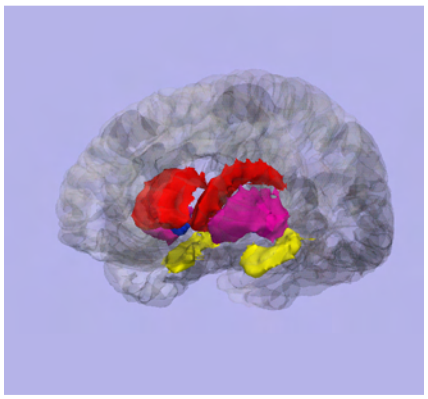
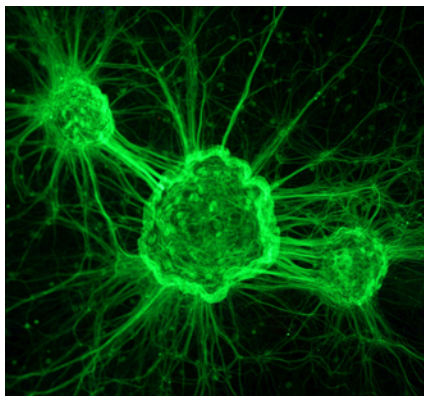
Alzheimer's Australia Research

Annual Report 2005/2006





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

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

Alzheimer's Australia Research Limited

ACN 081 407 534

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

Acknowledgment of support

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In particular, Alzheimer's Australia Research would like to extend special thanks to Mr Robert Bulley, Creative Memories, the Jack & Ethel Goldin Foundation, the Jacoby Family, Janssen-Cilag, the Rosemary Foundation for Memory Support Inc., Sherrin Hire and Mr Michael Sherrin for generously supporting AAR's research grants program.

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Front cover photographs: (From top left, clockwise) Dr Nicolas Cherbuin (Graphic produced in Slicer); Office for an Ageing Australia Positive Images Public Gallery; Associate Professor Adrian West; and Office for an Ageing Australia Positive Images Public Gallery.

Other photographs in the report provided by Dr Nicolas Cherbuin, Stephen Duma, Lolita Warden, Associate Professor Adrian West and Adele Woodhouse.

Michael Sherrin and Grant Sherrin of Sherrin Hire donate the proceeds of the 2005 Riverfire Charity Ball to Alzheimer's Australia Research, represented by Jan Samuels, Chief Executive Officer of Alzheimer's Australia Qld.

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About AAR

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

Why is Research Important?

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

We must invest in dementia research now, to help reduce the present and future impact of the dementia epidemic in Australia. Currently it is estimated that less than 0.4% of the total annual cost of dementia care in Australia is spent on research. A research investment of only 1% of the total costs of dementia each year – equivalent to around $50 million per annum - would seem a small price to pay to find solutions, as the numbers of people diagnosed with dementia will significantly increase in the future.

The Role of AAR

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

Research Grants

AAR actively encourages dementia related research in Australia by providing annual grants and scholarships. Research grants are available in many areas of dementia research including biomedical research and dementia care.

Supporting New Researchers

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

Research Collaborations

AAR has entered into partnerships with the National Health and Medical Research Council and the Australian National University to provide joint research fellowships. AAR welcomes research collaborations and partnerships to promote Australian dementia research.

Distributing Research Information

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

Promoting Australian Dementia Research

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

Mission Statement

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

Board

Professor Henry Brodaty, Chairman
Dr Alan McCutcheon, Vice Chairman
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Professor John McKellar
Kaye Pritchard
David Scarlett
Dr Robert Yeoh
Associate Professor Marc Budge (from April 2006)

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 Psychogeriatrics, University of New South Wales

Associate Professor Kaarin Anstey
Director, Ageing Research Unit, Centre for Mental Health Research, Australian National University

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

Professor Rhonda Nay
Professor of Gerontic Nursing, La Trobe University

Professor Lynn Chenoweth (from May 2006)
Professor of Aged and Extended Care Nursing, University of Technology Sydney

Dr Peter Dodd (from May 2006)
Associate Professor, School of Molecular and Microbial Sciences, University of Queensland

Professor Leon Flicker (from May 2006)
Professor of Geriatric Medicine, University of Western Australia

Professor James Vickers (from May 2006)
Head, Discipline of Pathology, University of Tasmania

Professor Tony Broe (until March 2006)
Professor of Geriatric Medicine, University of New South Wales

Dr Mark Yates (until June 2006)
Clinical Director, Aged Care and Rehabilitation Medicine, Ballarat Heath Service
President, Australian Medical Association Victoria

Chairman's Report

This year has seen significant advances for dementia research both in the work of Alzheimer's Australia Research Limited (AAR) and in the Australian research sector more generally.

In last year's annual report I emphasised the importance of bringing together the awareness and policy work of the National Office of Alzheimer's Australia with the research activities of AAR. This has proved to be extremely beneficial in enhancing the capacity of AAR to promote dementia research at a number of levels. AAR has continued to build its research funding and support, through the continuing annual Dementia Grants Program and new initiatives such as the Jack and Ethel Goldin Foundation Research into a Cure for Alzheimer's disease grant program and the joint postdoctoral fellowship with the Centre for Mental Health Research.

In 2005/2006, dementia research was given a major boost by the additional funding provided by the Australian Government as part of the implementation of dementia as a National Health Priority. This in part was a welcome response to the advocacy of Alzheimer's Australia and AAR for an increased investment in dementia research in the face of the dementia epidemic.

As 2005/06 closes, the Australian Government has announced the funding of three new Dementia Collaborative Research Centres. The primary centre, for which the hub will be the University of New South Wales, will focus on research into Assessment and Better Care Outcomes. The other two centres will focus respectively on Prevention, Early Intervention and Risk Reduction, for which the hub will be the Australian National University and on Consumers, Social Research, Carers and Carer Support, led by the Queensland University of Technology.

In addition, the application process for the Australian Government Dementia Research Grants is underway. The Grants have the objective of improving quality of life for people with dementia and their families and carers, with a priority to undertake practical research that focuses on service delivery, assessment, treatment and dementia care.

The research capacity and infrastructure that will be generated by this additional funding are encouraging for the work of AAR. The important objective of our research funding has been to attract new and talented researchers to the area of dementia research. We can now do this with even greater confidence as a consequence of a greater commitment by the Australian Government to funding dementia research.

The significant additional funding given to health and medical research in the 2006/07 budget is a further encouraging sign that health and medical research has been given a high priority by the Australian Government.

The greater level of research grant activity of AAR has created a need to expand the membership of the Scientific and Medical Panel. I would like to extend my warmest thanks to continuing members Associate Professor Kaarin Anstey, Professor Colin Masters and Professor Rhonda Nay and to new members Professor Lynn Chenoweth, Associate Professor Peter Dodd, Professor Leon Flicker and Professor James Vickers.

Professor Tony Broe and Dr Mark Yates have stood down from the Panel and I should like to thank them in particular for the contribution they have made.

Finally, I should like to thank staff in the National Office and particularly Susanna Park for the excellent support given to myself and the Board.

Professor Henry Brodaty
Chairman

Company Secretary's Report

Developments for Alzheimer's Australia Research (AAR) in 2005/06 have been very positive and have again demonstrated the importance of excellent working relationships with dementia researchers, academic institutions and policy makers.

Importantly, the profile of dementia research and the possibilities for involving consumers in research have been strengthened in a number of ways in 2005/06.

First, a group of clinicians led by Associate Professor Michael Woodward prepared a publication *"Dementia: can it be prevented?"* for release during Dementia Awareness Month 2005. The scientific and medical information contained in this document laid the basis for **Mind Your Mind**®, a public education program on risk reduction and dementia.

Secondly, the initiatives taken by the Australian Government to establish Dementia Collaborative Research Centres and to fund Dementia Research Grants have increased the opportunities for partnership between Alzheimer's organisations and dementia researchers. This is not only helpful to the knowledge base of AAR in conducting its own research funding activities but creates new possibilities for involving consumers in dementia research.

Thirdly, the then Minister for Ageing, Julie Bishop, took the initiative in calling together researchers, service providers and consumers from across Australia to talk about consumer involvement in dementia research and research priorities in August 2005. Although a lot of work remains to be done, it was positive that there was a strong consensus in favour of greater consumer involvement in research - whether at the stage of determining research priorities, prioritising research grant applications or monitoring research.

Fourthly, AAR has increased its capacity to partner with other charitable bodies and with academic institutions. This is evidenced by the new initiatives – the AAR & CMHR Joint Postdoctoral Fellowship and the Jack and Ethel Goldin Foundation Research into a Cure for Alzheimer's disease grant program, as well as the continued success of the annual Dementia Grants Program.

Together Alzheimer's Australia and AAR have an important role to play in promoting awareness of the need for increased investment in dementia research. Dementia Awareness Month in 2005 focused on establishing a priority for dementia research, as did Dementia Awareness Week in 2004. A great deal of work has been done during the current year to lay the basis for research again to be the central theme of Dementia Awareness Month 2006.

This year – 2006 – is the centenary of the description of Alzheimer's disease by Dr Alois Alzheimer. During Dementia Awareness Month in 2006, we will endeavour to inform the community about how far research has come since then and in particular in the last 25 years and about the most promising strategies for identifying more effective therapeutic interventions for dementia.

On the basis of this work and plans for corporate sector fundraising, it is expected that the partnership between Alzheimer's Australia and AAR will result in still greater support for dementia research in the years to come.

Glenn Rees
Company Secretary

2005/2006: A Year in Review

Alzheimer's Australia Research 2005/2006 Highlights

The year 2005/2006 has brought a number of highlights for AAR, including:

- Forging new partnerships with Universities and research centres,
- An expanded Scientific and Medical Panel with an increased role in providing leadership and expertise on a range of issues,
- Doubled number of research grants available in the 2005 Dementia Grants Program,
- Record number of applications received, especially for the Hazel Hawke Research Grant in Dementia Care, and
- Broadening the types of grant funding on offer to include postgraduate and postdoctoral funding.

Collaboration with Alzheimer's Australia

The relocation of the AAR Secretariat to the Alzheimer's Australia National Office in Canberra in 2005 has facilitated the partnership between AAR and Alzheimer's Australia. Both organisations have worked together to further the research agenda through advocacy and policy efforts. Benefits have included improved response to media and information requests, increased awareness of Australian dementia research and strengthened advocacy for investment in research. An example of this overlap in priorities was Alzheimer's Australia's National Consumer Summit, held in October 2005, which included discussion of consumer involvement in dementia research as well as research priorities and called for an increased investment in dementia research.

2006 Centenary

Alzheimer's disease was first clinically described by Dr. Alois Alzheimer in 1906 - making 2006 the centenary year of Alzheimer's disease. A great number of events, publications and other initiatives are planned to commemorate the centenary year, including as part of Dementia Awareness Month 2006. In this centenary year, it is important to reflect on what research has achieved thus far and to look towards future goals. It is important that dementia research stays high on the agenda until positive solutions in the areas of prevention, treatment, care and cure are found.

Dementia as a National Health Priority

The Australian Government has made dementia a National Health Priority in recognition of the need for support, quality care and continuing research for the increasing number of Australians affected by dementia. Several aspects of the National Health Priority initiative focus on research. A National Dementia Research Workshop was held in August 2005 to bring together over 140 researchers, service providers, people with dementia and carers to discuss research priorities and directions. Two rounds of Dementia Research Grants worth up to $16 million over five years are being offered. Importantly, these grants will fund research aimed at improving quality of life for people with dementia and their family and carers – practical research that focuses on service delivery, assessment and dementia care. In addition, three Dementia Collaborative Research Centres have been established. The primary centre will focus on Assessment and Better Care Outcomes. The other centres will examine Consumers, Social Research, Carers and Carer Support and Prevention, Early Intervention and Risk Reduction. Other research initiatives include a Dementia Research Website and Dementia Research Mapping Project.

AAR Research Programs

2004 Dementia Grants Program

Four grants were awarded in the 2004 Dementia Grants Program to emerging researchers examining a variety of research topics. Below are summaries of the progress to date in the 2004 Dementia Grants Program projects.

Healthy Living with Dementia

2004 AAR Dementia Research Grant
Dr Ann Clarke - Centre for Research on Ageing, Curtin University of Technology
Promoting Health and Physical Activity for Carers and People with Dementia

Dr Clarke's study was a pilot of a community based program designed to enhance the quality of life of people with dementia and their carers. This study aimed to combine carer well being, models of dementia care, healthy ageing and the benefits of social and physical activity through psycho-educational support programs for both carers/support persons and people with dementia in early to intermediate stages. The nine-week program received very positive feedback from all participants. It engaged people with dementia in the community to optimise their quality of living through improving their level of physical wellbeing and social activity. It also lessened the burden of care, and improved the quality of life and health and wellbeing of the carers. Being involved and learning was highly valued by all the participants. The study demonstrated that people in mid stage dementia can respond positively to a group intervention that includes social and physical activity, as well as education. For the support person, participation with the person with dementia can achieve health benefits in conjunction with caring activities. The program could be used by service providers to improve the quality of life and enhance the health and wellbeing of both carers and people with dementia, during the course of the illness. In future, the investigators hope to test the approach in a new group as well as determine longer term impact of the intervention.

The Role of Brain Toxins in Alzheimer's Disease

2004 AAR Dementia Research Grant
Dr Gilles Guillemin - Centre for Immunology, University of New South Wales
The Involvement of Quinolinic Acid and Other Tryptophan Catabolites in the Pathogenesis of Alzheimer's Disease

Since being awarded a 2004 AAR Dementia Research Grant, Dr Guillemin and his team have demonstrated and published details of a new neurotoxic mechanism involved in Alzheimer's disease. Their research found that the neurotoxin quinolinic acid is over produced around and in senile plaques in the brains of people with Alzheimer's disease. Accumulation of this toxin leads to inflammation and brain cell dysfunction and death. Dr Guillemin and his team aim to identify the mechanisms involved in this toxic phenomenon. Their research generated considerable media interest during 2005/2006 and Dr Guillemin now hopes to investigate drugs which can block quinolinic acid formation to open a new therapeutic avenue for Alzheimer's disease and several other brain diseases including amyotrophic lateral sclerosis, Down syndrome and Huntington's disease. As some of these drugs are in or about to enter clinical trials for the treatment of epilepsy, stroke and possibly Parkinson's disease, they may prove to be promising candidates for Alzheimer's disease as well.

The Effect of Protein Structure in Alzheimer's Disease

2004 AAR Dementia Research Grant
Dr Glenda Bishop - Monash University
Differential Effects of the Secondary Structure of AB on Neuronal Viability and Synaptic Integrity

Dr Glenda Bishop's research focuses on Alzheimer's disease and cellular mechanisms of ageing. Her 2004 research project concerned amyloid-beta, a protein which forms toxic deposits in large numbers in the brains of people with Alzheimer's disease and are believed to play an important role in the disease process. Dr Bishop and her team are investigating different structures of the amyloid beta protein to determine how exactly they affect the brain. To date, preliminary findings indicate that some forms of amyloid beta protein do not harm brain cells, while other forms of the protein cause brain cells to die. In addition, they have found that certain brain regions are more vulnerable to the effects of amyloid beta than others. These findings are important as they can assist researchers in targeting therapies to the brain regions most affected by Alzheimer's disease and targeting the types of protein that are the most harmful. The project is continuing and the team will go on to examine the effect of different amyloid beta structures on brain cell communication.

Frontotemporal Dementia and Behavioural Patterns

2004 AAR Travelling Scholarship
Dr Clement Loy - Garvan Institute/Prince of Wales Medical Research Institute
Clinical, Imaging and Pathological features of patients with Frontotemporal dementia: The Queen Square cohort

The AAR Travelling Scholarship has allowed Dr Loy to study a large number of people with frontotemporal dementia (FTD) at the National Hospital for Neurology and Neurosurgery in London. As part of the Queen Square team, Dr Loy was involved in a range of clinical research projects- including preliminary studies on why people with FTD have changes in their eating habits and altered sense of smell. The olfactory dysfunction study has now been accepted for publication by the Journal of Neurology. This collaboration with Queen Square has continued, and Dr Loy will be returning to the UK in August 2006 to complete another clinical project studying leptin level in patients with FTD and altered eating behaviour. Upon his return to Sydney, Dr Loy has commenced a PhD on the molecular biology of FTD at the Garvan Institute/ Prince of Wales Medical Research Institute. Clinical research and experience gained through the AAR scholarship has formed an integral part of the clinical segment for his PhD, and has enabled the initiation of a longitudinal FTD imaging project in Sydney.

2005 Dementia Grants Program

In 2005, AAR was pleased to offer more than double the number of research grants than in 2004. The 2005 successful projects are of a high quality and cover a wide range of research areas - from basic biomedical research to studies into improving quality of life for people living with dementia. Below are summaries of the successful projects from 2005.

New Investigator Grants

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

Studies of the Amyloid Beta Protein

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

Amyloid beta is a naturally occurring protein which can become misfolded and aggregate in plaques in the brains of people with Alzheimer's disease. While the majority of cases of Alzheimer's disease are sporadic with a late age of onset, there are a number of mutations in the amyloid beta protein which are connected with familial younger onset Alzheimer's disease. This project will examine and describe the characteristic differences between the disease associated variants of amyloid beta protein and the normally occurring form. The knowledge gained from this study will add to our understanding of the changes in the amyloid beta protein that may lead to the development of Alzheimer's disease. Firstly, with this knowledge we will be better able to identify novel targets for drug design and secondly, strategies developed and employed in this project will have the potential to form the basis of future assays to determine the efficacy of potential drug candidates.

Emotional Regulation and Alzheimer's Disease

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

Increasing evidence suggests that Alzheimer's disease is characterised by deficits in emotional processing, in addition to problems with memory and cognitive impairment. However, prior studies have focused only on the assessment of basic emotions, depression and emotion recognition. This project will be the first to assess whether people with Alzheimer's disease are impaired in the capacity to *regulate* emotions, and if so, whether specific *types* of emotional regulation are differentially affected. This project will help clarify the role of emotional control deficits in Alzheimer's disease. It will also help identify the mechanism that underpins the association between emotional processing deficits and Alzheimer's disease, and delineate the relationship between cognitive and emotional control. By enhancing our understanding of the underlying cause of changes in emotional and social behaviour following Alzheimer's disease, this will help improve their future prediction, management and treatment. The proposed research will thus extend prevailing models of emotional regulation in Alzheimer's disease, with important implications for development of intervention-based treatments.

Research into Alzheimer's Disease and Genetics

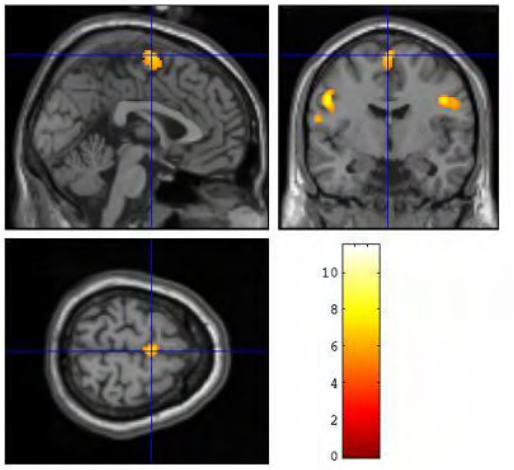
2005 AAR Dementia Research Grant
Agnes Luty - The Garvan Institute of Medical Research
Positional cloning of a novel Alzheimer's disease locus associated with atypical plaque-predominant neuropathology

Alzheimer's disease is a devastating and widespread neurodegenerative disorder typically characterised by the massive accumulation of amyloid beta plaques and neurofibrillary tangles (NFTs) in the brains of affected people. However, a small proportion of cases have an unusual disease process characterised by the absence of neurofibrillary tangles and a predominance of plaques. We have identified two family pedigrees with 'plaque-predominant' Alzheimer's disease (PPAD) which show genetic linkage to a single significant region on chromosome 9. The aims of this project are the characterisation of this potentially novel Alzheimer's disease gene. This project will aid in clarifying the relative contribution of plaques and tangles in the development of the disease and possibly help identify risk factors for Alzheimer's disease in the general population and allow predictive testing for at risk-family members. Finally, the novel gene product represents an ideal target for drug screening to identify candidate molecules for therapeutic intervention and new drug development.

Imaging Motor Slowing and Dementia

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

Progressive motor slowing has been found to be associated with cognitive impairment and may predict the onset of dementia. This project aims to identify the brain region and cause of progressive motor slowing associated with ageing. The project will examine the hypothesis that motor slowing is connected to a specific brain region called the pre-supplementary motor area of the frontal lobe (pre-SMA). Using brain imaging techniques, we will look at the pre-SMA brain region in people with Parkinson's disease, people with motor slowing and normal older and younger adults. This project is an essential step to future prevention, therapy and reduction of reduced mobility, falls and dementia. An understanding of the functional role of the pre-SMA, along with its connections will enable future research into the underlying pathology of age-related motor slowing. This study will detect functional deficits observed in subjects with motor slowing, enabling a better understanding of a key predictor of dementia. These findings can then be used to further investigate underlying causes of such deficits, and in turn the underlying causes of dementia.



Functional MRI brain scans showing activity in the pre-Supplementary Motor Area in the brain during a motor imagery task. Image: S. Duma

Dementia Care and Prevention Grants

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

Memory Training in People with Mild Cognitive Impairment

2005 AAR Grant in Prevention and Risk Reduction
Associate Professor Glynda Kinsella - La Trobe University
Memory Group Intervention for Mild Cognitive Impairment

It is increasingly recognised that Alzheimer's disease develops slowly over many years and that people with isolated memory impairment or mild cognitive impairment are at increased risk of subsequently developing Alzheimer's disease. The earlier that compensatory memory strategies can be introduced to people with declining memory, the more likely it will be that memory strategies will be used effectively in everyday life, reducing and delaying the impact. The primary aim of this study is to provide early intervention for developing memory difficulties in older adults. The project will evaluate the efficacy of an interactive memory-group program which will involve both the family and person with memory difficulties in developing increased awareness of memory issues and specific strategies to prevent memory failures. Information about memory and systematic training in skills are expected to significantly improve the capacity of individuals and families to cope with everyday memory difficulties. Through active participation in the management of memory impairment, it is expected that the level of wellbeing of all participants will increase and that there will be an improved use of memory strategies in everyday life.

Palliative Care and Dementia

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

This project aims to better understand the end-of-life care needs of people with dementia and their family caregivers. To date most research and policy directed towards the impacts of dementia have focussed on the needs of those in the early and mid-stages of the disease. Relatively little attention has been paid to the specific challenges facing family carers in the treatment of people with advanced dementia, yet they have been shown to have significant concerns about their relative's quality of life in the year before death and unmet support needs of their own. The study will collect in-depth interview data from a purposive sample of persons who have cared for a family member through the terminal stage of dementia. The project will yield previously unavailable information about the experiences of carers of people dying with dementia, their views about quality of life, the range of specific care issues and concerns surrounding end of life treatment, and a critical foundation for future research and development of evidence-based practice guidelines for enhanced care quality.

Travel Grants

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

2005 Rosemary Foundation Travelling Fellowship
Dr. Greg Savage - Monash University
Presentation at International Neuropsychological Society Conference, Boston, February 2006

Accurate early diagnosis of Alzheimer's disease is very important. Current diagnosis of Alzheimer's disease relies heavily on assessment of cognition and formal neuropsychological assessment. Unfortunately, the disease has progressed significantly by the time such an assessment is typically performed. This travel grant will assist in the promotion of findings concerning an inexpensive and efficient diagnosis test which should be sensitive at an earlier stage of progression. Intervention at the earliest possible stage has huge implications for the ultimate social and economic burden of Alzheimer's disease; better assessment of early signs is intimately related to better understanding of dementia, and will contribute directly to management in the short and long term. Dr Savage presented a research paper at the 2006 North American Meeting of the International Neuropsychological Society (INS). The paper presents important findings from a test of smell functioning we have developed which may be able to detect the earliest signs of Alzheimer's disease.

2005 Alzheimer's Australia Research Travelling Scholarship
Stephen Duma, Prince of Wales Medical Research Institute
To learn the technique of transcranial sonography (TCS) for the study of incident Lewy body disorders and dementia in "normal" older people and older people with motor slowing.

With an ever increasing ageing population, the prevalence of neurodegenerative disorders in society will also increase. Amongst the most prevalent of these neurodegenerative disorders are Alzheimer's disease, Parkinson's disease and dementia with Lewy bodies. It has been shown that both motor slowing and mild cognitive impairment are predictors of dementia. The pathology underlying motor slowing is unknown, but changes in a specific brain region, the substantia nigra, may be involved. These brain changes can be viewed with the imaging method transcranial sonography (TCS). The purpose of this travel project is to train in the technique of TCS to be able to perform this analysis in Australia. TCS may prove to be a non-invasive, inexpensive and efficient tool to predict incident Parkinson's disease, Parkinson's with dementia, dementia with Lewy bodies, or mixed dementia. Early (pre-clinical) diagnosis is very important for the effective management and treatment of all types of dementia. These preliminary studies will enable further studies into the underlying pathology that causes brain changes in the substantia nigra, and in turn develop a further understanding of dementia, its predictors and its causes.

Stephen Duma learning the technique Transcranial Sonography while on the Alzheimer's Australia Research Travelling Scholarship in Germany.
Image: S.Duma

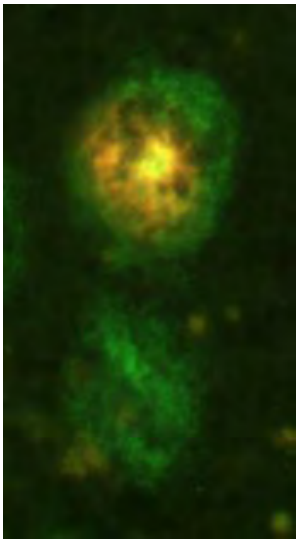
Hunter Postgraduate Research Scholarship into the Causes of Alzheimer's disease

For the first time, in 2005, AAR was pleased to offer a scholarship for a student undertaking PhD research in the area of research into the causes of Alzheimer's disease. The scholarship is made possible by a bequest and will be used in subsequent years to fund further scholarships. Below are details of the successful applicant and project for 2005.

Examining Inflammation in Alzheimer's Disease

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

In 2005, the inaugural Hunter Doctoral Research Scholarship into the Causes of Alzheimer's disease was awarded to Lolita Warden. The aim of the Hunter scholarship is to provide support to a new researcher in completing a PhD in the field of Alzheimer's disease, with a focus on exploring the causes of the condition. This research project, to be completed over three years, will look at inflammation in relation to the key hallmark inclusions of Alzheimer's disease in the brain, these being amyloid protein deposition, tau pathology and the associated cell loss. The exact role inflammation plays in Alzheimer's disease is yet to be determined. This project is designed to examine the major stimuli of inflammation in Alzheimer's disease and to ascertain their effect on tau pathology and brain cell death, both directly and indirectly. Particular focus on a recently identified soluble form of amyloid and its role in stimulating the inflammatory response will be examined. In addition, no studies to date have undertaken a comparative analysis of the major stimulators of inflammation and associated pathologies in a human cell culture system. Only by addressing these aims can we concentrate on developing safe and effective therapeutic strategies.



Fluorescent staining of an amyloid-beta plaque in the cortex of an Alzheimer's disease brain showing co-localisation of two different forms of the amyloid-beta protein.
Image: L. Warden

2006 Dementia Grants Program

The 2006 Dementia Grants Program offers a wide range of research grants including new investigator grants, travel grants and grants into dementia care. The Program was advertised in March 2006 and applications closed on 2 June 2006. After assessment by external expert reviewers, the final decision on successful applicants will be made by the Scientific and Medical Panel and AAR Board in September 2006. A Postgraduate Research Scholarship program will be offered later in 2006. The grants offered in the 2006 Dementia Grants Program are listed below.

2006 Dementia Grants Program

- 2 AAR Dementia Research Grants - $20,000 each
- Rosemary Foundation Loader Research Grant - $10,000
- Alzheimer's Australia Research Travelling Scholarship - $15,000
- Rosemary Foundation Travel Grant - $5,000
- 2 Hazel Hawke Research Grants in Dementia Care - $20,000 each

AAR Dementia Research Grants

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

Rosemary Foundation Loader Research Grant

The Rosemary Foundation Loader Research Grant, offered in partnership with the Rosemary Foundation, is a seeding grant for new researchers, valued at up to $10,000. It will enable new investigators to research either biological or psychosocial aspects of dementia.

Rosemary Foundation Travel Grant

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

Alzheimer's Australia Research Travelling Scholarship

AAR is offering a travelling scholarship up to the value of $15,000 to enable an Australian researcher or clinician to research aspects of dementia overseas. Scholarships will be awarded for the purpose of undertaking research that is not fully available in Australia and is relevant to the advancement of understanding dementia or dementia care and management.

Hazel Hawke Research Grant in Dementia Care

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

Partnership with the National Health & Medical Research Council

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

2004 NHMRC/AAR RD Wright Fellowship
Associate Professor Pradeep Nathan - Monash University
Neurochemical basis of cognitive function in Alzheimer's disease

Associate Professor Nathan is currently in the second year of his five year joint NHMRC/AAR RD Wright fellowship to examine the neurochemical basis of cognitive function in Alzheimer's disease. Associate Professor Nathan and his team are making good progress and have published numerous scientific papers related to their work on the neurobiology of cognition.

The major research project currently underway relates to the study of nicotinic receptors in Alzheimer's disease and their response to drug treatment. Nicotinic receptors in the brain act to bind acetylcholine, a chemical that is important in learning and memory. In Alzheimer's disease, a deficit develops in the level of acetylcholine available and current Alzheimer's medications attempt to counter this deficit. Studying nicotinic receptors and other brain proteins associated with acetylcholine may yield insights into the development of Alzheimer's disease.

Associate Professor Nathan's research uses the technique of PET imaging to visualise nicotinic receptors and other brain proteins in the living brain. Findings indicate that early in Alzheimer's disease, there is no net loss of nicotinic receptors (if anything a slight increase). Furthermore the receptors were not related to memory or cognitive dysfunction. The findings suggest that these receptors may increase as a compensatory response to cognitive decline in order to optimize cognitive functioning early in the course of the illness. Studies are currently underway to examine the changes in nicotinic receptors in patients with severe Alzheimer's disease. Studies are also underway to examine how these receptors change with treatment and if the treatment induced changes correlate with improvement in cognition. Preliminary findings indicate that nicotinic receptor numbers increase in the brain of a person with Alzheimer's disease following drug treatment with a cholinesterase inhibitor. This may be related to improvements in clinical symptoms, including memory and cognitive function, associated with the medication. In the future, brain imaging of this protein may be useful in examining the effectiveness of Alzheimer's drug therapy. The next step will be to conduct a larger study of the phenomenon. In the next year, Associate Professor Nathan and his collaborators at the Austin Hospital PET Centre will continue their research into the basis of Alzheimer's disease and the neurobiology of cognitive processes including memory, cognition and anxiety.

Research into a Cure for Alzheimer's Disease Grant Program

The Jack & Ethel Goldin Foundation has pledged $250,000 over three years for biomedical research that specifically focuses on developing a cure for Alzheimer's disease. Applications for this grant program closed on 30 January 2006.

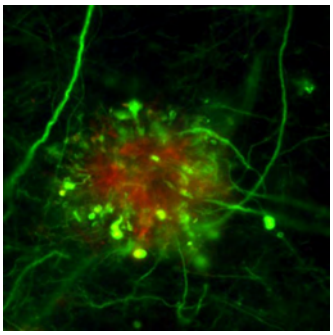
The successful project was entitled *Metallothionein-based therapeutic for Alzheimer's disease* from the University of Tasmania. The successful researchers from the NeuroRepair Group at the School of Medicine were Associate Professor Adrian West, Professor James Vickers and Dr Roger Chung. A summary of the successful project is included below.

Associate Professor Adrian West - NeuroRepair Group, University of Tasmania

Metallothionein-based therapeutic for Alzheimer's disease

Much research has indicated that Alzheimer's disease is causally related to dysfunction in the processing of a brain protein called amyloid-beta. The accumulation of this protein leads to the formation of brain plaques and brain inflammation leading to the dysfunction and death of brain cells. This project focuses on a novel potential mechanism to ameliorate the effects of amyloid beta on the brain in Alzheimer's disease.

Associate Professor West and his team have determined that a naturally occurring protein called metallothionein may have a potential use in the treatment of Alzheimer's disease. They believe that metallothionein may prove to be beneficial in several stages of the disease process by reducing the amyloid beta protein plaques, as well as reducing inflammation and brain cell death. In addition, the protein could be a promising therapeutic candidate as it can easily enter the brain and is unlikely to have serious side effects. However, the protein has not yet been tested. The project is a proof of concept study to examine the efficacy of metallothionein in an animal model. This project will determine if metallothionein and related proteins can reduce production, accumulation or aggregation of amyloid beta, reduce inflammation in the brain, decrease oxidative stress and lead to enhanced brain cell survival as well as examine the effect of metallothionein on the development of Alzheimer's pathology and the transport of metallothionein into the brain during initiation of the disease. Furthermore, the researchers have produced analogues of metallothionein which may have enhanced ability to promote the solubilisation of amyloid beta, and these will be tested in parallel in tissue culture and animal models. The project will be conducted over three years.

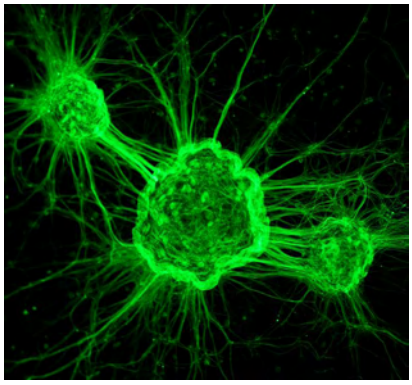


Brain slices are cultured from mice which have been genetically modified to develop Alzheimer's-like amyloid plaques, and are stained to reveal abnormal neurons in the vicinity of the plaques.
Image: A. Woodhouse

It is important that treatments for Alzheimer's disease specifically target the damaging effects of amyloid beta accumulation while leaving normal brain functions intact. The gradual, progressive and lengthy nature of the development of Alzheimer's disease over several decades in humans suggests that a relatively subtle but multi-targeted protective strategy might be effective in treating this disease. Associate Professor West and his team believe metallothionein demands attention as a therapeutic agent for Alzheimer's disease since it has a moderate effect on multiple pathways rather than blocking a single essential pathway, and because it is unlikely to have side effects which would prevent its timely uptake as a human therapeutic.

Associate Professor Adrian West of the NeuroRepair Group, University of Tasmania

In this experimental model of a nerve in vitro, neurons are isolated from the cortex of rat brains and are cultured for 21 days, after which they form clusters interconnected with fasciculated bundles of axons.
Image: A. West (Image also on front cover)

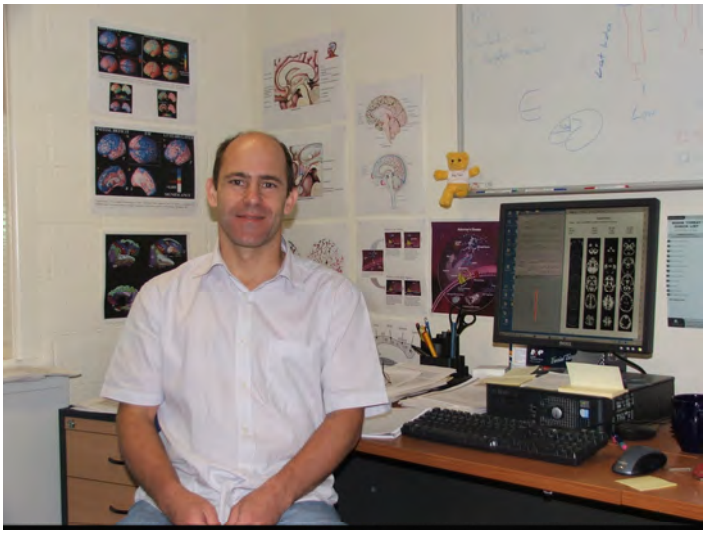


AAR & CMHR Joint Postdoctoral Fellowship

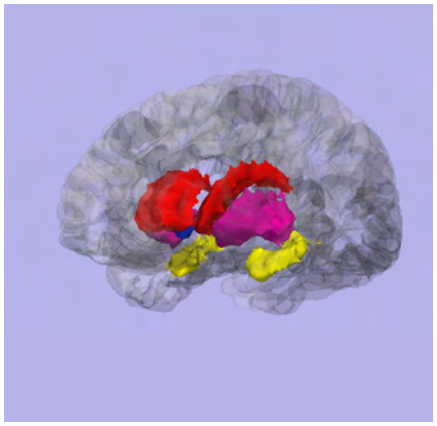
AAR and the Centre for Mental Health Research (CMHR) at the Australian National University have established a joint Postdoctoral Fellowship in Ageing Research. The AAR & CMHR Postdoctoral Fellowship was established in May 2006 and will be a two year collaborative project, with a possibility of extension to a third year. The AAR & CMHR Postdoctoral Fellowship position was awarded to Dr Nicolas Cherbuin.

Over the next couple of years, Dr Cherbuin will examine risk and protective factors for cognitive decline, Mild Cognitive Impairment and dementia using large population databases available at the Centre for Mental Health Research. Research from the fellowship will be used to inform community education programs. The CMHR has access to large, unique, high quality longitudinal studies, including the Path Through Life Project, The Canberra Longitudinal Study and the Australian Longitudinal Study of Ageing, which examine potentially protective risk factors for both mental and brain health. Risk factors in these studies include education, social networks, mental and physical activity, drug and alcohol use, presence of APOE e4 allele and other genetic markers, smoking, head injury, health and disease factors and nutritional factors.

As the AAR & CMHR Postdoctoral Fellow, Dr Cherbuin will develop specialised knowledge of Alzheimer's disease, dementia and the ageing process, produce research publications, develop skills in research methodologies including MRI and statistical analysis and present his findings to a variety of audiences. We look forward to the results of Dr Cherbuin's research.



Dr Nicolas Cherbuin at the Centre for Mental Health Research



3D brain structures visualisation: hippocampus (yellow), putamen (pink), caudate nucleus (red). The outline represents the surface of the cortex. Image: N. Cherbuin; Graphic produced in Slicer www.slicer.org (Image also on front cover)

Alzheimer's Australia Research Ltd.
ACN 081 407 534
Financial Report
For the year ended 30 June 2006

Financial information was extracted from the audited financial statements of Alzheimer's Australia Research Ltd., for the year ending 30 June 2006 and is included here for information purposes only.

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

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

WALTERTURNBULL
your extra asset

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Scope

The financial report and director's responsibility

The financial report comprises the income statement, balance sheet, statement of changes in equity, cash flow statement, accompanying notes to the financial statements, and the statement by members of the committee for Alzheimer's Australia Research Limited, for the year ended 30 June 2006.

The directors of the company are responsible for the preparation and true and fair presentation of the financial report in accordance with the *Corporations Act 2001*. This includes responsibility for the maintenance of adequate accounting records and internal controls that are designed to prevent and detect fraud and error, and for the accounting policies and accounting estimates inherent in the financial report.

Audit Approach

We conducted an independent audit in order to express an opinion to the directors of the company. Our audit was conducted in accordance with Australian Auditing Standards, in order to provide reasonable assurance as to whether the financial report is free of material misstatement. The nature of an audit is influenced by factors such as the use of professional judgment, selective testing, the inherent limitations of internal control, and the availability of persuasive rather than conclusive evidence. Therefore, an audit cannot guarantee that all material misstatements have been detected.

We performed procedures to assess whether in all material respects the financial report presents fairly, in accordance with the *Corporations Act 2001*, including compliance with Accounting Standards and other mandatory financial reporting requirements in Australia, a view which is consistent with our understanding of the company's financial position, and of its performance as represented by the results of its operations and cash flows.

We formed our audit opinion on the basis of these procedures, which included:

- examining, on a test basis, information to provide evidence supporting the amounts and disclosures in the financial report; and
- assessing the appropriateness of the accounting policies and disclosures used and the reasonableness of significant accounting estimates made by the directors.

While we considered the effectiveness of management's internal controls over financial reporting when determining the nature and extent of our procedures, our audit was not designed to provide assurance on internal controls.

INDEPENDENT AUDITORS REPORT
TO THE MEMBERS OF ALZHEIMER'S AUSTRALIA RESEARCH LIMITED
(Continued)

Independence

In conducting our audit, we followed applicable independence requirements of Australian professional ethical pronouncements and the *Corporations Act 2001*.

In accordance with ASIC Class Order 05/83, we declare to the best of our knowledge and belief that the auditor's independence declaration set out in page 3 of the financial report has not changed as at the date of providing our audit opinion.

Qualification

The financial statements for the year ended 30 June 2005 were not audited by our firm. Accordingly, we are unable to and do not express an opinion on the balances for the year ended 30 June 2005.

It is not practicable for the company to maintain an effective system of internal control over donations and bequests until their initial entry in the accounting records. Accordingly, our audit in relation to donations and bequests was limited to amounts recorded.

Audit Opinion

In our opinion, except for the effects on the financial report of the matters referred to in the qualification paragraphs, the financial report of Alzheimer's Australia Research Limited is in accordance with:

a. the *Corporations Act 2001*, including:

    i. giving a true and fair view of the company's financial position as at 30 June 2006 and of their performance for the year ended on that date; and

    ii. complying with Accounting Standards in Australia and the Corporations Regulations 2001; and

b. other mandatory professional reporting requirements in Australia.

Shane Bellchambers
Registered Company Auditor
WalterTurnbull

Canberra, ACT
30 October 2006

ALZHEIMER'S AUSTRALIA RESEARCH LIMITED
(A COMPANY LIMITED BY GUARANTEE)
ABN 79 081 407 534

STATEMENT BY DIRECTORS OF THE COMPANY

The Directors of the Company declare that:

1. The financial statements and notes, as set out on pages 8 to 18, are in accordance with the *Corporations Act 2001*:

   (a) comply with Accounting Standards and the Corporations Regulations 2001; and

   (b) give a true and fair view of the financial position as at 30 June 2006 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.

Director .....

Director .....

Dated this 30th day of October 2006

The accompanying notes form part of these financial statements.

ALZHEIMER'S AUSTRALIA RESEARCH LIMITED
(A COMPANY LIMITED BY GUARANTEE)
ABN 79 081 407 534

INCOME STATEMENT
FOR THE YEAR ENDED
30 JUNE 2006

	Note	2006 $	2005 $
Revenue	3	454,922	220,701
Employee benefits expense		(32,875)	(1,386)
Grants Issued	4	(210,693)	(47,080)
Loss on Investment		(12,110)	-
Other expenses		(44,087)	(7,444)
Profit attributable to members of the association		155,157	164,791

The accompanying notes form part of these financial statements.

ALZHEIMER'S AUSTRALIA RESEARCH LIMITED
(A COMPANY LIMITED BY GUARANTEE)
ABN 79 081 407 534

BALANCE SHEET
AS AT 30 JUNE 2006

	Note	2006 $	2005 $
ASSETS			
CURRENT ASSETS			
Cash and cash equivalents	7	736,024	1,244,244
Trade and other receivables	8	107,427	37,352
TOTAL CURRENT ASSETS		843,451	1,281,596
NON CURRENT ASSETS			
Investments	9	982,878	-
TOTAL NON CURRENT ASSETS		982,878	-
TOTAL ASSETS		1,826,329	1,281,596
LIABILITIES			
CURRENT LIABILITIES			
Trade and other payables	10	72,876	2,200
Other current liabilities	11	487,896	168,996
TOTAL CURRENT LIABILITIES		560,772	171,196
TOTAL LIABILITIES		560,772	171,196
NET ASSETS		1,265,557	1,110,400
EQUITY			
Retained earnings		1,265,557	1,110,400
TOTAL EQUITY		1,265,557	1,110,400

The accompanying notes form part of these financial statements.