfolded and aggregate in plaques in the brains of people with Alzheimer's disease. There are a number of mutations in the amyloid-beta protein which are connected with familial younger onset Alzheimer's disease. Dr Tew carried out experiments with the Aβ familial mutant proteins, to compare their secondary conformations and to investigate the level of their toxicity. Aβ is known to associate with cell membranes in the normal healthy brain. It was shown in this study that when incubated with lipid membranes that resemble neuronal cell membranes, most of the familial mutants underwent a structural change. The degree of the structural change was correlated with the level of increased toxicity of the mutant proteins. Further studies of this structural change will help to understand the relationship between the toxicity of the peptide and its association with neuronal cell membranes and will add to our understanding of the changes in the amyloid-beta protein that may lead to the development of Alzheimer's disease.

Emotional Regulation and Alzheimer's Disease

2005 AAR Dementia Research Grant
Dr Julie Henry—University of New South Wales
Emotion regulatory deficits in relation to Alzheimer's disease

Dr Henry's study examined deficits in emotional processing in people with Alzheimer's disease, particularly addressing impairment of inhibitory control, which is the capacity to regulate emotions. Converging evidence suggests that these inhibitory failures are likely to have broader implications for socioemotional functioning in people with Alzheimer's disease, in particular the capacity for empathy, emotion regulation, and likelihood of depression. The study administered behavioural tests and self-report measures of depression, emotion regulation, and empathy to people with and without Alzheimer's disease. The results show that people with Alzheimer's have increased inhibitory failures and report significant impairment in some aspects of socioemotional functioning. This suggests that there are specific relationships between cognitive and socioemotional functioning in Alzheimer's disease, but further research will be required to

determine the mechanism underpinning the association, in order that we can make further strides in prediction, management, and treatment of the disease. This study has culminated in an article that is currently in press in the *Journal of the International Neuropsychological Society*, an international peer-reviewed journal, as well as a further manuscript that is currently under review. In addition the research outcomes were disseminated via conference presentations and in lecture materials for Dr Henry's undergraduate course.

Research into Alzheimer's Disease and Genetics

2005 AAR Dementia Research Grant
Agnes Luty—The Garvan Institute of Medical Research
Positional cloning of a novel Alzheimer's disease locus associated with atypical plaque-predominant neuropathology

Although the brains of most people with Alzheimer's disease accumulate both amyloid-beta plaques and neurofibrillary tangles, Agnes Luty has been working to characterise a potential novel disease gene on chromosome 9 which appears to cause a predominance of plaques and an absence of tangles. The research team has studied one particular family lineage, in which affected members exhibit either dementia (frontotemporal dementia or Alzheimer's disease) or motor neurone disease, or a combination of the two. DNA analysis has identified a gene that is faulty only in affected members of the family. Currently they are investigating how this gene mutation is associated with the progression of neurodegenerative diseases, and whether such genetic changes are also present in other families with similar disease presentations. Clarifying the role of this gene in the different pathways leading to dementia or motor neurone disease will have a major impact on future predictive testing and therapeutic intervention not only for this family, but also for other affected members of the ageing population. This is very important as without the discovery of new treatments, these progressive and fatal neurodegenerative disorders will exact a larger burden of morbidity and mortality as our society ages.

Imaging Motor Slowing and Dementia

2005 Rosemary Foundation Loader Research Scholarship
Stephen Duma—Prince of Wales Medical Research Institute
A brain imaging study of the role of the pre-supplementary motor area in extrapyramidal motor slowing: A predictor of cognitive decline and dementia

Parkinson's disease (PD) is a neurological movement-related disorder, with slowing of movements being a key symptom necessary for diagnosis; however, by that time the majority of brain cell loss has already occurred. Patients with late-onset PD show subtly different clinical signs, and are more likely to progress to dementia. Stephen Duma's PhD project, informed by his AAR-supported travel to Germany for neuroimaging training, aimed to identify early signs of late-onset PD by the use of functional brain imaging and ultrasonography techniques, and to correlate these findings with mild motor signs not yet severe enough for a diagnosis. Preliminary findings show that both motor-slowed older participants and people with PD demonstrate measurable changes in a particular brain region, indicating that both may be caused by similar neuropathological mechanisms. The identification of these early or pre-clinical signs will enable future research to focus on preventative for PD and related movement disorders and dementias. It will also enable clinicians to make a diagnosis prior to severe loss of brain cells, so therapeutic measures can be implemented earlier. These results have already been presented at conferences and will form the basis of Duma's PhD thesis, as well a paper in an international journal.

Dementia Care and Prevention Grants

In 2005, AAR offered research grants with a specific research focus for the first time. The AAR Grant in Prevention and Risk Reduction was offered to encourage research into aspects of prevention and risk reduction, including interventions to delay the onset of dementia or methods to educate the community about risk factors. The Hazel Hawke Research Grant in Dementia Care was designed to support research into dementia care and support issues, often an under-funded research area. The large number of applications received in this category indicate the interest in dementia care research and the need for increased funding support.

Memory Training in People with Mild Cognitive Impairment

2005 AAR Grant in Prevention and Risk Reduction
Associate Professor Glynda Kinsella—La Trobe University
Memory group intervention for Mild Cognitive Impairment

Older adults with pronounced memory difficulty are often diagnosed with Mild Cognitive Impairment (MCI), a condition which may progress to Alzheimer's disease. Active management of MCI through medication remains difficult, so patients and families often seek interventions that offer improvement in quality of life; cognitive interventions are low-cost and can provide assistance in learning and implementing appropriate compensatory strategies in everyday living**.** This study evaluated the efficacy and practical benefit of a five-week program of memory training in improving everyday use of memory strategies. Preliminary analysis of data from fifty-two Melbourne patients and families has provided encouraging results: participants who received the intervention program performed better on tasks of everyday living, reported better effective memory in everyday life, and showed a trend towards reduction in family strain. This study demonstrated that awareness of and systematic training in compensatory memory skills can significantly improve everyday living for people with MCI, a finding with important implications for cognitive management approaches. The results have been reported at several conferences and one community seminar, and a journal article is currently in progress. A major randomized controlled trial of the intervention will be run once funding is obtained; until then the protocol is being standardised to create a training manual for health professionals.

Palliative Care and Dementia

2005 Hazel Hawke Research Grant in Dementia Care
Associate Professor Cherry Russell—University of Sydney
Dying with dementia: An exploratory study of family caregiver perspectives on best quality care and support practices at the end of life

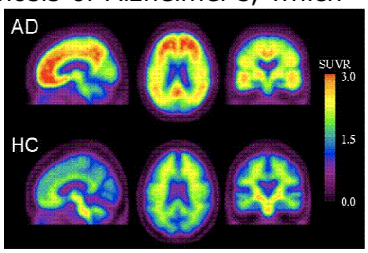
People with terminal-stage dementia are an especially vulnerable group, yet few studies have addressed the non-medical dimensions of their complex care needs. Assessments of the quality and effectiveness of formal care services must often rely on the perspectives of family caregivers, which provide vital information for clinical workers lacking another evidence base. Associate Professor Russell's exploratory study aimed to better understand end-of-life care experiences and unmet needs, via collection of in-depth carer interview data. Her research demonstrated that family caregivers linked perceptions of their relative's quality of life to three main sets of indicators, concerning the physical body, the immediate environment, and 'attributed internality', or how they believe the relative would have subjectively experienced the situation. There was also a strong tendency to incorporate a consideration of the social environment and the processes of care embodied within it. These findings are especially important as they support the idea that relatives' assessments of quality of life play a significant role in their treatment decision-making. One report of the research has already been submitted for publication in the *Australasian Journal on Ageing*, and two others are in preparation. These will provide a critical foundation for future research and development of evidence-based practice guidelines for enhanced care quality.

Travel Grants

AAR provides travel grants to assist researchers in disseminating their findings to a wider audience and to further their research skills and collaborations. The Rosemary Foundation Travelling Fellowship allows a researcher to attend and present at a relevant conference. The Alzheimer's Australia Research Travelling Scholarship enables a researcher to undertake an in-depth project overseas or learn a technique not available in Australia.

2005 Rosemary Foundation Travelling Fellowship
Dr Greg Savage—Monash University (now at Macquarie University)
Presentation at International Neuropsychological Society Conference, Boston, February 2006

The Rosemary Foundation Travelling Fellowship grant allowed Dr Savage to present a research paper in Boston on the early diagnostic potential of a new smell test for Alzheimer's disease. Dr Savage presented his research team's study at the 2006 Annual Meeting of the International Neuropsychological Society (INS), a premier conference for neuropsychologists which provided an opportunity to learn about and discuss other similar studies. It also provided an opportunity to inform other researchers and clinicians about the promising results obtained using the inexpensive olfactory test, which can sensitively spot deficits in smell identification ability that may be able to predict progression from Mild Cognitive Impairment to Alzheimer's disease. The study generated considerable interest among conference delegates, as these results have important implications for early diagnosis of Alzheimer's, which is currently quite difficult. Resultant intervention at the earliest possible stage could significantly reduce the social and economic burden of Alzheimer's disease and would contribute directly to better disease management. Future work in Dr Savage's lab aims to track the participants of the study for a longer period of time to confirm whether the observed smell deficiencies can identify those who will develop Alzheimer's disease.



PIB-PET imaging of beta-amyloid deposition in Alzheimer's brain (AD) and healthy control (HC). Provided by Dr Victor Villemagne and Prof Christopher Rowe, Centre for PET, Austin Health, Melbourne.

2005 Alzheimer's Australia Research Travelling Scholarship
Stephen Duma—Prince of Wales Medical Research Institute
Transcranial sonography (TCS) for the study of incident Lewy body disorders and dementia in older adults with motor slowing

With the aid of the AAR Travelling Scholarship, Stephen Duma was able to go to Germany to learn the technique of transcranial sonography (TCS), an imaging technique that can view brain changes in a specific region of the brain that may be associated with incident Lewy body disorders and dementia. Over the course of two weeks, Duma learned from world leaders in the field, and had a chance to practice this technique on approximately thirty individuals displaying a spectrum of brain conditions. This allowed him to differentiate between normal and abnormal signal intensity in the substantia nigra brain region, which can aid in the identification of Parkinson's disease. In addition, Duma had the opportunity to attend an International Neuroscience Conference in Al Ain, United Arab Emirates, where he learned about different areas of neuroscience that could be related to his own field of research from world-renowned neuroscientists. Upon his return to Australia, he was then able to use this new knowledge and technique successfully to image the substantia nigra of the participants of his PhD project, an AAR-supported study focused on identification of early indicators for Parkinson's disease.

Scholarships

Joint AAR/CRC Postgraduate Research Scholarship in Social Research and Dementia

In 2006, AAR was pleased to offer the Joint AAR/CRC Postgraduate Research Scholarship in Social Research and Dementia. It is offered in partnership between AAR and the Dementia Collaborative Research Centre – Consumers and Social Research (DCRC-CSR) based at the Queensland University of Technology. DCRC-CSR is one of three dementia research centres established by the Australian Government as part of its Dementia National Health Priority Initiative. Below are details of the successful applicant and her project.

Impact of Palliative Care Services for People at the Terminal Stage of Dementia on Health Outcomes of their Carers

Patricia Shuter—Queensland University of Technology
Supervisor: Prof Helen Edwards
Associate Supervisor: Prof Jenny Abbey
Can a palliative care framework ameliorate complicated grief and improve medium term health outcomes in carers of people at the terminal stage of a dementing illness?

The burden of caring for people with dementia and its exacerbation in the terminal stages of the disease is well documented. Research suggests that palliative care for the care recipient might be efficacious in reducing the caregiver burden. The first stage of Ms Shuter's study will consist of individual face to face semi-structured interviews with a sample of caregivers of people in the terminal stage of dementia. The objective of these interviews will be to determine key factors and issues that will be central to development of data collection in the second stage of the project. The second stage of the study will consist of a cross sectional prospective follow up design comparing medium term health outcomes in a group of carers of people in the terminal stage of dementia receiving varying levels of palliative service. Medium term health outcomes will be monitored and measured and the correlation between these, complicated grief, levels of palliative care for the care-recipient and baseline measurements will be determined. The information obtained in the study will be used to assist in developing programs to address the challenges experienced by the carers of people in terminal stage dementia.

Hunter Postgraduate Research Scholarship into the Causes of Alzheimer's Disease

Since 2005, AAR has been pleased to offer the Hunter Postgraduate Research Scholarship. The scholarship is made possible by a bequest. It aims to provide support to a new researcher completing a PhD in the field of Alzheimer's disease, with a focus on exploring the causes of the condition. Successful research projects are subsidised over three years. Below are details of the successful applicants and their projects for 2005 and 2006 awards.

Examining Inflammation in Alzheimer's Disease

Lolita Warden—Prince of Wales Medical Research Institute
Supervisor: Dr Claire Shepherd
Identifying important mediators of tau pathology in Alzheimer's disease: the role of inflammation

In 2005, the inaugural Hunter Postgraduate Research Scholarship into the Causes of Alzheimer's disease was awarded to Lolita Warden.

Protein deposition (amyloid and tau) and inflammation are key features of the Alzheimer's

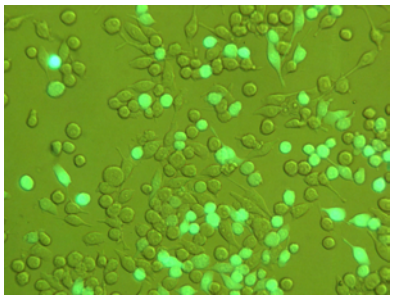
disease brain. Amyloid deposition is thought to be responsible for initiating downstream changes such as inflammation, tau pathology and neuronal death. The amyloid protein can exist in many different forms depending on its conformation. To date, Alzheimer's disease research has primarily focused on the effects of aggregated, so-called fibrillar, amyloid. However, recent studies have suggested that soluble oligomeric amyloid may be more damaging in Alzheimer's disease, although the exact mechanisms whereby this occurs are not clear. This study has shown that oligomeric amyloid consistently co-localises with inflammation and tau protein deposition in Alzheimer's disease affected brain tissue, indicating a dynamic relationship between these pathologies. The researchers are now using a human cell culture model to study this interaction and have shown that oligomeric amyloid is a more potent stimulator of the inflammatory response when compared to its fibrillar counterpart. They have also identified some important mediators of this inflammatory response and are currently in the process of determining the effects of these changes on tau and neuronal survival. Unveiling the exact mechanisms underlying the disease process in Alzheimer's disease will ultimately lead to developing effective therapeutic strategies.

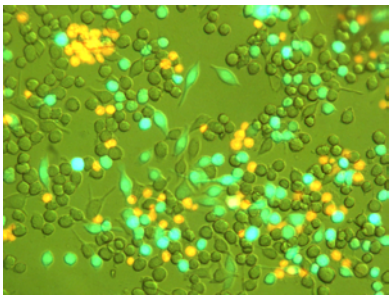
Investigation into the Causes of Alzheimer's Disease: Link Between Inflammation and Dysfunction of Astrocytes

Megan Steele—James Cook University
Supervisor: Dr Gerald Muench
Investigation into the role of astrocytes in neuroprotection: When and why do astrocytes stop protecting neurons?

In 2006, the Hunter Postgraduate Research Scholarship into the Causes of Alzheimer's disease was awarded to Megan Steele.

The Alzheimer's disease brain is characterised by amyloid plaques, neurofibrillary tangles, oxidative damage and inflammation, as well as a decrease in glucose uptake in plaque-enriched areas of the brain. This project will link inflammation and dysfunction of astrocytes, the "liver cells of the brain", as one of the causes of Alzheimer's disease. The hypothesis Megan is testing is whether neurons (the nerve cells) die as a result of astrocytes (supportive cells) neglecting their neurosupportive and neuroprotective functions and whether this is linked to changes in energy metabolism in the astrocytes. The project will involve using cell lines, primary cell cultures and an organotypic brain slice model to determine the effects of stress and inflammation on the neurosupportive functions of astrocytes (i.e. production of glutamine, lactate and glutathione precursors). Additionally Megan will investigate the effect of inflammation on astrocyte glucose metabolism as an intermediate step in astrocytes supporting and protecting neurons.





Left: stereo microscope image of a co-culture of fluorescent murine N2A neurons (light) and N11 microglia (dark), used to assess cell viability after various treatments to determine neuroprotective abilities of drugs and extracts. Right: co-culture after 24-hour treatment with hydrogen peroxide (smaller light-coloured cells are dead cells stained with orange propidium iodide). Provided by Megan Steele.

2006 Dementia Grants Program

The 2006 Dementia Grants Program offers a wide range of research grants including new investigator grants, travel grants and grants into dementia care.

New Investigator Grants

The AAR Dementia Research Grants are seeding grants for new researchers, valued up to $20,000, to be allocated for research in a dementia-relevant area. Grants are awarded in both biological and psychosocial research areas.

Therapeutic Possibilities of Natural Amyloid-beta Clearance

2006 Rosemary Foundation Loader Research Grant
Justin Yerbury—University of Wollongong
Do the effects of extracellular chaperones on Aβ clearance and toxicity provide potential therapeutic targets?

Alzheimer's disease (AD) is thought to arise from the accumulation in the brain of a molecule called Amyloid-beta peptide (Aβ). In AD, it is thought that either the production of Aβ is increased or its rate of removal is decreased, resulting in it becoming toxic to brain cells and forming insoluble clumps. Thus, identification of mechanisms to counter the accumulation of Aβ, and its associated toxicity, will be critical to the development of new effective AD therapies. There are naturally occurring molecules called extracellular chaperones that may control the removal and breakdown of Aβ. We will test the possibility that increasing the levels of these extracellular chaperones in the fluid that bathes the brain will help remove Aβ and protect brain cells from its toxicity. These experiments will test the feasibility of the hypothesis that increasing the concentration of extracellular chaperones in cerebrospinal fluid could increase the rate of Aβ clearance from the brain and protect neurons from Aβ-mediated toxicity. This project may identify new targets for the treatment of AD.

Investigating the Neuroprotective Abilities of Anti-oxidants

2006 AAR Dementia Research Grant
Grant Stuchbury—James Cook University
Prevention of Alzheimer's disease by synthetic and plant-derived antioxidants

Brain degeneration and subsequent loss of memory in Alzheimer's disease is partially a result of excessive inflammation in the brain. There is significant evidence, from both human and animal studies, to suggest that treatment with anti-inflammatory or anti-oxidant compounds may prevent or delay the onset of Alzheimer's disease. The aim of this study is to analyse both naturally occurring and synthetic antioxidant substances for their ability to protect neurons from inflammation-induced degeneration in cell culture and brain slice models of Alzheimer's disease. Compounds will be tested for their ability to down-regulate the inflammatory response in cell culture models of Alzheimer's disease. Furthermore, we will test the ability of these compounds to protect neurons from inflammation-induced impairment of glucose metabolism and cell death. This research takes the first step in providing an in-depth comparison between numerous anti-oxidant compounds in relation to their oxidant scavenging and neuroprotective properties. We expect to identify the potent antioxidants attenuating inflammation and improving neuronal energy production and cell survival and it is expected that this study will identify highly neuroprotective anti-oxidant substances suitable for future clinical trials.

Hospital Discharge Process for Patients with Dementia

2006 AAR Dementia Research Grant
Dr Michael Bauer—La Trobe University
Improving hospital discharge preparation and support for families of patients

with dementia

The literature suggests that the needs of family carers are not always addressed in the hospital discharge process; this study aims to understand the family carer's experience of the discharge planning process for their family member with dementia. Using a qualitative research methodology, Dr Bauer will interview family carers regarding their experience of the preparation for and execution of the hospital discharge plan, in order to understand how well the discharge plan met their needs and what improvements could have better assisted with the transition from hospital to residential or home based care. A preliminary analysis of the data has indicated that the needs of family carers of patients with dementia are not always being met and discharge practices are in need of development, as families often perceive that discharge planning is ad hoc, and that information, communication and care standards they expect are often not provided. These findings will ultimately inform a review of hospital discharge practices for people with dementia, providing the basis for guidelines for hospital staff, and also act as a springboard for further research to improve the quality of hospital discharge for both family carers and people with dementia.

Hazel Hawke Research Grants in Dementia Care

The aim of this grant is to provide up to $20,000 for research into dementia care. Suitable projects might include research into carer support, best quality care practices, activities and therapies for people with dementia, or any other aspect of dementia care research.

Care Needs of People with Down Syndrome and Alzheimer's Disease

Dr Jennifer Torr—Monash University
Alzheimer's disease and Down Syndrome: Pathways of care

Three quarters of people with Down syndrome will develop clinically evident Alzheimer's disease in middle age. This project will explore the changing care needs of people with Down syndrome newly diagnosed with Alzheimer's disease, and examine how primary carers, and the disability and aged care service systems adapt to these changing needs. Dr Torr has obtained ethics approval and is currently in the process of recruiting and assessing participants, allowing her to map pathways to the assessment of people with Down syndrome and suspected Alzheimer's disease, and then care pathways following confirmation of diagnosis. This will provide an opportunity to identify issues in accessing assessment and treatment services and the experience of families and paid carers in negotiating the system. The study will also explore the relationships between progression of Alzheimer's disease, carer burden, and transitions in care arrangements. The project will inform the development of policy and programs to enable service systems to respond to this group of people, whose numbers will increase significantly in the next few years.

Cognitive Impairment, Dementia and Homelessness

Dr Astrid Rogoz—St Vincent's Hospital
Cognitive impairment in the elderly homeless

Among the general literature on homelessness there is little recognition of older homeless people as a distinct group, despite the likelihood that the circumstances, needs and remedies for older people are likely to be different from other homeless groups. The prevalence of cognitive impairment (mostly memory problems) is higher in the homeless population than the general population, and results in further disadvantage and vulnerability. Dr Rogoz's study attempts to identify and describe demographic characteristics of homeless elderly people, and offer interventions that may stabilize or improve their cognitive functioning. The study is being conducted as a randomized controlled trial; they are currently in the stage of recruiting the participants, and providing good clinical care (including assistance with accommodation and welfare benefits, referral to a GP, and referral to the mental health services and/or drug and alcohol services if indicated) for the intervention group, and referral to a GP for the control

group. This ongoing study will include a follow up of study participants at 6 and 12 months. The researchers are also trying to raise awareness about the needs of this group, and, working closely with the old age services and various service providers that cater for needs of homeless population, are developing networks to improve their access to services and provide a better level of care. They have also established links with GPs, mental health services, and drug and alcohol services, which will assist them in meeting the needs of this population. This study is expected to make an important contribution to the well-being of the individual subjects, and to the literature on the homeless elderly.

Developing Falls Risk Assessment Procedures

Dr Kate Webster—La Trobe University
Falls risk assessment in people with Alzheimer's disease

This project is investigating a physiological approach to falls risk assessment in people with Alzheimer's disease. Falls are a significant problem in Alzheimer's disease and the ability to predict falls is an important priority for dementia care. In this study, fifty adults with Alzheimer's disease will undergo simple physiological tests of vision, strength, sensation, reaction time and balance. Falls will be recorded over a 12 month period and it will be determined whether the physiological tests are accurate at predicting falls. In the first stage of this project it was shown that physiological falls risk assessment is feasible in older people with mild to moderate Alzheimer's disease. It was also shown that older people with Alzheimer's disease demonstrate significant impairments in several physiological domains, particularly reaction time, compared to age- and sex-matched controls without Alzheimer's disease. If, as shown by the first stage of the study, the tests are predictive of falls they can be used to identify individuals at risk of falling so that the number of falls in people with Alzheimer's disease can be reduced. These physiological tests can then be implemented in health care settings. In the longer term, the results of this study will assist in the development of intervention programs (such as strength training or balance exercises) to prevent falls in people with Alzheimer's disease, thereby increasing the opportunity for them to continue to live independently in the community.

Travel Grants

AAR provides travel grants to assist new researchers in developing scientific presentation skills, learning about cutting-edge advances in international dementia research, showcasing emerging Australian research and building connections with the international scientific community.

2006 Rosemary Foundation Travel Grants
Amee George—University of Melbourne
A Serial Analysis of Gene Expression (SAGE) profile of the Alzheimer's disease Tg2576 mouse model

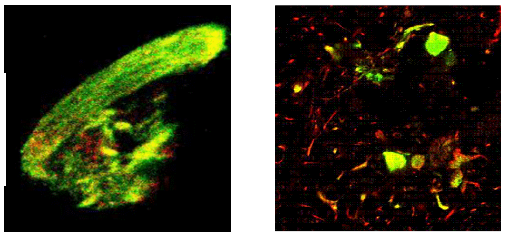
This travel grant was provided to assist in attending and presenting at the 10th International Conference for Alzheimer's Disease and Related Disorders (ICAD) in Madrid in July 2006. Ms George's oral presentation in the Animal and Cellular Models session of the conference received many questions and positive responses; the abstract of the presentation was published. The research that was presented was part of her PhD studies, and employed the technique of Serial Analysis of Gene Expression (SAGE). This technique had not been previously utilised in Alzheimer's disease research. Amee George used SAGE to analyse differentially expressed genes in a mouse model of Alzheimer's disease. Close analysis revealed changes in some cellular pathways, which suggested that the diseased brain is trying to compensate for losses induced by the presence of large amounts of amyloid precursor protein and amyloid-beta, proteins involved in Alzheimer's disease. Individual gene expression was also analysed in the brains of both mouse model and human Alzheimer patients, where the expression of some genes was found to be

decreased. Potentially, the results of this study could lead to the identification of novel diagnostic and prognostic markers of Alzheimer's disease.

Image: Ms George and several other participants at the 10th International Conference for Alzheimer's Disease and Related Disorders, Madrid, July 2006. Provided by Amee George.

2006 Rosemary Foundation Travel Grant
Tong Chen—Flinders University
Molecular characterisation of a novel dipeptidyl pepdidase like protein in the pathology of Alzheimer's disease

This travel grant was provided to assist with costs to attend the 4th Congress of the Federation of Asian-Oceanian Neuroscience Societies (FAONS), held in Hong Kong in November/December 2006. Ms Chen's oral presentation at the Congress was well received and the abstract of the presentation was published. The research presented at the Congress concerned the function of a novel discovered protein which may be involved in Alzheimer's disease. Alzheimer's disease is a progressive neurodegenerative disorder characterised clinically by loss of memory and other higher cognitive functions, and pathologically by the presence of extracellular amyloid-beta peptide deposition—neuritic plaques and intracellular tau-positive neurofibrillary tangles—associated with loss of synapses and neurons in select brain regions. The aim of this research was to study the function of the novel discovered protein DPL2-s in the human brain. Tong Chen's finding that DPL2-s is present in tangles and plaques suggests it has a pathological interaction with tau in Alzheimer's disease.



DPL2-s protein colocalised with tau in tangles (left) and plaques (right) in AD brain; lightest areas represent DPL2-s colocalised with tau. Provided by Tong Chen.

2006 AAR Travelling Scholarship
Dr Colleen Doyle—La Trobe University
Consumer involvement in dementia care research and evaluation

This travel program, set to commence later this year, consists of visiting and exchanging information with colleagues in the U.S. and U.K. who are involved in dementia research, evaluation, and service provision. The scholarship will be used to support visits to: the Ethel Percy Andrus Gerontology Center at the University of Southern California; the Center for the Advanced Study of Aging Services at University of California Berkeley; the Gerontological Society of America's 60th Annual Meeting in San Francisco; the Family Caregiver Alliance in San Francisco; the Alzheimer's Association office in Chicago; The Alzheimer's Society, Alzheimer's Disease International, INVOLVE, and the James Lind Alliance, all in London; the Section of Mental Health and Ageing at King's College London; The Bradford Dementia Group (performing Dementia Care Mapping) at the University of Bradford; and the Dementia Services Development Centre at the University of Stirling. These visits will allow Dr Doyle to exchange information about evaluation of dementia care, learn about consumer involvement in dementia care evaluation, attend seminars on dementia and caregiving, and learn about quality of life issues and dementia caregiving. She will specifically investigate how to involve carers and people with dementia in evaluation of dementia programs, methods of measuring quality of life and satisfaction with services for people with dementia, strategies to involve consumers in development of services for people with dementia, and evaluation of community services for people with dementia. The information will be applied to the national evaluation of the Dementia Health Priority Initiative, an Australian Government initiative that will provide extra funding for research, service provision and training over the next three years. Learning about consumer involvement in dementia care evaluation in the U.S. and U.K will allow provision of the best available evaluation of dementia care here in Australia.

Research into a Cure for Alzheimer's Disease Grant Program

The Jack & Ethel Goldin Foundation has pledged $250,000 over three years for biomedical research that specifically focuses on developing a cure for Alzheimer's disease. The researchers from the NeuroRepair Group at the School of Medicine—Associate Professor Adrian West, Professor James Vickers and Dr Roger Chung—were awarded the grant in 2006. The project will be conducted over three years. Below is a summary on progress of their project to date.

New Strategies for Treating Alzheimer's Disease

Associate Professor Adrian West—University of Tasmania
Metallothionein-based therapeutic for Alzheimer's disease

Associate Professor Adrian West and his team believe that a naturally occurring protein called metallothionein may have a potential use in the treatment of Alzheimer's disease, by reducing the production, accumulation or aggregation of amyloid-beta protein in the brain, as well as reducing inflammation, oxidative stress, and brain cell death (Figure 1). The protein could be a promising therapeutic candidate as it appears to enter the brain and targets multiple cellular pathways. Toxicological studies also indicate that it is unlikely to have serious side effects. West and his team are examining the efficacy of the protein in treating an Alzheimer's model in mice and *in vitro*. Early results with a smaller group of animals have been encouraging and they are now designing a larger trial to confirm these findings. In addition, the team has begun work on establishing the distribution of injected metallothionein in the mouse, and its uptake into the central nervous system of healthy and Alzheimer-model mice. Initial experiments have indicated that injection of native metallothionein, into animals that cannot produce the protein themselves, results in detectable levels of protein in the central nervous system of the animals. They are now attempting to determine whether this means the protein has crossed the blood-brain-barrier, as they hypothesise.

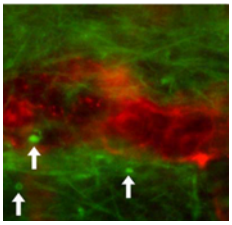


Figure 1: amyloid-beta (Aβ) plaques and neurophil disruption in Tg2576 transgenic mice. Alpha-internexinlabelled DNs (light spots, arrows) were associated with Aβ-labelled amyloid angiopathy (dark) in aged Tg2576 Mice. Figure prepared by PhD student Adele Woodhouse.

Furthermore, the team have successfully made recombinant constructs of metallothioneins, currently under production by a specialist protein synthesis laboratory, and aim to test these chimeric proteins *in vitro* for their ability to inhibit amyloid-beta aggregation. They have also successfully designed and synthesised several analogues of the protein which they hope will combine the abilities to protect neurons and to inhibit early polymerisation of amyloid-beta. Analogues will also allow them to test the hypothesis that one specific region of the molecule is responsible for its ability to promote neuronal regeneration. In the coming year they additionally plan to trial specific brain markers of oxidative stress and neuronal apoptosis. These comprehensive studies should go a significant way towards developing a metallothionein-based strategy for treating Alzheimer's Disease. Work from the group has been published in *Experimental Brain Research*, *Cellular and Molecular Life Sciences*, and the *Journal of Neurochemistry*.

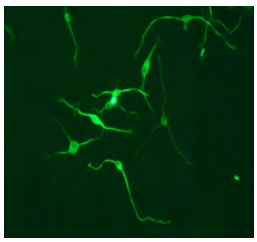


Figure 2: neuronal cells after immunohistochemistry for the neuronal marker b-III-tubulin. These cells, like cortical and hippocampal neurons, show dramatic changes in regenerative growth following treatment with metallothionein. Provided by A/Prof West.

AAR & CMHR Joint Postdoctoral Fellowship

In May 2006 AAR and the Centre for Mental Health Research (CMHR) at the Australian National University established a joint Postdoctoral Fellowship in Ageing Research. The Fellowship position was awarded to Dr Nicolas Cherbuin. This two to three years collaborative project is due for completion in May 2009. Below is an update on progress to date.

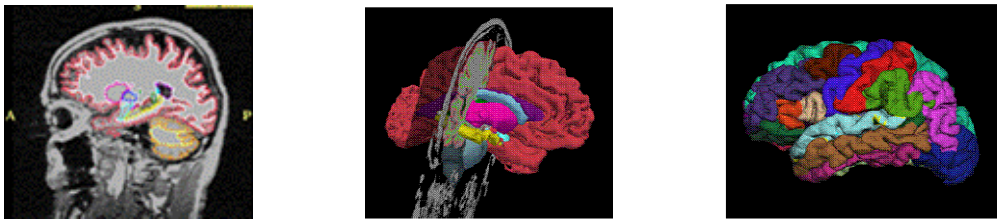
Identifying Risk Factors in Cognitive Ageing

Dr Nicolas Cherbuin—Australian National University
Risk and protective predictors of cognitive ageing and dementia

Dr Cherbuin's research in the past year has focused on identifying risk and protective factors of cognitive ageing and dementia, particularly in relation to structural brain changes detected on MRI scans and reviews of related areas of the literature, which might aid in developing a national dementia website and in predicting transition from healthy ageing to cognitive impairment. Dr Cherbuin learned techniques to process and analyse brain scans, and used large population databases available at the CMHR to analyse a large sample of MRI scans from people 60-64 years of age. His study attempted to determine whether effects of the APOE e4 genotype, the main genetic predictor of late onset Alzheime's disease, present in older people with dementia were already detectable in this younger group. An analysis of the predictors of conversion from normal to pathological ageing and dementia was also undertaken.

The most significant findings of this project to date are that the cerebral effects of an APOE genotype are not yet detectable in a younger sample of cognitively healthy ageing individuals, suggesting that most of the brain atrophy caused by the APOE e4 genetic profile only occurs in a person's late 60s, and therefore following its progression at this stage of life might provide important information of the risk of transition to dementia. Other important findings are the preliminary identification of smoking, abstaining from alcohol, and poor lexical task (spot-the-word) performance as likely risk factors and significant predictors for conversion from healthy ageing to mild cognitive impairment. Finally, a review of the literature showed that presently there are no validated self-administered dementia screening tests, but there are some informant-assessments that could possibly be recommended for use on the potential national dementia website without the supervision of professionals.

Some of these findings are reported in a paper published in the journal *Dementia and Geriatric Cognitive Disorders*, and in other papers currently in press or submitted for publication to journals such as *International Psychogeriatrics*, as well as a report to the Department of Health and Ageing. They have also been presented at several conferences to date, and at a free public symposium. Future planned work includes further analysis of the behavioural and brain predictors of conversion from healthy to pathological cognitive ageing and dementia, and attending an MRI course in the UK to support further processing of the existing brain scans. Dr Cherbuin will additionally focus on neurological differences between individuals with early-stage dementia, the relationship of diet and cognition, and the association between personality measures and brain structure.



"Brain Parcellation" technique employed by Dr Cherbuin and the Ageing Research Unit at ANU to analyse cerebral MRI scans, using cross-sectional scans of the brain to obtain a 3D model that can be parcelled into substructures for separate viewing and analysis. Provided by Dr Cherbuin and the Ageing Research Unit, Centre for Mental Health Research, ANU.

Partnership with the National Health & Medical Research Council

In 2004, AAR formed a funding partnership with the National Health & Medical Research Council (NHMRC), the premier health research funding body in Australia. AAR and the NHMRC will support a Biomedical Career Development Award (the R.D. Wright Fellowship) for five years. Below is an update on progress to date.

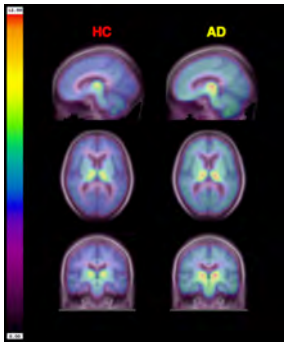
Neurochemistry of Alzheimer's Disease and its Relation to Cognitive Processes

Associate Professor Pradeep Nathan—Monash University
Neurochemical basis of cognitive function in Alzheimer's disease

Over the period of the last financial year, Associate Professor Nathan was in the third year of his five-year joint NHMRC/AAR RD Wright fellowship. Associate Professor Nathan and his collaborators led by Professor Chris Rowe at the Austin Hospital PET Centre conducted their research into the neurochemical basis of Alzheimer's disease and its association with cognitive processes including memory, executive function and attention. Findings resulting from these studies have been presented at international meetings and have been submitted for publication in international peer reviewed journals.

The major research project conducted during his fellowship related to the study of nicotinic receptors in Alzheimer's disease, their response to drug treatment and how they relate to cognitive function. Nicotinic receptors in the brain act to bind acetylcholine, a chemical that is important in learning and memory. In Alzheimer's disease, a deficit develops in the level of acetylcholine available in the brain. Current Alzheimer's medications attempt to counter this deficit. Studying nicotinic receptors and other brain proteins associated with acetylcholine may yield insights into the development of Alzheimer's disease and ultimately to its better treatment and cure.

The research conducted by the team used the technique of PET molecular imaging to visualise nicotinic receptors and other brain proteins in the living brain. Their findings indicate that early in Alzheimer's disease, there is no net loss of nicotinic receptors (see figure). Furthermore, these receptors were not related to memory or cognitive dysfunction at this stage of the disease. It was also shown that nicotinic receptors were not altered in the Alzheimer's disease patients following pharmacological treatment with the Alzheimer's drug, galantamine (Reminyl). Together, these findings suggest that nicotinic receptors may not be critical early in Alzheimer's disease with regard to cognitive function and that these receptors are not essential for the cognitive improvements observed with galantamine.



Average PET to MRI Fusion images by group: mild Alzheimer's disease patients (AD) and matching healthy controls (HC). Provided by A/Prof Nathan.

2007 Dementia Grants Program

The 2007 Dementia Grants Program offers a wide range of research grants including new investigator grants, travel grants and grants in dementia care. The Program was advertised in March 2007 and applications closed on 4 June 2007. After assessment by external expert reviewers, the final decision on successful applicants will be made by the Scientific and Medical Panel and AAR Board in August 2007. A Postgraduate Research Scholarship program will be offered later in 2007. The grants offered in the 2007 Dementia Grants Program are listed below.

2007 Dementia Grants Program

- 5 AAR Dementia Research Grants for new researchers of $20,000 each
- Janssen-Cilag Research Grant for new researchers of $20,000
- Ann Miller New Investigator Dementia Research Grant (for a Victorian researcher) of $20,000
- Rosemary Foundation Travel Project Grant of $10,000
- Rosemary Foundation Travel Stipend Grant of $5,000
- Alzheimer's Australia Research Travel Stipend Grant of $5,000
- 2 Hazel Hawke Research Grants in Dementia Care of $20,000 each

AAR Dementia Research Grants

The AAR Dementia Research Grants are seeding grants for new researchers, valued up to $20,000, to be allocated for research in a dementia-relevant area. Grants are awarded in both biological and psychosocial research areas.

Janssen-Cilag Research Grant

The Janssen-Cilag Research Grant, offered in partnership with the Janssen-Cilag Pty Ltd., is seeding a grant for new researchers, valued up to $20,000. The grant is offered in both biological and psychosocial research areas.

Ann Miller New Investigator Dementia Research Grant (for a Victorian researcher)

The Ann Miller New Investigator Dementia Research Grant is a result of a generous donation to research from Miss Ann Miller. The grant is offered to support an emerging Victorian researcher undertaking research in an area relevant to dementia and is valued up to $20,000.

Rosemary Foundation Travel Project Grant

The Rosemary Foundation Research Grant, offered in partnership with the Rosemary Foundation, is a travel project grant up to the value of $10,000. It will enable an Australian researcher to research aspects of dementia overseas. The grant will be awarded for the purpose of undertaking research that is not fully available in Australia and is relevant to the advancement of understanding dementia or dementia care and management.

Rosemary Foundation and Alzheimer's Australia Research Travel Stipend Grants

AAR, in partnership with the Rosemary Foundation and separately, is offering two travel stipend grants valued at $5,000 each to enable an Australian researcher to attend and present at a conference or similar event. Researchers will present their research related to understanding dementia, dementia care and management or carer support.

Hazel Hawke Research Grant in Dementia Care

The aim of this grant is to provide up to $20,000 for research into dementia care. Suitable projects might include research into carer support, best quality care practices, activities and therapies for people with dementia, or any other aspect of dementia care research.

Alzheimer's Australia Research Ltd.
ABN 79 081 407 534
Financial Report
For the year ended 30 June 2007

Financial information was extracted from the audited financial statements of Alzheimer's Australia Research Ltd., for the year ending 30 June 2007 and is included here for information purposes only.

A full copy of Financial Statements, including Notes to the Financial Statements and the Audit Opinions, can be obtained free of charge on request from Alzheimer's Australia Research Ltd., PO Box 4019, Hawker ACT 2614.

INDEPENDENT AUDITORS REPORT
TO THE DIRECTORS OF ALZHEIMER'S AUSTRALIA RESEARCH LIMITED

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your extra asset

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WalterTurnbull Pty Ltd
ABN 97 099 740 879

Report on the Financial Report

We have audited the accompanying financial report of the Alzheimer's Australia Research Limited (the company), which comprises the balance sheet as at 30 June 2007 and the income statement, statement of recognised income and expenditure and cash flow statement for the year ended on that date, a summary of significant accounting policies and other explanatory notes and the directors' declaration.

Directors' Responsibility for the Financial Report

The directors of the company are responsible for the preparation and fair presentation of the financial report in accordance with Australian Accounting Standards (including the Australian Accounting Interpretations) and the *Corporations Act 2001*. This responsibility includes establishing and maintaining internal control relevant to the preparation and fair presentation of the financial report that is free from material misstatement, whether due to fraud or error; selecting and applying appropriate accounting policies; and making accounting estimates that are reasonable in the circumstances.

Auditor's Responsibility

Our responsibility is to express an opinion on the financial report based on our audit. We conducted our audit in accordance with Australian Auditing Standards. These Auditing Standards require that we comply with relevant ethical requirements relating to audit engagements and plan and perform the audit to obtain reasonable assurance whether the financial report is free from material misstatement.

An audit involves performing procedures to obtain audit evidence about the amounts and disclosures in the financial report. The procedures selected depend on the auditor's judgment, including the assessment of the risks of material misstatement of the financial report, whether due to fraud or error. In making those risk assessments, the auditor considers internal control relevant to the entity's preparation and fair presentation of the financial report in order to design audit procedures that are appropriate in the circumstances, but not for the purpose of expressing an opinion on the effectiveness of the entity's internal control. An audit also includes evaluating the appropriateness of accounting policies used and the reasonableness of accounting estimates made by the directors, as well as evaluating the overall presentation of the financial report.

We believe that the audit evidence we have obtained is sufficient and appropriate to provide a basis for our audit opinion.

Independence

In conducting our audit, we have complied with the independence requirements of the *Corporations Act 2001*. We confirm that the independence declaration required by the *Corporations Act 2001*, provided to the directors of the Alzheimer's Australia Research Limited on 16 October 2007, would be in the same terms if provided to the directors as at the date of this auditor's report.

Auditor's Opinion

In our opinion, the financial report of the Alzheimer's Australia Research Limited is in accordance with the *Corporations Act 2001*, including:

i. giving a true and fair view of the company's financial position as at 30 June 2007 and of its performance for the year ended on that date; and

ii. complying with Accounting Standards (including the Australian Accounting Interpretations) and the Corporations Regulations 2001.

James Barrett, CA
Registered Company Auditor
WalterTurnbull

Canberra, ACT
Dated: 22 October 2007

ALZHEIMER'S AUSTRALIA RESEARCH LIMITED
ABN 79 081 407 534

DIRECTORS' DECLARATION

The directors of the company declare that:

1. The financial statements and notes, as set out on pages 9 to 21 are in accordance with the *Corporations Act 2001:*

    a. comply with Accounting Standards and the Corporations Regulations 2001; and
    b. give a true and fair view of the financial position as at 30 June 2007 and of the performance for the year ended on that date of the company;

2. In the directors' opinion there are reasonable grounds to believe that the company will be able to pay its debts as and when they become due and payable.

This declaration is made in accordance with a resolution of the Board of Directors.

Name _____

Date 16 October 2007

Name _____

Date 16 October 2007

ALZHEIMER'S AUSTRALIA RESEARCH LIMITED
ABN 79 081 407 534

INCOME STATEMENT FOR THE YEAR ENDED 30 JUNE 2007

	Note	2007 $	2006 $
Revenue	2	774,810	454,922
Employee benefits expense		(28,616)	(32,875)
Grants issued	3	(266,645)	(210,693)
Loss on Investment		-	(12,110)
Other expenses		(31,880)	(44,087)
Profit		447,669	155,157

The accompanying notes form part of this financial report.

ALZHEIMER'S AUSTRALIA RESEARCH LIMITED
ABN 79 081 407 534

BALANCE SHEET AS AT 30 JUNE 2007

	Note	2007 $	2006 $
ASSETS			
CURRENT ASSETS			
Cash and cash equivalents	4	743,625	736,024
Trade and other receivables	5	21,400	107,427
TOTAL CURRENT ASSETS		765,025	843,451
NON-CURRENT ASSETS			
Financial assets	6	1,135,461	982,878
TOTAL NON-CURRENT ASSETS		1,135,461	982,878
TOTAL ASSETS		1,900,486	1,826,329
LIABILITIES			
CURRENT LIABILITIES			
Trade and other payables	7	34,098	72,876
Other current liabilities	8	153,162	487,896
TOTAL CURRENT LIABILITIES		187,260	560,772
TOTAL LIABILITIES		187,260	560,772
NET ASSETS		1,713,226	1,265,557
EQUITY			
Retained Earnings		1,713,226	1,265,557
TOTAL EQUITY		1,713,226	1,265,557

The accompanying notes form part of this financial report.

If you would like to know more about Alzheimer's Australia Research or make a donation please visit the Alzheimer's Australia website at www.alzheimers.org or contact us at:

Alzheimer's Australia Research Ltd.
PO Box 4019 Hawker ACT 2614

Tel: (02) 6254 4233
Fax: (02) 6278 7225
Email: aar@alzheimers.org.au

For more information about dementia or to learn about the services that Alzheimer's Australia provides in your State or Territory please visit the website *www.alzheimers.org* or call the National Dementia Helpline on 1800 100 500