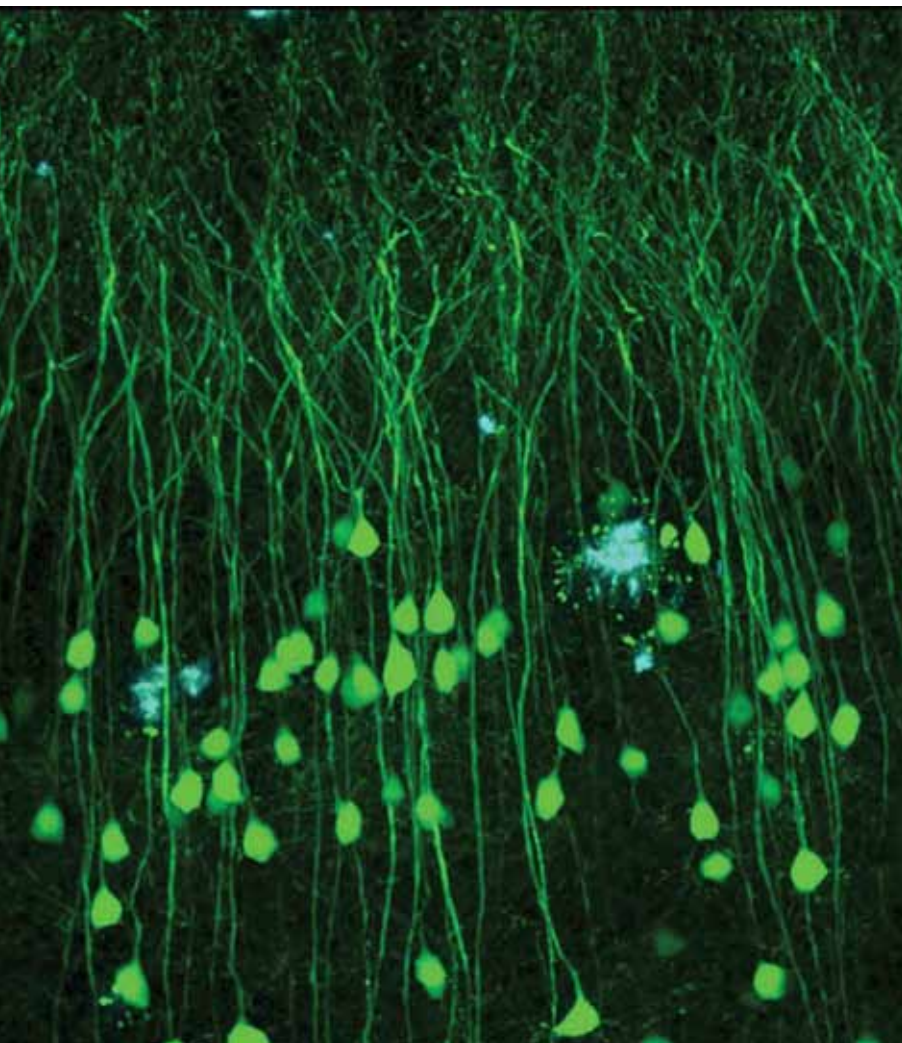


Alzheimer's  
Australia  
Research

# A N N U A L R E P O R T



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# Alzheimer's Australia Research Limited

ABN 79 081 407 534

## Annual Report 2009/2010

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[www.alzheimers.org.au](http://www.alzheimers.org.au)

## Acknowledgment of support

Alzheimer's Australia Research (AAR) would like to thank the many individuals and organisations that support our annual Dementia Research Grants Program through donations, gifts and bequests to AAR and the Hazel Hawke Alzheimer's Research and Care Fund. Donations to the Hazel Hawke Alzheimer's Research and Care Fund are used to fund the Hazel Hawke Research Grant in Dementia Care, which is administered by AAR.

In particular, we would like to extend special thanks to the following entities:

Alzheimer's Australia New South Wales  
 Alzheimer's Australia South Australia  
 Alzheimer's Australia Victoria  
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 Remember the Milk Pty Ltd  
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 The Rosemary Foundation for Memory Support Inc  
 The Sylvia & Charles Viertel Charitable Foundation  
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 Mr Norman Parry  
 Ms Diane Price  
 Ms Thelma M Ryan  
 Mr Ronald Tillman  
 Mr Hans Torv  
 Mr W and Mrs J Tshe  
 The Estate of the Late Doris May Barlow  
 The Estate of the Late Pamela Joy Sell

We owe a great debt to Hazel Hawke and the commitment she has made to dementia research through the establishment of the Hazel Hawke Alzheimer's Research and Care Fund.

We are also grateful for the awareness activities of Sue Pieters-Hawke and her continuing support in advocating for people with dementia, their families and carers. Thank you also to Forget-Me-Not: Andrea Britz, Sophie Pieters-Hawke, Tess Paul and Annabelle Boyd Jones.

Thank you also to Mr Richard Buxton for donating proceeds from his book *If Matthew Flinders Had Wings* to fund dementia research.

We would like to thank Peter Collett for his continued support.

Alzheimer's Australia Research would like to extend their thanks to Neville and Denise Odell for continuing to donate all the profits from the sales of their publications *Bowl 'em Over* and *A Tad More Grass* to research.

Alzheimer's Australia Research would also like to thank Mr Tom Valenta for donating proceeds from his book *Remember Me, Mrs V?* to research.

Front and back cover photographs provided by Professor Adrian West and Dr Jerome Staal.

All other photographs supplied by the researchers.

Finally, Alzheimer's Australia Research would like to thank Dinusha Fernando for supporting the Board and the Panel during 2009–10.

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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?

Dementia research is crucial if we are to:

- reduce the number of people affected by dementia; and
- ensure that people with the condition have a better quality of life.

Most of our current knowledge of dementia has been discovered by researchers in the last 25 years. The next 25 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. Latest figures predict that there will be around a million people with dementia by 2050. Australia has the potential and expertise to be a world leader in dementia research, but this cannot happen at the current level of investment. Greater investment in 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.

### Mission statement

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

### Research grants

AAR actively encourages dementia-related research in Australia by providing annual grants in many areas of dementia research, including biomedical research and dementia care. Some AAR grants are allocated to specific research areas according to donor's 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 undertake dementia research. AAR provides new investigator grants, postgraduate research scholarships, postdoctoral fellowships 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 Jack & Ethel Goldin Foundation, Sylvia and Charles Viertel Charitable Foundation, and the Dementia Collaborative Research Centres (DCRCs) which are part of the Dementia Initiative – Making Dementia a National Health Priority of the Australian Government. In particular, AAR and the DCRC–Carers and Consumers will be offering a second round of joint research scholarships.

### Distributing research information

AAR and Alzheimer's Australia work to increase the information available to consumers in order to further awareness of the importance of research and the quality of Australian dementia research, through initiatives such as the fortnightly Dementia News electronic newsletter that is funded by the DCRCs and the research section of the Alzheimer's Australia website. Providing the public with a reliable source of information about dementia research is a central role of AAR.

### Promoting Australian dementia research

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

# Alzheimer's Australia Research Board of Directors

## Professor Henry Brodaty, *Chairman*

Professor Henry Brodaty is Professor of Ageing and Mental Health and Director of the Primary Dementia Collaborative Research Centre at the University of New South Wales. He is also Director, Aged Care Psychiatry and Head of the Memory Disorders Clinic, Prince of Wales Hospital. He has served on several New South Wales and Commonwealth committees related to ageing and dementia. Currently, he leads the NSW Dementia Policy Team which has prepared the NSW Dementia Services Plan 2011–2015 and is a member of the Commonwealth Minister for Ageing's Dementia Advisory Group. He is past chairman of Alzheimer's Disease International (ADI), representing over 70 national Alzheimer Associations and is past president of Alzheimer's Australia and Alzheimer's Australia (NSW). Professor Brodaty has authored over 300 papers in academic journals and several books and book chapters.

## Dr Alan McCutcheon, *Vice Chairman* (until November 2009)

Dr McCutcheon worked as a staff specialist in geriatric medicine at Fremantle Hospital and at Armadale Hospital in WA for 29 years before retiring in late 2009. In 1992, Dr McCutcheon was appointed as an inaugural member of the former Guardianship and Administration Board of WA, whose functions were subsumed by the State Administrative Tribunal in 2005, and he was rostered regularly for tribunal hearings in Perth to consider applications

made regarding management of the personal and financial affairs of people with cognitive impairment. Dr McCutcheon was the Honorary Medical Director of Alzheimer's Australia (WA), a position he had held since 1988, and he was made a Life Member of the organisation in 1997.

## Gordon Robinson, *Treasurer*

Gordon has a business background with over 30 years in the consumer goods industry, including Australian and overseas CEO positions in South America and Europe. Gordon has been associated with Alzheimer's Australia for the past 15 years as past Victorian President and National Vice President.

## Glenn Rees, *Company Secretary*

Glenn has worked at senior levels in the British and Australian Public Services. In Britain he worked as Private Secretary to senior Ministers in the Cabinet Office and in Economic Departments. In Australia since 1976, he has worked in program and policy areas including Prime Minister and Cabinet, Employment and Training, Aged Care, Disabilities, Housing and the Aboriginal and Torres Strait Islander Commission. He was Chair of the Nursing Homes and Hostels Review in 1986 and was involved in implementing the first wave of aged care reforms. Glenn has been Chief Executive Officer of Alzheimer's Australia since 2000, during which time dementia has been made a National Health Priority.

## Professor John McKellar AM ED, *Vice Chairman* (from November 2009)

Professor McKellar is currently the President of Alzheimer's Australia SA and is also a Director and Secretary of the Rosemary Foundation. Professor McKellar was awarded Member of the Order of Australia in the Queen's Birthday Honours list in 2008 for "Service to people with dementia, particularly Alzheimer's, and their carers through organisations that provide education, support services and funding for research".

## Kaye Pritchard

Kaye's husband David was diagnosed with frontotemporal dementia in 1998. Kaye is a past President of the Board of Alzheimer's Australia ACT and a current Board Member. Kaye has also represented Alzheimer's ACT on the National Board of Alzheimer's Australia from 2001 to 2006. In October 2006, Kaye attended the Alzheimer's Disease International conference in Berlin and co-presented a paper on carer support. Kaye is currently the consumer representative on the Coordinating Committee of the Dementia Collaborative Research Centres and is also a member of the Ministerial Dementia Advisory Committee. As a member of the Board of Alzheimer's Australia Research, Kaye has a keen interest in helping others to understand what it is like living with dementia.

## David Scarlett

David is a lawyer and brings to the Board a valuable legal background. He serves on the Research Ethics Committee of the Royal North Shore Hospital overseeing the ethical aspects of medical research. The insights he gains from this voluntary work equip him to contribute on other aspects of the work of the organisation. David was a member of the Alzheimer's Australia NSW (AANSW) Board of Directors from 1998 and held the position of Vice President (2000–2002), President (2002–2004), immediate past President (2004–2005) and Director in 2006. David continues to represent AANSW on the Alzheimer's Australia Research Board.

## Dr Robert Yeoh

Dr Yeoh is a General Practitioner with a special interest in dementia. He has been a member of the Board of Directors of Alzheimer's Australia NSW since 1994, holding positions as Vice President (1996–1998), President (1998–2000) and immediate past President (2001). Robert also held the position as National President of Alzheimer's Australia from 2000 to 2005. Dr Yeoh is a professional member of the Guardianship Tribunal and has been the NSW Delegate to Alzheimer's Australia 1995–2000 and Honorary Secretary of Alzheimer's Australia 1997–2000.

#### Associate Professor Marc Budge

Associate Professor Budge is the Head of the Geriatric Medicine Unit, ANU Medical School, Director of Geriatric Medicine, Aged Care and Rehabilitation Services, ACT Health, President of Alzheimer's Australia and Director of the Dementia Collaborative Research Centre number 2 (Prevention, Early Intervention and Risk Reduction). He was formerly a clinician and MRC-funded Senior Research Fellow in the multi-disciplinary Oxford Project "To Investigate Memory and Ageing" (OPTIMA) at the Radcliffe Infirmary (1996–2003, Oxford, UK). His role as collaborating investigator to the NIH-funded Maine-Syracuse (USA) longitudinal study of cognition and ageing continues.

#### Andrew Watt (from June 2010)

Andrew Watt's father was diagnosed with younger onset Alzheimer's disease in 2002. Since then he has worked closely with both Alzheimer's Australia WA and Vic to raise awareness within both the Western Australian and Victorian communities. In 2007, Andrew was the opening speaker at the Alzheimer's National Conference in Perth where he shared his personal journey with Alzheimer's disease. In 2009, Andrew was a steering committee member for the National Consumer Summit on Younger Onset Dementia. Andrew is currently undertaking a PhD within the University of Melbourne at the Bio21 Molecular Science and Biotechnology Institute where he is investigating blood-borne biomarkers of Alzheimer's disease.

## 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.

#### Professor Henry Brodaty

Professor of Psycho-geriatrics  
University of New South Wales

#### Professor Kaarin Anstey

Director, Ageing Research Unit  
Centre for Mental Health Research  
Australian National University

#### Professor Lynn Chenoweth

Professor of Aged and Extended Care Nursing  
University of Technology, Sydney  
Director, Health and Ageing Research Unit  
South Eastern Sydney-Illawarra Area Health Service, NSW

#### Dr Peter Dodd

Associate Professor  
School of Chemistry and Molecular Biosciences  
University of Queensland

#### Professor Leon Flicker

Professor of Geriatric Medicine  
Director, Western Australian Centre for Health and Ageing  
University of Western Australia

#### Professor Colin Masters

Laureate Professor, Department of Pathology  
School of Medicine  
University of Melbourne

#### Professor Rhonda Nay

Professor of Interdisciplinary Aged Care  
La Trobe University

#### Professor James Vickers

Chair of Pathology  
Head, School of Medicine  
University of Tasmania



## Chairman's Report



One of the pleasures of seeing Alzheimer's Australia Research grow over the years has been the contribution made by clinicians and researchers through the AAR Scientific and Medical Research Panel. I have been involved with the panel or its equivalent since 1985.

The excellence of research necessitates that many contribute not only to developing proposals but also to assessing them. It is through the panel that AAR has sustained a high level of excellence in the grant applications that have been approved. And of course this involves not only the panel members but also many assessors across Australia. It is a time consuming and often difficult process as the panel wrestles with numbers of applications that far exceed the resources available.

The composition of the panel has remained virtually unchanged over the past five years. This could not continue, given other demands on panel members. To start the renewal process, Professor Masters and I will be stepping down at the end of 2010.

I am delighted that our good colleague, Professor Kaarin Anstey, will be taking over the role of panel Chair. Although I am leaving the panel I will remain as Chair of the AAR Board and continue the rewarding partnership I have with AAR.

It has been very satisfying for me to watch AAR grow over the years in both funding capacity and scope. From funding a small number of research grants each year, to funding a wide range of awards encompassing new investigator grants, grants into dementia care, travel grants, post graduate scholarships and postdoctoral fellowships.

There have been important developments in dementia research in recent years, notably the three Dementia Collaborative Research Centres funded by the Australian Government through the Dementia Initiative—Making Dementia a National Health Priority. The dementia research grants administered through the National Health and Medical Research Council and funded through the National Dementia Initiative have also been a significant step forward.

Nonetheless, dementia research remains the Cinderella in medical research, and it is important that we secure both greater government and community support for dementia research.

I would like to thank all of the members of the Scientific and Medical Research Panel for their support and camaraderie over the years, Professor Kaarin Anstey, Professor James Vickers, Professor Leon Flicker, Professor Lynn Chenoweth, Associate Professor Peter Dodd, Professor Rhonda Nay and Professor Colin Masters. I would also like to pay tribute to Professor Phil Waite, Frank Schaper, Dennis Lim, Susanna Park and Anna Conn who were integral to AAR in previous years.

Finally, I should like to thank Glenn Rees for the continuing priority that Alzheimer's Australia gives in their advocacy to dementia research and to Dinusha Fernando for the excellent support she has given to the AAR Board and to the Panel during the year.

Professor Henry Brodaty  
Chairman

## Company Secretary's Report



Consumer involvement in research can lead to research with greater relevance and better outcomes, but can be difficult to establish. Despite the clear benefits, meaningful consumer involvement in health research in Australia is rare. In 2008, Alzheimer's Australia and the DCRCs agreed that a more systematic approach to consumer involvement in dementia research was needed. Over the past several years, we have explored models of consumer engagement in research, both in Australia and overseas, which could be adopted in respect to dementia research.

As a result of this work, and the commitment of the DCRCs to consumer engagement, Alzheimer's Australia, in partnership with the DCRCs, has recently established the Consumer Dementia Research Network (CDRN). This national network is the first of its kind in Australia, and will support individuals with dementia and their family carers and friends in having an active role in research and contributing to better care practice and outcomes.

The consumer network had their first face-to-face meeting in September at the Quality Dementia Care Summit in Sydney. At this meeting, the twenty-four members of the CDRN discussed areas of dementia care in which there is a gap between the research evidence and what is done in terms of services. They prioritised six key areas in dementia care which need to be addressed:

- person-centred care;
- advance care planning;

- support for carers;
- timely diagnosis of dementia;
- non-pharmacological approaches to managing behavioural symptoms of dementia; and
- palliative approach to dementia care.

These areas will be used to call for knowledge translation projects that will be funded through the Alzheimer's Australia's Quality Dementia Care Initiative. Projects funded through the initiative will take the existing evidence in one of these areas and find innovative ways to ensure that the evidence is adopted into practice. The CDRN will play a key role in all stages of these projects.

The establishment of the network is the first step in a longer process of working towards greater consumer engagement in dementia research. Over the next year, the network will be involved with the knowledge translation projects, but will also work towards establishing their role with the DCRCs and the work of Alzheimer's Australia Research. I look forward to increased consumer involvement in the work of AAR and am confident that this involvement will have positive outcomes for researchers and consumers alike. I anticipate that 2010–2011 will be a year of great progress towards consumer engagement in dementia research.

Glenn Rees  
Company Secretary





# 2009–2010: A Year in Review

## Alzheimer's Australia Research 2009–2010

### Highlights

The year 2009–2010 has brought a number of highlights for AAR, including:

- Fundraising from the Buxton Group and associates totalling \$120,000.
- Half of funds raised for research by state and territory Alzheimer's Australia organisations to go to AAR.
- Two joint postgraduate scholarships offered in conjunction with the Dementia Collaborative Research Centre–Carers and Consumers (DCRC–CC).
- A new postgraduate scholarship with Resthaven Incorporated to be offered in 2011.

### Fundraising from the Buxton Group and associates

In early August 2009 the Managing Director of the Buxton Group, Richard Buxton, launched his new book titled *If Matthew Flinders had Wings*. The book details his adventures circumventing Australia by both yacht and plane. Richard generously pledged to donate the first \$500,000 in proceeds to Alzheimer's Australia for research into Alzheimer's disease.

In 2009–2010, the Buxton Group raised \$60,000 for research, matched by an overseas foundation, to give a total of \$120,000 raised so far. This funding is greatly appreciated and will help to fund a number of research awards in 2010–2011.

### New fundraising agreement among state and territory Alzheimer Australia organisations

In early 2010, the presidents from all eight state and territory Alzheimer's Australia organisations agreed that a minimum of 50% of what each state raises for research should go to AAR, with the remaining research funds available for local research projects. This has resulted in a significant increase in donations to AAR in the 2009–2010 financial year.

### Joint scholarships with the Dementia Collaborative Research Centre–Carers and Consumers

In 2010, AAR, in conjunction with the Dementia Collaborative Research Centre–Carers and Consumers (DCRC–CC), offered two *2010 AAR/DCRC–CC Joint Postgraduate Research Scholarships for Research Focused on Quality in Dementia Care* worth \$30,000 per annum for up to 3 years. Applications closed in May 2010 and successful applicants will be determined in late 2010.

The DCRC–CC has six collaborating partners: Alzheimer's Australia; Curtin University; Griffith University; HammondCare; La Trobe University, and Queensland University of Technology—and it is based at the Queensland University of Technology in Brisbane. The DCRC–CC's primary research foci are the broad conceptual domains of Quality of Life (QoL) and Quality of Care (QoC). The DCRC–CC is one of three DCRCs funded under the Australian Government's Dementia Initiative.

### New Resthaven Incorporated Postgraduate Research Scholarship—Quality in Dementia Care for 2011

In June 2010, AAR entered into a new partnership with Resthaven Incorporated, a public benevolent aged care community service of the Uniting Church based in South Australia. This partnership coincides with Resthaven's 75th anniversary and is part of a number of activities undertaken to celebrate this milestone.

*The Resthaven Inc. Postgraduate Research Scholarship—Quality in Dementia Care*, will support a doctoral student researching quality dementia care. The scholarship will be offered in 2011 and will be open to applicants from across Australia.

AAR is grateful to Resthaven, in particular Resthaven's CEO Mr Richard Hearn, for their generous contribution to the future of dementia care research.

# Hazel Hawke and the Hazel Hawke Alzheimer's Research and Care Fund

## Background

The Hazel Hawke Alzheimer's Research and Care Fund was established in 2004 at the expressed wish of Hazel Hawke, who chose to make public the fact that she is living with Alzheimer's disease in late 2003.

In 2004, Hazel's daughter Sue Pieters-Hawke co-authored a book with Hazel Flynn called *Hazel's Journey: A personal experience of Alzheimer's*. Money from each copy sold goes to the Hazel Hawke Alzheimer's Research and Care Fund.

## Hazel Hawke Research Grants in Dementia Care

An initial round of funding distributed \$172,500 to a number of care-related projects across Australia. For example, \$20,000 helped to develop further resources for carers in languages other than English.

Over the past five years the Hazel Hawke Research and Care Fund has also awarded \$156,804 of funding to nine Australian research projects (see Table 1 on the following page). Individual grants were valued between \$10,000 and \$20,000 each.

The Hazel Hawke Research Grants in Dementia Care are one of the most competitive awards offered through AAR, with up to 22 applicants for just one to three grants offered each year since 2005 (see Table 2 on the following page for details).

The popularity of the Hazel Hawke Research Grants in Dementia Care is likely to be due to the lack of research grants focusing on dementia care. One previous recipient has said:

*"This research award is particularly important to get projects initiated. Dementia care is a particularly important aspect which directly relates to the individual's quality of life. Unfortunately, this type of research is difficult to attract funding for from other sources."*

Table 1: Details of projects funded by the Hazel Hawke Alzheimer's Research and Care Fund

RESEARCH TEAM	YEAR	INSTITUTION AT TIME OF AWARD	PROJECT TITLE
Associate Professor Cherry Russell and Chris Shanley	2005	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
Dr Jennifer Torr, Associate Professor Christine Bigby and Dr Teresa Iacono	2006	Monash University	Alzheimer's disease and Down syndrome: Pathways of care
Dr Kate Webster and Dr Hylton Menz	2006	La Trobe University	Falls risk assessment in people with Alzheimer's disease
Dr Astrid Rogoz, Dr David Burke and Ms Pearl Price	2006	St Vincent's Hospital	Sydney Cognitive impairment in the elderly homeless
Dr Matthew Hopcraft and Professor Mike Morgan	2007	University of Melbourne	Evaluation of oral healthcare training for carers of nursing home residents with dementia
Professor Megan-Jane Johnstone and Dr Olga Kanitsaki	2007	RMIT University (later Deakin University)	The use and misuse of Alzheimer's disease in the euthanasia/ physician assisted suicide debate
Professor Elizabeth Beattie, Professor Lynne Daniels and Dr Elisabeth Isenring	2008	Queensland University of Technology	Nutritional challenges for family caregivers and persons with dementia
Dr Melissa Lindeman, Ms Kerry Taylor and Dr Pim Kuipers	2009	Centre for Remote Health, Flinders University	Evaluation of a dementia education resource for Indigenous communities
Dr Karen Sullivan, Professor Elizabeth Beattie, Dr Nigar Khawaja and Dr Gabriele Wilz	2009	Queensland University of Technology	Good idea! The dementia carers' healthy thinking project

Table 2: Success rates for applicants to the Hazel Hawke Research Grant in Dementia Care

YEAR	VALUE OF GRANT	NUMBER OF AWARDS AVAILABLE	NUMBER OF APPLICATIONS RECEIVED	SUCCESS RATE
2005	\$20000 (x1)	1	22	5%
2006	\$10,000 (x2) + \$20,000 (x1)	3	10	30%
2007	\$20000 (x2)	2	17	12%
2008	\$20000 (x1)	1	15	7%
2009	\$20000 (x2)	2	15	13%

## New Projects

### New Investigator Grants

*The AAR Dementia Research Grants were seeding grants for new researchers. Valued at up to \$20,000, they were given for research in a dementia-relevant area, including both biological and psychosocial research areas.*

#### 2009 AAR Dementia Research Grant



**Anna Devlin (Deakin University),**  
Dr Virginie Etienne (INRETS—Institute National de Recherche sur les Transports et leur Sécurité, France), Dr Judith Charlton (Monash University) & Dr Georgia Lowndes (Monash University)

***Assessing braking responses of older adult drivers with cognitive decline at urban intersections***

The proposed study will compare brake patterns of older drivers with cognitive decline to those without in order to assess the safety risk at intersection approaches. It is hypothesised that cognitively impaired older drivers will engage in brake response patterns of higher risk and display a greater number of right foot hesitations (between the accelerator and brake) compared to healthy older drivers. If a distinction between brake profiles is found, brake profiles could be used as one key trigger point for detecting cognitively impaired older drivers who may be at an increased safety risk while driving

and therefore require further driving and medical assessment. Findings have important implications for understanding the driving behaviour of older adults with cognitive decline.

*Image from the driving simulator.*



#### 2009 AAR Dementia Research Grant



**Dr Juliet Taylor (University of Melbourne, formerly of the Murdoch Children's Research Institute)**  
& Dr Paul Lockhart (Murdoch Children's Research Institute)

***Characterisation of the role of parkin in Alzheimer's disease***

Protein aggregation and the accumulation of misfolded proteins are hallmark features of many neurodegenerative disorders, including Alzheimer's disease (AD). This neuropathology has commonly been attributed to an impairment of the ubiquitin-proteasomal system (UPS). The protein parkin functions in the UPS to degrade short-lived and unwanted proteins, which are toxic to cells. Reduced parkin function is associated with neuronal cell loss in Parkinson's disease and recent evidence suggests the protein may also play a role in AD. This study has recently identified an interaction between parkin and RanBPM, a protein

implicated in AD pathology through its role in Amyloid Protein Precursor (APP) processing. Using cell and mouse models, current work is characterising the potential functional role of these two proteins in amyloid-beta accumulation and the aggregation of tau, the two pathologies of AD. The characterisation of proteins associated with AD will aid our understanding of the disease and therefore allow the design of new/novel therapeutic strategies for its treatment.

#### 2009 AAR Dementia Research Grant



**Dr Rachel Carling-Jenkins (Monash University),**  
Associate Professor Teresa Iacono (Monash University), Dr Jennifer Torr (Monash University) & Professor Chris Bigby (La Trobe University)

***Alzheimer's disease in people with Down syndrome: Developing a model of care***

With advances in medical sciences, the life expectancy of people with Down syndrome has doubled since the 1980s. As a result, we are currently seeing the first generation of people with Down syndrome who are living into older age. About half of this population will develop Alzheimer's disease in middle age.

This project will provide carers with a Model of Care, which will outline the key elements of support required by people with Down syndrome and Alzheimer's disease, and which will facilitate the development, as a result of collaborative consultation, of a management plan individualised to a person's specific situation and needs. This will increase carer confidence in family, disability and aged

care environments, and will contribute to an enhanced understanding of and quality of life for people with Down syndrome and Alzheimer's disease.



*Above: One of the participants in the study (permission to use granted by next of kin).*

#### 2009 AAR Dementia Research Grant



**Ms Jacki Wesson (Prince of Wales Hospital),** Associate Professor Lindy Clemson (University of Sydney), Associate Professor Jacqueline Close (Neuroscience

Research Australia, previously the Prince of Wales Medical Research Institute) & Professor Henry Brodaty (Prince of Wales Hospital and University of New South Wales)

***Preventing falls in older people with dementia—A pilot randomised controlled clinical trial of a tailored prevention program***

Falls can cause serious injury and be costly to the individual and healthcare system. People with dementia are more likely to fall. There is



good evidence that we can prevent falls in people who do not have dementia. The same evidence does not exist for people with dementia.

This pilot project is testing a new approach to falls prevention for people with dementia, by adapting the delivery of proven falls prevention strategies to match the preserved cognitive abilities of participants. A tailored allied health program is delivered over 12 weeks, and falls are monitored for 12 months.

Recruitment started in June 2010 and is progressing well. Currently fourteen people have enrolled, with five receiving the program and four still to be allocated to a group. Assessment protocols have been refined and a manual has been written to train future staff. Participants report to be enjoying the program, with adherence to both the exercises and home safety recommendations being high. Individual tailoring of the program has been critical in all cases.

If successful, this pilot will be used to undertake larger studies in this population.

## Hazel Hawke Research Grants in Dementia Care

*The aim of these grants 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 non-pharmaceutical therapies for people with dementia, or any other aspect of dementia care research.*

### 2009 Hazel Hawke Research Grant in Dementia Care



**Dr Melissa Lindeman  
(Centre for Remote Health, Flinders University),**

Ms Kerry Taylor (Centre for Remote Health, Flinders University)  
& Dr Pim Kuipers

(Centre for Remote Health, Flinders University)

#### ***Evaluation of a dementia education resource for Indigenous communities***

Educating families and individuals about dementia is challenging, irrespective of their social context. Indigenous Australian communities experience additional barriers to becoming well informed due to the added complexities of cross-cultural influences. Health related resources and education programs need to ensure that they are not only culturally appropriate, but are also locally appropriate in order to be accessible and acceptable to their intended audience. This project will evaluate a multi-media communication resource developed by Alzheimer's Australia NT specifically for use in Indigenous communities in the Northern

Territory. The resource—Looking out for Dementia—included a short DVD in English, with versions in three Indigenous languages. The evaluation method has involved visits to selected communities after the resource has been implemented to conduct interviews and focus groups with workers, carers and family members. The evaluation will provide important information that will inform the approaches taken to communicating with Indigenous community members about dementia.

### 2009 Hazel Hawke Research Grant in Dementia Care



**Dr Karen Sullivan  
(Queensland University of Technology),**

Professor Elizabeth Beattie (Queensland University of Technology),  
Dr Nigar Khawaja (Queensland University of

Technology) & Dr Gabriele Wilz (Technical University of Berlin, Germany)

#### ***Good idea! The dementia carers' healthy thinking project***

This project, led by an international research team, is working towards developing an awareness of the impact that negative thoughts can have on dementia caregivers. We all experience negative thoughts from time to time, but sometimes these thoughts can become overwhelming. If this occurs, help may be needed to restore 'healthy' thinking. Left unchecked, negative thoughts can develop into depression. This project team is developing a method of assessing 'negative' thoughts. Through an examination of the literature, and by analysis of focus group data,

they have identified the main themes around which negative thoughts might emerge for dementia carers. This information was used to develop the content of their tool. They are now seeking expert input into the method they have developed to refine their measure. This input is being sought from dementia carers and dementia researchers. The final tool should be ready for a full trial (by postal survey) before Christmas, 2010.



## Travel Grants

*AAR provides travel grants to assist new researchers to develop scientific presentation skills, learn about cutting-edge advances in international dementia research, showcase emerging Australian research, and build connections with the international scientific community. Travel project grants are valued at up to \$10,000, while travel stipend grants are valued at up to \$5,000. The 2009 Rosemary Foundation Travel Grant was valued at up to \$15,000.*

### 2009 Rosemary Foundation Travel Grant



**Cathleen Taylor (War Memorial Hospital)**

*Improving communication in dementia: Identifying resources for Australian carer and patient programmes*

In some types of dementia, the ability to communicate is lost first. In others, communication breakdown accompanies other cognitive changes. This affects all parts of life: relationships, jobs, leisure and everyday activities. Increasing breakdown in communication causes great distress, increases carer burden and decreases quality of life for the person with dementia and their carers. People can be helped with treatments and education. Families who understand their loved ones' communication problems are better able to maintain communication, and have a better quality of life. Excellent programs exist in the US. By visiting these programs and learning from experts, Cathleen Taylor will

be able to develop services in Australia so that individuals with communication breakdown due to dementia will be able to access appropriate help for improving their communication. Specifically, throughout October 2010, she will be attending the 7th International Frontotemporal Dementias Conference, visiting the Cognitive Neurology and Alzheimer's Disease Center (CNADC) at Northwestern University in Chicago, the Massachusetts General Hospital in Boston and The Memory and Aging Center at University of California, San Francisco.

## Postdoctoral Fellowships

*In 2009, three AAR Postdoctoral Fellowships in Dementia were offered to support PhD graduates undertaking research in an area related to dementia. In 2009 these fellowships were each valued at \$45,000 per annum for two years and was cost shared with the applicant's institution.*

### 2009 AAR Postdoctoral Fellowship in Dementia



**Dr Tong Chen (Flinders University)**

*Investigation of the abnormal expression of dipeptidyl peptidase 10 (DP10) in Alzheimer's disease*

Dipeptidyl peptidase 10 (DP10) is one of the major components of potassium channels that control brain functions. Dr Tong Chen and her colleagues have recently discovered that this protein has a markedly different expression pattern in an Alzheimer's disease (AD) brain compared to normal human brain tissue. Of key importance is the detection of significant levels of this protein in the tangles and plaques—the two major types of brain cell damage in AD. This project aims to further explore the link between abnormal distribution of DP10 and AD. The first part of this project aims to establish the expression pattern of full length and truncated DP10 proteins in both normal and AD brains. It is expected that truncated pieces of DP10 protein will be found at increased levels in the tangles and plaques

of an AD brain, which will implicate that the processed DP10 is directly involved in the formation of these damaged brain features. The second part of this work is to investigate the levels of DP10 in body fluids, such as blood and cerebrospinal fluid, in both people with and without AD, to further determine whether DP10 has the potential to be used as a novel molecular biomarker for AD.

### 2009 AAR Postdoctoral Fellowship in Dementia



**Dr Jerome Staal (University of Tasmania)**

*Investigating the critical early brain changes of Alzheimer's disease*

Alzheimer's disease (AD) is the major cause of dementia in aged individuals, affecting approximately 11% of the population over 65 years and up to 50% of individuals over 85 years. The interval between initial diagnosis and death can vary considerably, usually 3–15 years, and with this decline comes an increasing dependence on primary carers and the healthcare system.

Recent advances have improved our understanding of extracellular amyloid-beta (A $\beta$ ) deposits, which are a major clinical feature of AD. A major question remains as to the relationship between this pathological change and the process by which specific subgroups of neurons slowly degenerate, leading to the gradual and progressive emergence of the clinical features of AD-related dementia. In this respect, A $\beta$  plaque formation appears to be an early pathological brain change.

In this proposal, Dr Jerome Staal and colleagues seek to use advanced cellular imaging technology to determine in real-time if plaque formation leads to disruption of axonal transport (figure). Finally, they will determine if a targeted therapeutic strategy can ameliorate the transport deficits in axons and/or inhibit the abnormal regenerative response of neurons to plaque-associated axonal injury.

This proposal will provide key information regarding the relationship between the major pathological changes of AD, identifying the cellular mechanisms that are crucial to this process, and providing new avenues for therapeutic agents targeted at the earliest stage of AD. An early intervention would hold the greatest promise for delaying morbidity and prolonging quality of life for AD sufferers and their primary carers.



*The early signs of small Aβ deposits (in blue) in living mouse brain tissue illustrate neuronal (in green) damage, particularly at the edges of the plaques (see front cover for full colour). Picture taken using advanced multi-photon laser microscopy, which allows better resolution of cells deep in the brain.*

## 2009 AAR Postdoctoral Fellowship in Dementia



**Dr Renate Zilkens  
(Curtin University)**

***Medication and hospital use in Western Australians with Alzheimer's disease***

The original proposal, which relied on data from the Commonwealth Pharmaceutical Benefits Scheme, was designed to study medication use in persons with Alzheimer's disease. A delay in the release of Commonwealth data has led to changes in the study. Western Australians with dementia will now be identified through WA State health records including hospital (inpatient, emergency and outpatient mental health) and death records. Each of the estimated 30,000 Western Australians with dementia documented between 2000 and 2009 is currently being age- and sex-matched to a person without dementia from the electoral roll. No personal identifying data will be released to researchers.

By linking the aforementioned historical health records of persons with and without dementia, it will be determined whether a history of depression is associated with an increased risk of developing dementia. The matched controls will be used as a comparison group. The study will also describe the mental health conditions in those persons requiring hospitalisation and outpatient management.

The reasons for emergency department admissions and outcomes of those with dementia will be compared to those in the control group. The project will provide critical information for strategic sustainable health care planning and assist in the development of dementia-specific healthcare policies.

## Ongoing Projects

### New Investigator Grants

*The AAR Dementia Research Grants were seeding grants for new researchers. Valued at up to \$20,000, they were given for research in a dementia-relevant area, including both biological and psychosocial research areas.*

#### 2008 AAR Dementia Research Grant



**Dr Lenka Munoz  
(University of Sydney),**

Dr Alaina Ammit (University of Sydney) & Dr Gilles Guillemain (St Vincent's Hospital and University of New South Wales)

***Integrating chemistry and biology in the search for new therapeutics for Alzheimer's disease***

Alzheimer's disease (AD) is characterised by a loss of synaptic plasticity and neuronal death, which manifest as loss of memory and cognitive function. Research has shown that unregulated, excessive activity of a protein called p38 MAPK is involved in these processes and thus significantly contributes to the manifestation of Alzheimer's disease. Dr Lenka Munoz and her colleagues' drug discovery research aims to identify and develop compounds that, via inhibition of the p38 MAPK, will slow down the progress of AD.

A crucial step in every drug discovery process is an efficient assay that allows screening and testing compounds for their ability to modify the target. In their platform, the researchers

require an assay that will measure the strength by which a chemical compound (potential drug) binds to the p38 MAPK. The AAR Dementia Research Grant allowed them to develop such an assay. The research team have developed and validated a unique biomedical assay based in fluorescence polarisation that identifies compounds able to bind to the p38 MAPK protein and prevent its activation. They are currently the only laboratory worldwide with access to this assay. With this assay they have established a novel drug discovery platform that guides them in their ongoing research to identify and develop new drugs against AD.

#### 2008 AAR Dementia Research Grant



**Dr Alex Sykes  
(University of Queensland)**

& Dr Elizabeth Coulson (University of Queensland)

***The detection and inhibition of p75 neurotrophin receptor-mediated neurodegeneration***

Neurodegenerative diseases such as Alzheimer's disease are underpinned by the loss of nerve cells. One molecule known to cause the death of these nerve cells is p75<sup>NTR</sup>. However, no tools currently exist which can specifically detect the form of p75<sup>NTR</sup> that mediates cell death.

Drs Sykes and Coulson are aiming to develop a chemical reagent (antibody) that can do this, as well as find a way to prevent cell death in an Alzheimer's disease model. They have generated more than 15 antibodies that should be specific for either detecting or blocking



generation of the form of p75<sup>NTR</sup> that mediates cell death. They are currently screening to see which are the most effective for their purposes. This will allow for better understanding of the circumstances in which the p75<sup>NTR</sup> causes cell death, a crucial step in designing drugs that can treat neurodegenerative conditions involving p75<sup>NTR</sup>, including Alzheimer's disease.

#### 2008 AAR Dementia Research Grant



**Jay Hill (Neuroscience Research Australia, previously Prince of Wales Medical Research Institute),** Professor Tony Broe (Neuroscience Research Australia), Dr Jeffrey Rowland (Prince Charles Hospital)

& Associate Professor Lisa Jackson-Pulver (Neuroscience Research Australia)

***A pilot test of a modified RUDAS in an urban aboriginal population***

Cognitive screening tools help identify if a person has a memory problem or has dementia. The majority of these screening tools have been developed for non-indigenous people. Few cognitive assessment tools have been tested or adapted for use with Australian Indigenous populations. Recent research has seen the development of the Kimberly Indigenous Cognitive Assessment (KICA) tool, which was designed specifically for use in remote Aboriginal communities. However, most Aboriginal and Torres Strait Islander people live in urban areas, and there are no specific cognitive assessments for them. Previous research has not examined if established cognitive screening tools fit the needs of urban Indigenous populations.

Jay Hill and his colleagues aim to fill this gap by testing an existing cognitive screening tool called the Rowland Universal Dementia Assessment Scale (RUDAS) in urban Aboriginal communities. The RUDAS has been trialled in a pilot study involving 30 participants from La Perouse community in Sydney, and with the Durri community in Kempsey. All pilot interviews have been completed, including contact person and medical interviews, which were considered to be the 'gold standard' dementia diagnosis. Participant and interviewer feedback has also been collected.

Final clinical diagnoses of cognitive impairment or dementia have been finalised using diagnostic criteria and results from the medical interviews. Preliminary pilot results were presented at the Australian Association of Gerontology 2009 annual conference in Canberra and at Neuroscience Research Australia (NeuRA) earlier this year. Currently, the final analyses are being conducted and results will be reported back to Alzheimer's Australia by the end of 2010.



Professor Tony Broe (right) with Colleen Cawood, the local La Perouse guidance group leader for this project, who has been of great assistance to the researchers on the Koori Growing Old Well Study. Photograph taken by Neuroscience Research Australia Communications Director, Anne Graham.

*The Ann Miller New Investigator Dementia Research Grant was made possible by a bequest. This was a seeding grant for new researchers, valued at up to \$20,000 and available specifically for Victorian researchers.*

#### 2007 Ann Miller New Investigator Dementia Research Grant



**Dr Shayne Bellingham (University of Melbourne)** & Associate Professor Andrew Hill (University of Melbourne)

***The role of exosomes in genetic signalling***

***mechanisms and the implications in Alzheimer's disease pathogenesis***

Dr Bellingham of the University of Melbourne was awarded the Ann Miller New Investigator Dementia Research Grant for 2007. He is investigating the role of exosomes (vesicles secreted by mammalian cells) in the development of Alzheimer's disease (AD). The exosomes of interest have been implicated in the production of toxic amyloid-beta, a protein associated with AD. By communicating with other cells, exosomes may be able to transfer genetic information that instructs these cells to also produce toxic amyloid-beta.

Dr Bellingham's current and ongoing work has identified a small group of genetic signals that he hopes may be responsible for toxic amyloid-beta production in exosomes secreted by cells with Alzheimer's pathology. This is an exciting discovery as exosomes can be easily isolated from a simple blood test and screened for these genetic signals to assist in the early

diagnosis of AD and in the development of therapeutic targets and clinical interventions to prevent amyloid-beta formation. Hopefully, this will delay the progression of AD.

## Hazel Hawke Research Grants in Dementia Care

*The aim of these grants 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.*

### 2008 Hazel Hawke Research Grant in Dementia Care



**Professor Elizabeth Beattie (Queensland University of Technology)**, Professor Lynne Daniels (Queensland University of Technology) & Dr Elisabeth Isenring (Queensland University of Technology)

***Nutritional challenges for family caregivers and persons with dementia***

The research team is currently in the recruitment and data collection stage of this project. This relates to Aim 1 of the study, which is to identify challenges to maintaining sound nutritional status for the caregiver and the person with dementia. There have been problems with recruiting the desired number of participants for this study within the original time frame. The reasons for slow recruitment include the limited availability of persons with a reliable diagnosis of early stage dementia and the length of time required to negotiate access to potential subjects living in corporate environments.

The researchers have negotiated with other healthcare facilities and groups to assist with recruitment of potential participants. Additionally, they have obtained ethical clearance at these new sites. They now have access to nine healthcare facilities/agencies to assist with recruitment but have been unable to gain access to any more potential participants. The team has a total of 12 dyad data collections completed but are seeking an additional 18 to fulfil their original sample size.

## Postgraduate Scholarships

*AAR was able to offer the Hunter Postgraduate Research Scholarship into the Causes of Alzheimer's Disease in 2005, 2006, and 2007 due to a generous bequest from the estate of Mrs Wendie Hunter. The scholarship has supported three new researchers in completing their PhDs focusing on the causes of Alzheimer's disease.*

### 2006 Hunter Postgraduate Research Scholarship into the Causes of Alzheimer's disease



**Megan Steele (University of Western Sydney, formerly at James Cook University)**

***Investigation into the role of astrocytes in neuroprotection:***

***When and why do astrocytes stop protecting neurons?***

Over the last decade there has been growing interest in the neuro-supportive and protective functions of astrocytes, star-shaped cells of the brain whose major function was historically thought to be physical support. It is now known that a complex relationship exists between astrocytes and neurons, the cells that die in Alzheimer's disease. This relationship involves the exchange of numerous substances involved in energy metabolism, cell signalling and cell defence.

Megan Steele's research focuses on understanding how this relationship changes in response to inflammation, such as occurs in Alzheimer's disease. Although short-term inflammation can be advantageous, by increasing many of the neuro-supportive and neuro-protective functions of astrocytes, chronic inflammation appears to severely disturb this 'caregiver' role of astrocytes. Megan's results suggest that chronically inflamed astrocytes decrease their release of important energy and cell defence substrates and abandon their role of recycling neurotransmitters (required for cell signalling), as well as increase the release of an array of neuro-toxic substances. Prevention of these changes through the use of a multi-factorial astrocyte-targeted approach has been achieved, however, and if it can be proved that a similar 'change in astrocyte function' occurs in Alzheimer's disease, this astrocyte-targeted approach may be useful for treatment of the disease.

*In 2006 and 2007, AAR was pleased to offer the Joint AAR/CRC Postgraduate Research Scholarship in Social Research and Dementia in partnership with the Dementia Collaborative Research Centre—Consumers, Carers and Social Research (now known as the Dementia Collaborative Research Centre—Carers and Consumers, DCRC-CC), based at the Queensland University of Technology. DCRC-CC is one of three Dementia Collaborative Research Centres established by the Australian Government as part of its Dementia National Health Priority Initiative. In 2007, AAR also offered the AAR Entirely Postgraduate Scholarship in Social Research and Dementia.*



**2006 Joint AAR/CRC Postgraduate Research Scholarship in Social Research and Dementia**

**Patricia Shuter  
(Queensland University of Technology)**

***Predictors of complicated grief and health outcomes of family caregivers of people with dementia following bereavement***

The vital role of family caregivers of people with dementia is receiving increasing attention, and the need to support this group has been widely recognised. Some factors associated with the role are known to contribute to the risk of negative outcomes prior to and following bereavement. This PhD research project aims to determine the impact of anticipatory, disenfranchised grief and ambiguous loss on health-related quality of life, as dementia advances in their care recipient. It also aims to determine the impact on health-related quality of life, of complicated grief following the death of their relative with dementia, and to identify risk factors and predictors for these outcomes.

The research consists of a qualitative scoping study and a prospective cohort follow-up study. The scoping study involved semi-structured interviews with family caregivers (N=13) who were spouses (N=7) or adult children (N=6). The results of this scoping study were used to inform data collection for the prospective cohort follow-up study that is currently underway. This second study is underpinned by rolling recruitment and includes surveys administered prior to the death of the relative with severe dementia

(pre-bereavement baseline), six weeks post-bereavement, and six months post-bereavement.

Results of multivariate statistical analysis using SPSS indicate that role appraisal, anticipatory grief and some caregiver and care recipient characteristics correlate significantly with caregiver health outcomes, and that this varies according to whether the relationship is spousal or adult child. This paper reports on these preliminary pre-bereavement baseline results, which will be elucidated by results and quotations from the qualitative scoping study.

The findings indicate that anticipatory grief and role appraisal by family caregivers have a significant impact on their health outcomes. This highlights the need to acknowledge and understand the role and influence of this grief and prioritise this in developing targeted, effective interventions.

**2007 AAR Entirely Postgraduate Research Scholarship in Social Research and Dementia**



**Dr Fiona Millard  
(James Cook University)**

***Dementia: GP diagnosis and management of dementia and raising awareness of dementia risk factors***

Over the past three years, Dr Millard and colleagues at James Cook University, Townsville, have explored dementia literacy in general practice and applied interventions that may improve this. The project collected

data throughout Australia, especially regional Queensland, and a smaller sample in England, with similar outcomes in both countries. Results have been published in medical journals and presented at national and international conferences.

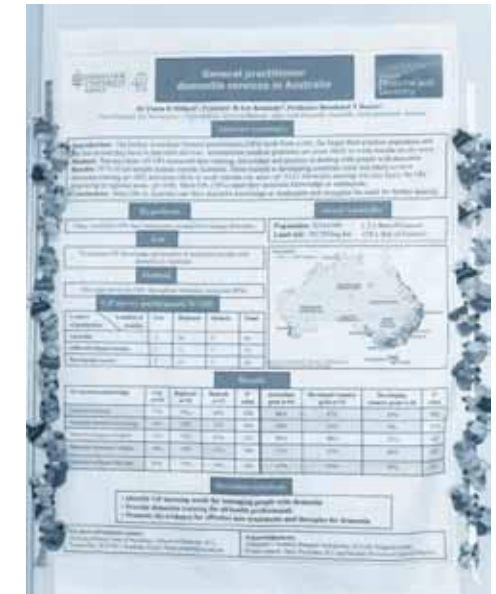
A patient questionnaire was distributed to 621 patients aged over 30 years attending their GP. Responses indicated 37% had memory concerns and 52% would like a memory test especially if they had memory concerns ( $p=0.005$ ). Only 6% of all responders and 16% of those aged greater than 70 years recalled having a memory test. A small proportion (15.5%) had heard about dementia from a doctor although 81% would seek help from a doctor if they thought they had dementia.

The Alzheimer's Australia **Mind Your Mind**® dementia risk reduction summary was randomly distributed to patients with the questionnaire. Those receiving the information were more likely to suggest strategies to reduce their own dementia risk ( $p=0.012$ ). A majority (78.4%) wanted to learn more about dementia risk reduction.

A GP/nurse questionnaire produced 153 responses with 63% suggesting a GP as the appropriate person to discuss dementia with patients. However, most GPs (78%) and nurses (85%) rated their dementia knowledge as inadequate regardless of whether they had received dementia training (63% GPs, 39% nurses).

The project enrolled 61 GPs in a trial, randomly assigning them to groups that continued normal practice or received interventions of dementia education and/or the results of an audit. The audit intervention consisted of a comparison of the documented and predicted dementia cases in practice patients greater than 65 years seen in the 6 months before the trial, using a

prevalence of 6%. These results are currently being analysed. A pilot trial with 18 GPs indicated audit rather than education improved dementia documentation.



Above: Dr Millard's poster at the 2010 Alzheimer's Disease International (ADI) conference in Greece. Dr Millard had 100 clip-on koalas to give away (see either side of poster) that made her poster the most popular to attend.

Below: Dr Millard in front of her poster at the 2010 ADI conference; Dr Millard standing among Greek ruins.



*The Sylvia and Charles Viertel Foundation pledged \$540,000 over three years to support doctoral and postdoctoral researchers conducting dementia-related research. In 2007, two Sylvia and Charles Viertel Postgraduate Research Scholarships were awarded to doctoral researchers and in 2008 four Viertel Foundation Postdoctoral Fellowships in Dementia were awarded to postdoctoral researchers. Below are details of the 2007 two successful applicants for the Sylvia and Charles Viertel Postgraduate Research Scholarships and their projects.*

#### **2007 Sylvia and Charles Viertel Post-graduate Research Scholarship in Dementia**



**Emile Werden (University of Melbourne)**

***Arbitrary associative learning as a candidate cognitive endophenotype for sporadic Alzheimer's disease***

In order to take full advantage of current drug treatments for late-onset Alzheimer's disease (AD), physicians need a way to identify potential sufferers of the condition at the earliest possible stage. One way to do this is to study the cognitive profiles of healthy, middle-aged people who are at risk of developing AD, including children of people with AD and people who have the apolipoprotein ε4 gene.

The aim of Emile Werden's research project is to examine whether problems with a specific memory function, called arbitrary associative memory (AAM), are present in these groups. Over the past year, Emile has completed two studies of AAM, in healthy 45 to 55-year-olds,

whose parents do not suffer from any dementia. The purpose of these studies was to ensure that all four measures of AAM (i.e. word-word; face-face; word-face; pattern-word) were equally difficult. He is currently recruiting children of people with AD for his third and final study.

If problems with AAM are found in children of people with AD, this type of new learning, along with other cognitive and behavioural measures, might be used to screen for dementia in the elderly.

#### **2007 Sylvia and Charles Viertel Post-graduate Research Scholarship in Dementia**



**Holly Yeatman (University of Melbourne and the Howard Florey Institute)**

***The use of small molecule IRAP inhibitors for treating dementia in Alzheimer's disease***

Alzheimer's disease (AD) is the most common cause of dementia, leading to memory loss and cognitive impairment. Brain cells are destroyed due to a build-up of toxic amyloid proteins and the breakdown of normal healing mechanisms. There is great need for development of therapies to reverse memory loss and brain damage in AD, as the current treatments are limited in efficacy.

The protein insulin regulated aminopeptidase (IRAP) was identified as a potential drug target due to its abnormal location in Alzheimer's disease brains. Previously, small compounds developed to block IRAP activity were shown to improve memory and learning in rodents

with brain damage. This study was developed to test whether blocking IRAP activity can reverse the memory deficits seen in aged Alzheimer's disease mice. Preliminary screening indicated that in animals with memory loss in spatial and visual tasks, the IRAP-blocking treatment could return memory back to normal. Treatment also reduced the number of amyloid protein deposits in a region of the brain required for memory. As IRAP was associated with the abnormal repair system in AD brains, blocking its activity might result in restoration of this vital process and therefore improvement in brain function.

*Through the kind generosity of the George Hicks Foundation, Alzheimer's Australia Victoria and Alzheimer's Australia Research were pleased to offer the George Hicks Postgraduate Scholarship for Dementia Prevention and Risk Reduction Research in 2007. The aim of the scholarship is to support a PhD student who is enrolled in a Victorian University and who is undertaking research in an area relevant to the prevention and/or risk reduction of Alzheimer's disease or dementia.*

#### **The George Hicks Postgraduate Scholarship for Dementia Prevention and Risk Reduction Research (for Victorian researchers)**



**Pavithra Amadoruge (University of Melbourne)**

***Metals and Memory: Metals and the NMDA receptor in Neuro-degenerative Diseases***

An apparent imbalance in copper and zinc metal levels is proposed to exist in the brains

of Alzheimer's disease (AD) sufferers. As a result, compounds capable of affecting metal availability in the brain have been designed in a hope of ameliorating this AD pathology.

Miss Pavithra Amadoruge, utilising these compounds in embryonic mouse cortical neurons, is investigating the effects that metals have on the function and expression of a brain protein known to control memory. She aims to determine whether restoration of the proposed metal imbalance in the brain is a possible therapeutic strategy in preventing the dementia associated with AD.

Miss Amadoruge has recently shown these novel compounds, capable of affecting copper and zinc levels within the brain, to decrease the toxic affects of a chemical found in excess in the AD brain. She has also shown these compounds to prevent amyloid-beta (a protein found in high levels in the AD brain) affects known to be associated with the brain protein under study.

She is currently investigating the potential role that metals may play in the neuronal pathways involved in these and other common pathophysiologies associated with AD and other neurodegenerative diseases.

Miss Amadoruge, a Biomedical Science graduate from the University of Melbourne, is under the supervision of Associate Professor Kevin Barnham, Dr Anthony White and Associate Professor Andrew Hill.



## Postdoctoral Fellowships

*The AAR Postdoctoral Fellowship in Dementia was offered to support a PhD graduate undertaking research in an area related to dementia. In 2008 this fellowship was valued at \$90,000 per annum for two years.*

### 2008 AAR Postdoctoral Fellowship in Dementia



**Dr Cassandra Szoeki (National Ageing Research Institute)**

**Factors affecting cognition in healthy ageing women**

Dementia is an increasing cause of disability, illness and death within our ageing community. Current therapies are inadequate and emerging therapies, even if successful, will be limited by both cost and side effect profiles. For this reason, preventative strategies are required now more than ever to reduce the burden of disease in our community. Epidemiological research examining population risk factors for dementia can uncover potential early intervention targets and is therefore the key to stalling this rising epidemic.

This study aims to examine potential strategies for the prevention of dementia by addressing midlife cardiovascular risk factors and the role of hormones in cognitive decline. Studying healthy ageing in earlier life is important to pick up factors which may be targets for prevention of later life disease.

Initial findings from this project examining lipid profile in the Melbourne Women's Midlife Health Project–Women's Health Ageing Project (MWMHP–WHAP) showed the importance of lipids influencing cognitive performance. The study has now been expanded to combine the two internationally recognised Australian studies: the WHAP and the Australian Imaging, Biomarker & Lifestyle Flagship Study of Ageing (AIBL). This combined study is now progressing to the final analysis stage, examining the cholesterol profiles, blood pressure and weight across both groups in order to look at the relationship of midlife cardiovascular risk to later life cognitive measures.

In addition to this research project Dr Szoeki and colleagues recently published an update of the advances in treatment for Alzheimer's disease in *Medicine Today*, a journal for general physicians.

*The Sylvia and Charles Viertel Foundation pledged \$540,000 over three years to support doctoral and postdoctoral researchers conducting dementia-related research. In 2007, two Sylvia and Charles Viertel Postgraduate Research Scholarships were awarded to doctoral researchers and in 2008, four Viertel Foundation Postdoctoral Fellowships in Dementia were awarded to postdoctoral researchers. Below are the details of the four successful applicants for the Sylvia and Charles Viertel Postdoctoral Fellowships in Dementia and their projects. Each fellowship was valued at \$45,000 per annum for two years and was cost shared with the applicant's institution.*

### 2008 Viertel Foundation Postdoctoral Fellowship in Dementia



**Dr Laura Vella (University of Melbourne)**

**Delineating the role of the GXXXG motif in Alzheimer's disease**

Alzheimer's disease (AD) is associated with the amyloid precursor protein (APP). The processing of APP plays a central role in the onset and progression of AD because when APP is processed a toxic fragment known as the amyloid-beta peptide (A $\beta$ ) can be formed. A number of these toxic fragments can accumulate in the brain, resulting in AD.

While much is known about the production of A $\beta$ , many questions remain concerning the site of APP processing within human cells, the potential role of APP motifs in the modulation of protein processing, and the normal cellular function of APP fragments.

To this end, Dr Laura Vella and Associate Professor Roberto Cappai aim to investigate the cellular pathways implicated in the cleavage of APP and the occurrence of novel APP processing products. This research will provide evidence of novel N-terminal APP fragments in the brain, with the aim of clarifying the normal physiological function of APP and its processing products and their role in Alzheimer's disease pathophysiology.

### 2008 Viertel Foundation Postdoctoral Fellowship in Dementia



**Dr Michelle Fodero-Tavoletti (University of Melbourne)**

**Characterisation of A $\beta$  oligomers, for the early detection of Alzheimer's disease**

Definitive diagnosis of Alzheimer's disease (AD) relies on examination of the deceased brain. In the living, we currently use mental testing for diagnosis, which is most reliable at mid to later stages of the disease; making the choice of therapeutics difficult and less effective. Recently, there has been much progress in brain imaging whereby AD pathology (known as amyloid-beta (A $\beta$ ) plaques) can be examined and monitored in the living. The imaging technique positron emission tomography (PET), while very effective at imaging A $\beta$  plaques, has indicated that the degree of A $\beta$  plaques does not correlate with mental decline. Recent findings indicate that the precursors of A $\beta$  plaques (A $\beta$  oligomers) appear earlier and correlate with mental decline, suggesting that their imaging would better monitor disease progression and therapeutic intervention.

While no imaging agent is currently available for A $\beta$  oligomer detection, Dr Fodero-Tavoletti has tested a well-characterised imaging agent (PiB) and its ability to recognise A $\beta$  oligomers that are bound to copper (copper-A $\beta$  oligomers), since metals are known to influence their formation. She has found that PiB recognises A $\beta$  oligomers differently to A $\beta$  fibrils/plaques and such observations imply that further chemical modifications to PiB could lead to PET imaging agents that specifically detect copper-A $\beta$  oligomers in the human brain.



## 2008 Viertel Foundation Postdoctoral Fellowship in Dementia



**Dr David Elliott**  
(Neuroscience Research Australia, previously the Prince of Wales Medical Research Institute)

*Characterisation and biological activity of apolipoprotein-E fragments in human brain*

Variation of the apolipoprotein-E (APOE) gene is the major genetic factor contributing to the risk of developing Alzheimer's disease (AD) late in life. However, the reason for this is currently unknown. Dr Elliott and his colleagues have discovered that a series of peptides are produced in the brain by the normal version of APOE, but not the high AD risk version. They have investigated these peptides in depth and established that a key feature common to all these peptides is the presence of a very important region involved in binding with receptors present on neurons in the brain. They are currently determining if these peptides are able to promote the survival of nerve cells in the brain. In addition, Dr Elliott has identified another major structural difference between the normal and high AD risk versions of APOE. The normal version is able to self-associate and form dimers (or 'doublets') in the human brain whereas the high AD risk version is unable to form this bond due directly to its altered genetic code. This knowledge will be vital, both for understanding the role of this genetic variant in AD, and for developing a treatment for this debilitating illness.

## 2008 Viertel Foundation Postdoctoral Fellowship in Dementia



**Dr Melinda Martin-Khan**  
(University of Queensland)

*An accreditation and quality framework for dementia care in acute hospitals*

How can consumers (i.e. carers of people with dementia) and older people in general be confident that a hospital is prepared to provide suitable care for people with dementia? This is a source of considerable anxiety for carers. Similarly, hospital funders and administrators need to know that hospitals are delivering appropriate care to all of their patient groups, including frail older people and people with cognitive impairment—who will, over time, become a greater proportion of the hospital clientele. Dr Martin-Khan is aiming to develop a system for measuring a hospital's 'readiness' to provide quality care for patients with dementia.

Data collection, including following 645 patients daily through their acute episode, is nearing completion. Dr. Martin-Khan spent time earlier in the year at Harvard Medical School in the US working on the statistical analysis with co-investigators. A second expert panel three-day meeting was held where a full list of potential quality indicators were reviewed and debated in relation to the current evidence of links between processes of care and outcomes for patients with dementia. A voting system, with extensive decision rules, has been established in preparation for the panel to vote on the final list of valid indicators.

The expert panel (The Research Collaboration for Quality Care of Older Persons: Dementia

Care Panel) includes people across a range of medical specialities and backgrounds, who have volunteered their time to ensuring that the framework is robust and has relevance to the acute care setting. Dr. Martin-Khan recognises the significant contribution of this group of experts and acknowledges the extent to which their involvement influences the success of the project.



Above: Dr. Martin-Khan spent time earlier this year in America with international collaborators for this project: A/Prof Rich Jones, from Harvard Medical School (pictured) and Prof. John Morris, Hebrew SeniorLife Centre.

Below: Harvard Medical School, US and Hebrew SeniorLife Centre, US.

Below: The Research Collaboration for Quality Care of Older Persons: Dementia Care Panel.

Back (L-R): Dr. David Lie (Princess Alexandra Hospital, Queensland Health); Dr. Eddy Strivens (Cairns Base Hospital, Queensland Health); Dr. Tony Snell (Royal Melbourne Hospital, Melbourne Health); A/Prof Caroline Brand (Melbourne Health; CREPS, Monash University).

Front (L-R): A/Prof Nancy Pachana (School of Psychology, The University of Queensland); Dr Catherine Yelland (Princess Alexandra Hospital, Queensland Health); Prof Len Gray (Centre for Research in Geriatric Medicine, The University of Queensland); A/Prof Paul Varghese (Princess Alexandra Hospital, Queensland Health).

Absent from Photo: Prof Elizabeth Beattie (School of Nursing and Midwifery, Queensland University of Technology); A/Prof Gerard Byrne (School of Medicine, The University of Queensland); Cathy Dancer (Alzheimer's Australia - QLD); Catherine Sherlock (Alzheimer's Australia - QLD); Dr Donna Maria Spooner (School of Psychology, The University of Queensland).





## Completed Projects

### New Investigator Grants

*The AAR Dementia Research Grants were seeding grants for new researchers. Valued at up to \$20,000, they were given for research in a dementia-relevant area, including both biological and psychosocial research areas.*

#### 2008 AAR Dementia Research Grant



**Claire Thompson**  
(University of New South Wales),

Dr Julie Henry (University of New South Wales),  
Dr Adrienne Withall (University of New South Wales) & Professor Henry Brodaty (University of New South Wales)

***A longitudinal study of prospective memory in Mild Cognitive Impairment and dementia***

Prospective memory is our memory for future plans and intentions, such as remembering to keep an appointment, take medication, or turn off appliances. This type of memory is crucial for maintaining healthy and safe independent living. Problems with this type of memory are commonly reported in ageing, and can be distressing. In this research, Ms Claire Thompson and her colleagues examined prospective memory in mild cognitive impairment (MCI) and dementia. Specifically, the researchers examined whether prospective memory problems progress over a one-year

period, by re-assessing people's prospective memory one year after an initial assessment. They also investigated whether assessments of prospective memory done in a clinic or laboratory reflect 'real-world' prospective memory performance. Prospective memory was found to be remarkably stable over a one-year period in people with MCI or early dementia (as well as in cognitively healthy controls). Interestingly, for those with MCI, prospective memory difficulties were found on the laboratory assessment but not in the real-world assessment, whereas those with dementia had significant difficulty with the real-world task at both time-points. This pattern was still present one year later. Longer time periods will be needed to chart the stability of prospective memory as dementia progresses over several years.

#### 2007 AAR Dementia Research Grant



**Dr Bridget Ryburn**  
(La Trobe University),

Dr Judy Tang (La Trobe University),  
Dr Colleen Doyle (La Trobe University)  
& Dr Yvonne Wells (La Trobe University)

***The impact of residential respite care on family carers and individuals with dementia***

Dr Ryburn, Dr Tang and colleagues investigated the impact of using residential respite on people with dementia and their carers. Of particular interest was the extent to which residential respite affects the mental state of people with dementia, especially their mood, behaviour and thinking skills.

The researchers undertook an extensive review of the literature and range of respite services available in the Australian context. They also interviewed carers and people with dementia before, during and after the person with dementia undertook residential respite care. The results suggested that there were no significant changes in mood, behaviour and thinking skills when the person with dementia uses residential respite. They also suggested that the carer does not experience any obvious decrease in carer stress following respite use.

During the research, concerns about how the person with dementia is assessed were noted. This prevented any firm conclusions from being reached. In the future, the researchers will try to improve the assessment approaches and tools. The

researchers also found that providing extra psychological support services to the carer during respite can help with stress.

#### 2007 AAR Dementia Research Grant



**Dr Yue Huang**  
(Neuroscience Research Australia, previously Prince of Wales Medical Research Institute),

Dr John Kwok

(Neuroscience Research Australia), Professor Glenda Halliday (Neuroscience Research Australia) & Professor Shengdi Chen (Shanghai Jiao Tong University, China)

***Characterising the phenotypes of a novel causative dementia gene***

This research team confirmed that mutations on the *SIGMAR1* gene can cause a rare form of dementia called frontotemporal dementia. They also confirmed that *SIGMAR1* protein was not involved in any pathological lesions found in neurodegenerative dementia syndromes. Although mutations in *SIGMAR1* gene cause dementia, patients carrying such mutations are rare. Most people have a normal variation in a gene called *APOE* that increases their risk for Alzheimer's disease (AD) and also influences how severe their dementia may be.

The research team assessed genetic variations in *APOE* as well as *SIGMAR1* in both Australian and Chinese patients with AD. They found that the *SIGMAR1* gene did not increase the risk for AD (unlike *APOE*) but did influence the severity of AD. This

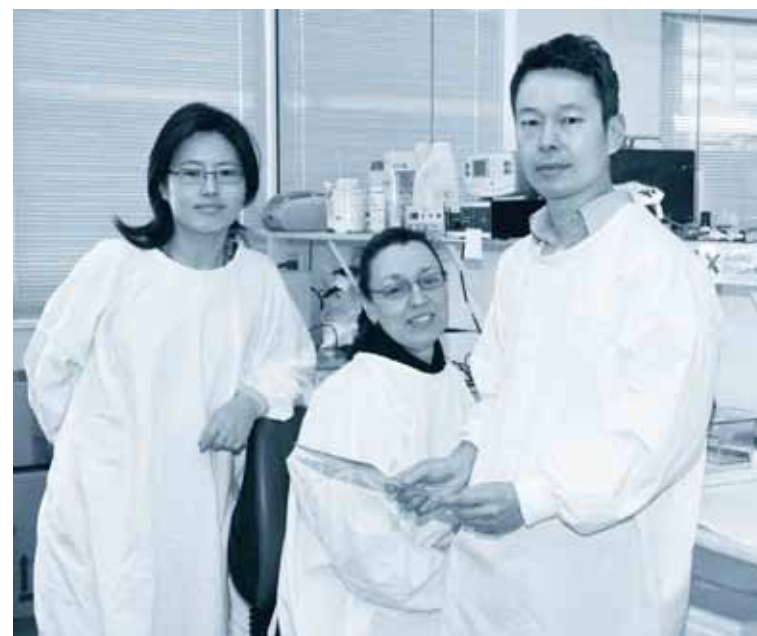
finding indicates that these genetic variations might give rise to different responses towards clinical management of AD.



Top: Dr Huang (right) is grateful to her PhD supervisor, Professor Bill Piu Chan, who first taught her how to perform the polymerase chain reaction technique.

Above: Dr Huang's best wishes for people with Alzheimer's disease: If youth is the spring, old age is the winter of life. If so, Alzheimer's disease is the ice in winter. However, with hope, love and support, it can blossom flowers. Photo taken at the annual Harbin International Ice and Snow Sculpture Festival in China, 2008.

Below: Dr Huang (left) would like to thank Dr. John Kwok (right) and Professor Shengdi Chen for their support to complete this project, and special thanks to Professor Glenda Halliday (middle) for her patience, supervision and support during the past years.



*The Janssen-Cilag Research Grant offered in partnership with research-based pharmaceutical company Janssen-Cilag, was a seeding grant for new researchers, valued at up to \$20,000.*

#### 2007 Janssen-Cilag Research Grant



**Dr John Gehman (University of Melbourne)**, Professor Frances Separovic (University of Melbourne) & Anil K. Mehta (Emory University, United States of America)

#### *Investigation of the cytotoxic structural determinants of A $\beta$ peptide in Alzheimer's disease*

The protein fragment A $\beta$  is one of the possible culprits responsible for the loss of nerve cell function in Alzheimer's disease. The molecular basis of any cause and effect between this molecule and the disease lies in the details of the protein fragment's structure and biological interactions, which interfere with natural processes within the brain. The significant structural polymorphism of A $\beta$  was widely known at the outset of this project, but the enigma has grown even more complex in recent years, with many more structural forms being identified under a variety of increasingly physiological conditions.

Dr John Gehman and his team are investigating the structure of A $\beta$  in the context of its interactions with lipid bilayers that mimic nerve cell membranes. This line of enquiry is supported by several studies, which show that very small A complexes

are cytotoxic, but differ from a number of research programs that implicate and concentrate on the highly aggregated forms. Their work thus far has employed advanced solid-state NMR techniques, and suggests that the membrane-associated forms of the peptide have more similarity to aggregated forms than those from previous endeavours to mimic the membrane environment. Yet there are some intriguing differences. Their current efforts are focused on obtaining a better understanding and control of sample conditions and peptide behaviour as they plan more complex and comprehensive structural studies, in order to better identify and understand the role of A $\beta$  in the pathology.



## Hazel Hawke Research Grants in Dementia Care

*The aim of these grants 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.*

### 2007 Hazel Hawke Research Grant in Dementia Care

#### Dr Matthew Hopcraft (University of Melbourne),

Professor Mike Morgan (University of Melbourne) & Dr Mihiri Narayan (University of Melbourne)

#### **Evaluation of oral healthcare training for carers of nursing homes residents with dementia**

Residents of nursing homes, particularly those with dementia, often have difficulty obtaining dental care and have poor oral health. Many are dependent on carers to clean their teeth and dentures. However, the staff in nursing homes are sometimes not well trained to do this task. The aim of this research project is to provide oral health education training to carers and nursing staff in aged care facilities, and to measure the impact on oral health.

In order to measure the changes in oral health of nursing home residents, approximately 500 dental examinations

were carried out from September 2008 to July 2009, and 12-month follow-up examinations were completed in July 2010. Almost 500 nursing staff also participated, completing questionnaires and attending training sessions held at the facilities. It is expected that improving the oral health knowledge of carers will result in significant benefits to residents.

### 2006 Hazel Hawke Research Grant in Dementia Care



#### Dr Jennifer Torr (Monash University),

Associate Professor Christine Bigby (La Trobe University) & Dr Teresa Iacono (Monash University)

#### **Alzheimer's disease and Down syndrome: Pathways of care**

The life expectancy of people with Down syndrome (DS) is approaching 60 years. Up to 75% of people with DS will develop dementia of Alzheimer type (DAT). This project, between Monash and Latrobe Universities, aimed to document the pathways of care of people with DS and DAT; changing care needs over twelve months; the demands on family and paid caregivers; and the reasons for transitions in care.

This project has explored the pathways to diagnosis and assessment of people with DS and DAT at the Centre for Developmental Disability Health Victoria (CDDHV), Monash University. It has also explored the changing care needs of this group of people from the perspective of their primary carers. Twelve people with DS and DAT, and their carers,

were recruited. The participants were at different stages of dementia, from very early stage to late stage. They lived in a range of settings, including family homes, group homes and aged care facilities.

This research found:

- Pathways to assessment were inconsistent, with many barriers evidenced, including lack of knowledge of family, carers and general practitioners of the risk of DAT in people with DS; and the refusal or inability of mainstream services to provide services.
- People with DS and DAT, particularly those living within family, have haphazard access to services, with both Disability and Aged Care services struggling to accommodate their needs.
- There is an evident need for clear policy to cogently address the needs of increasing numbers of people with DS and Alzheimer's disease.
- Many inconsistencies were exposed in transitions to care post-diagnosis, including an ad hoc style of management and crisis driven service provision.

This research provides a platform for future research into ageing in place and to the trialing of intervention strategies. Such strategies will target minimising confusion over the cause of behaviours of concern, provide staff with direction regarding positive reinforcement strategies to avoid the current ad hoc strategies being implemented, consider the appropriateness of placements prior to decisions on transitions being made and contribute to establishing best practice for care transitions.

### 2006 Hazel Hawke Research Grant in Dementia Care



#### Dr Astrid Rogoz (Brain and Mind Research Institute),

Dr David Burke (St Vincent's Hospital) & Ms Pearl Price (Brain and Mind Research Institute)

#### **Cognitive impairment in the elderly homeless**

The purpose of this study is to identify people who are elderly and homeless and to test them for any memory problems and find out more about their physical and mental health. People in the 'intervention group' will receive help with any underlying problems.

The researchers completed the initial phases of this study between October 2007 and November 2008 and found that of 171 older homeless people interviewed, 76% had memory problems. There was a significant unmet need for old age psychiatry services among the elderly homeless population in the inner-city Sydney, as evidenced by high rates of mental health problems and mental illness, and most strikingly by very high rates of significant memory problems. The provision of case management to this group of elderly homeless people was found to improve their level of functioning and help them to obtain and maintain stable accommodation.

The researchers originally planned to conduct a follow-up of participants at 6 and 12 months, however the project has experienced significant delays due to lack of funding. When further funding has been sourced, the researchers will then conduct these follow-up assessments.

## Postgraduate Scholarships

*In 2006 and 2007, AAR was pleased to offer the Joint AAR/CRC Postgraduate Research Scholarship in Social Research and Dementia in partnership with the Dementia Collaborative Research Centre—Consumers, Carers and Social Research (now known as the Dementia Collaborative Research Centre—Carers and Consumers, DCRC–CC), based at the Queensland University of Technology. DCRC–CC is one of three Dementia Collaborative Research Centres established by the Australian Government as part of its Dementia National Health Priority Initiative.*

### 2007 Joint AAR/ CRC Postgraduate Research Scholarship in Social Research and Dementia



**Kathryn Nicholson  
(University of Melbourne)**

***Dementia with Lewy Bodies: Evaluating carers' experiences***

This PhD study explored dementia with Lewy bodies (DLB) and the challenges it presents to carers. DLB is a common neurodegenerative disease of ageing and is one of a spectrum of diseases, known as Lewy body disorders. Other conditions in the spectrum are Parkinson's disease (PD) and Parkinson's disease dementia. DLB affects a person's

ability to multi-task and to plan and carry out sequences of activities. Apathy and difficulty in coping in noisy or crowded places are also common features.

The carers in this study faced many challenges. Some, such as coping with fluctuations, disturbed sleep and hallucinations, are a direct result of the disease process. Other factors which added further burden included ignorance of DLB as a disease, difficulties in getting a timely, accurate diagnosis and a lack of appropriate information and support. The carers expressed particular concerns about driving safety, continence management and accessing appropriate respite but were grateful that their partners retained the ability to recognise family and enjoy simple social engagements.

The study demonstrates the need for further research into the psychosocial aspects of living with DLB. There is also a need for educational programs specifically targeted to raising the profile and understanding of this common disease.

*In 2007, AAR also offered the AAR Entirely Postgraduate Scholarship in Social Research and Dementia. Ms Bianca Brijnath received this scholarship in 2007, however she requested only two years tenure to start from 2008.*

### 2007 AAR Entirely Postgraduate Research Scholarship in Social Research and Dementia



**Bianca Brijnath (Monash University)**

***Understanding dementia care in India***

Bianca Brijnath's project investigated how people with age-related dementia were cared for and the barriers encountered in accessing support in urban India. Changes in demographics, migration and patterns of family formation have created significant health and care issues for older people with dementia in the sub-continent and globally—including among Indian immigrants in Australia.

In 2008, Bianca worked for 10 months with families caring for a relative with dementia, key service providers and the Alzheimer's and Related Disorders Society of India (ARDSI). Her research revealed the intimacies of care giving and how broader understandings of health, illness and family affected the care process. Far from losing culture through migration and travel, families found alternatives, and a strong preference for home care remained. The illness experience

intensified feelings of love, compassion and duty, especially between spouses. Existing systems, inequities and roles were also challenged as illness and loss forced changes in identity for the carer and the person with dementia. Limited resources and heavy demand on Indian support systems meant that the costs of care were borne by families with little external assistance. Class, income and gender affected carers' capacity to successfully bear such costs.

Many of the barriers identified through this research can be redressed. Additionally, culturally-appropriate, affordable models can also be developed. The next steps include lobbying government and the medical fraternity, in India and Australia, for better services for people with dementia.



*Caring at Guruvayoor: India's only dementia respite care centre.*



## Research into a Cure for Alzheimer's Disease Grant

*The Jack & Ethel Goldin Foundation pledged \$250,000 over three years for biomedical research that specifically focuses on developing a cure for Alzheimer's disease. 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. Their project ran over three years. Below is a summary of their research and findings.*

### 2006 Research into a Cure for Alzheimer's Disease Grant Program



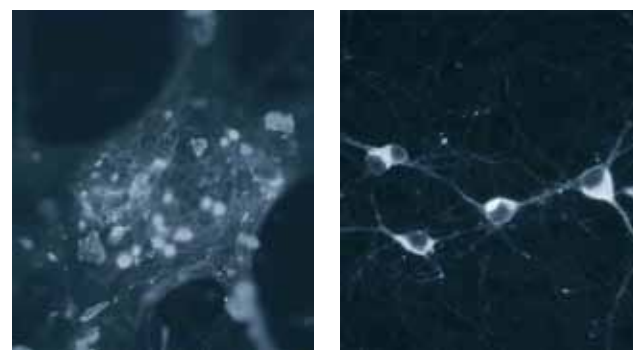
**Associate Professor Adrian West (University of Tasmania),**  
Professor James Vickers (University of Tasmania) & Dr Roger Chung (University of Tasmania)

#### ***Metallothionein-based therapeutic for Alzheimer's disease***

The Alzheimer's research team at the Menzies Research Institute has successfully completed their project examining the protective effects of the protein metallothionein in Alzheimer's disease. Their work has revealed the mechanism by which metallothionein acts and has indicated a promising therapeutic avenue based on analogues of metallothionein.

Their project examined the interaction of metallothionein with amyloid-beta, the protein

thought to cause Alzheimer's disease, including memory loss and the long term loss of brain cells which is associated with the disease. They found that injection of metallothionein into animal models of Alzheimer's reduced the amount of amyloid-beta in their brains. Turning to cell culture models, they found that metallothionein participated in a very specific reaction with amyloid-beta: it exchanged metallothionein-bound zinc for the copper found associated with amyloid-beta. This exchange dramatically reduced the toxicity of amyloid-beta and also changed the way it aggregated, the net result being that brain cells were protected in the presence of metallothionein. The researchers believe that these actions are therapeutically significant but their application is hampered by the difficulty in administering proteins, including metallothionein, to the brain. In an exciting development of the AAR-funded work, they are examining synthetic analogues of metallothionein which appear to capture components of metallothionein action and which are amenable to clinical use.



*Left: Amyloid-beta peptide (Aβ1-40) in red, after it has been applied to a culture of rat neurons, shown in green by the immunohistochemical stain SMI312. The research team did these experiments to work out how amyloid-beta injures neurons (as it does in Alzheimer's disease), and discovered a crucial interaction between amyloid-beta and the protein of interest, metallothionein (see cover for colour).*

*Right: Amyloid-beta (green) accumulating in cultured neurons derived from a mouse genetic model of Alzheimer's disease, the Tg25765 mouse. The red stain is for the neuronal protein tau, which is also thought to be one of the main causative agents of Alzheimer's. In this work the research team established a clear link between the oxidative stress caused by amyloid-beta and tau dysfunction (see cover for colour).*

## Past Grant Recipient – Dr Gilles Guillemin

*Dr Gilles Guillemin and his research team, including Professor Bruce Brew, Dr Karen Cullen, and Associate Professor George Smythe, received an AAR Dementia Research Grant in 2004 for their project "The involvement of quinolinic acid and other tryptophan catabolites in the pathogenesis of Alzheimer's disease".*

*AAR contacted Dr Guillemin recently, to find out more about his team's research and how it has progressed since receiving the grant.*



**Dr G.J. Guillemin**  
St Vincent's Centre for Applied Medical Research, Sydney, NSW, Australia.  
University of New South Wales, Sydney, NSW, Australia.

#### ***Identification of a new neurotoxic pathway involved in Alzheimer's disease***

Over the last decade Dr Guillemin's group has accumulated scientific evidence demonstrating the involvement of the kynurenine pathway in the neuropathogenesis of Alzheimer's disease. The kynurenine pathway is a major route of degradation of the essential amino acid L-tryptophan, leading to production of a number of biological active molecules. Among them, the neurotoxin quinolinic acid is known to be involved in the pathogenesis of several inflammatory neurological diseases. This group

have previously shown that quinolinic acid accumulates in senile plaques and within damaged neurons in an Alzheimer brain. Quinolinic acid is able to kill neurons by at least six different mechanisms (the group have identified two of those).

In collaboration with Dr Roger Chung (UTAS) and with Dr Joseph Nicolazzo (Monash University), the group have started in vivo studies using animal models of Alzheimer's disease to test some drugs able to interfere with the formation or the effects of quinolinic acid.

Several of these kynurenine pathway inhibitors and analogues are already in clinical trials for other inflammatory diseases. The researchers believe there is real promise that this class of drugs represents a novel and a clinically viable therapeutic target for Alzheimer's patients that has never been previously assessed. They predict that this treatment can significantly stall the progression of Alzheimer's disease.

# 2010 Dementia Grants Program

*The 2010 Dementia Grants Program offered a wide range of research grants, including new investigator grants, travel grants, grants in dementia care, postgraduate research scholarships and postdoctoral fellowships. The program was advertised in February 2010 and applications closed mid-April 2010. After assessment by external expert reviewers, the successful applicants were chosen by the Scientific and Medical Panel and the AAR Board in August 2010.*

The grants offered in the 2010 Dementia Grants Program are listed below.

## 2010 Dementia Grants Program

- Five AAR Dementia Research Grants for new researchers worth \$25,000 each.
- Two Hazel Hawke Research Grants in Dementia Care worth \$25,000 each.
- One Hunter Research Grant into the Causes of Alzheimer's Disease for new researchers worth \$25,000.
- One Rosemary Foundation Travel Grant valued at up to \$15,000.
- One AAR Postdoctoral Scholarship in Dementia worth \$30,000 p/a for three years.
- Two AAR/DCRC-CC Joint Postgraduate Research Scholarships for Research Focused on Quality in Dementia Care worth \$30,000 p/a for three years.
- Two AAR Postdoctoral Fellowships in Dementia worth \$45,000 p/a (cost-shared with applicant's institution) for two years.

## AAR Dementia Research Grants

The AAR Dementia Research Grants are seeding grants for new researchers, valued at up to \$25,000, to be allocated for research in a dementia-relevant area. Grants are awarded for both biological and psychosocial research.

## Hazel Hawke Research Grants in Dementia Care

This grant provides up to \$25,000 for research into dementia care. Suitable projects include research into carer support, best quality care practices, activities and non-pharmaceutical therapies for people with dementia, or any other aspect of dementia care research.

## Hunter Research Grant into the Causes of Alzheimer's Disease

The Hunter Research Grant into the Causes of Alzheimer's Disease is a one-off seeding grant for new researchers, valued at up to \$25,000, to be allocated for a research project relevant to understanding the causes of Alzheimer's disease.

## Rosemary Foundation Travel Grant

AAR and the Rosemary Foundation are offering a travel grant valued at up to \$15,000 to enable an Australian researcher or clinician to travel overseas for a period of approximately one month, and learn new techniques and/or network with well known international research teams at a hospital or university outside Australia.

## AAR Postgraduate Scholarship in Dementia

AAR is offering a postgraduate scholarship valued at \$30,000 per annum for three years, to support a PhD student undertaking research in an area related to dementia.

## AAR/DCRC-CC Joint Postgraduate Research Scholarships for Research Focused on Quality in Dementia Care

AAR and the Dementia Collaborative Research Centre-Carers & Consumers (DCRC-CC) are offering two postgraduate scholarships valued at \$30,000 per annum for three years each, to support PhD students undertaking research in areas relevant to the improvement of Quality of Life and Quality of Care in dementia.

## AAR Postdoctoral Fellowship in Dementia

AAR is offering two postdoctoral fellowships valued at \$45,000 per annum each (matched by the applicant's institution) for two years, to support PhD graduates undertaking research in an area related to dementia.



## Financial Report

Alzheimer's Australia Research Ltd.  
ABN 79 081 407 534  
Financial Report

### **For the year ended 30 June 2010**

Financial information was extracted from the audited financial statements of Alzheimer's Australia Research Ltd., for the year ended 30 June 2010 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  
1 Frewin Place  
Scullin ACT 2614

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

**Report on the Financial Report**

We have audited the accompanying financial report of the Alzheimer's Australia Research Limited (the company), which comprises the statement of financial position as at 30 June 2010 and the statement of comprehensive income, statement of changes in equity and expenditure and statement of cash flows 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,

The accompanying notes form part of this financial report.

PricewaterhouseCoopers  
ABN 52 780 433 757

44 Sydney Avenue  
BARTON ACT 2600  
GPO Box 447  
CANBERRA CITY ACT 2601  
DX 77 Canberra  
Australia  
Telephone +61 2 6271 3000  
Facsimile +61 2 6271 3999  
www.pwc.com/au

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

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*.

*Auditor's Opinion*

In our opinion, the financial report presents fairly, in all material respects, the financial position of Alzheimer's Australia Research Limited as of 30 June 2010, and its financial performance and cash flows for the year then ended in accordance with the *Corporations Act 2001* and the Australian Accounting Standards (including Australian Accounting Interpretations).

Shane Bellchambers, CA  
Registered Company Auditor  
WalterTurnbull  
Dated: 28 October 2010  
Canberra, ACT

The accompanying notes form part of this financial report.





**DIRECTORS' DECLARATION**

The directors of the company declare that:

1. The financial statements and notes, as set out on pages 6 to 24 are in accordance with the *Corporations Act 2001*:
  - a. comply with Australian Accounting Standards; and
  - b. give a true and fair view of the financial position as at 30 June 2010 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.

Sign   
Name GLENN REES  
Date 27/10/2010

Sign   
Name KAYE RITCHARD  
Date 27/10/2010

The accompanying notes form part of this financial report.

**STATEMENT OF FINANCIAL POSITION AS AT 30 JUNE 2010**

	Note	2010 \$	2009 \$
<b>ASSETS</b>			
<b>CURRENT ASSETS</b>			
Cash and cash equivalents	4	1,559,464	794,839
Trade and other receivables	5	17,893	67,616
<b>TOTAL CURRENT ASSETS</b>		<u>1,577,357</u>	<u>862,455</u>
<b>NON-CURRENT ASSETS</b>			
Financial assets	6	2,100,691	782,088
<b>TOTAL NON-CURRENT ASSETS</b>		<u>2,100,691</u>	<u>782,088</u>
<b>TOTAL ASSETS</b>		<u>3,678,048</u>	<u>1,644,543</u>
<b>LIABILITIES</b>			
<b>CURRENT LIABILITIES</b>			
Trade and other payables	7	13,862	15,063
Other current liabilities	8	23,907	46,028
<b>TOTAL CURRENT LIABILITIES</b>		<u>37,769</u>	<u>61,091</u>
<b>TOTAL LIABILITIES</b>		<u>37,769</u>	<u>61,091</u>
<b>NET ASSETS</b>		<u>3,640,279</u>	<u>1,583,452</u>
<b>EQUITY</b>			
Retained Earnings		3,640,279	1,583,452
<b>TOTAL EQUITY</b>		<u>3,640,279</u>	<u>1,583,452</u>

The accompanying notes form part of this financial report.

**ALZHEIMER'S AUSTRALIA RESEARCH LIMITED**  
**ABN 79 081 407 534**

**STATEMENT OF COMPREHENSIVE INCOME FOR THE YEAR ENDED 30 JUNE 2010**

	<b>Note</b>	<b>2010</b> \$	<b>2009</b> \$
Revenue	<b>2</b>	2,833,207	647,360
Employee benefits expense	<b>3</b>	(32,700)	(32,640)
Grants issued	<b>3</b>	(715,256)	(599,018)
Loss on investment	<b>3</b>	-	(117,498)
Other expenses		(28,424)	(32,584)
		<hr/>	<hr/>
Profit/(Loss)		<u>2,056,827</u>	<u>(134,380)</u>

The accompanying notes form part of this financial report.





Visit the Alzheimer's Australia website at  
[www.alzheimers.org.au](http://www.alzheimers.org.au)

for comprehensive information about:

- dementia and care
- education and training
- other services offered by member organisations

National Dementia Helpline  
1800 100 500

# A N N U A L R E P O R T

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