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Florey Neuroscience Institutes
Improving life through brain research.
through brain research.

Stroke
Dementia
Multiple sclerosis
Epilepsy
Huntington’s disease
Motor neuron disease
Traumatic brain and spinal cord injury
Brain function in health and disease
Depression
Parkinson’s disease
Schizophrenia
Addiction
Florey Neuroscience Institutes - a powerhouse of neuroscience

A new era of scientific discovery is dawning. A merging of minds is taking place. Three of Australia’s leading neuroscience research institutes have joined forces.

On 1 July 2007, the amalgamation of the Brain Research Institute, the Howard Florey Institute and the National Stroke Research Institute came into effect. The individual entities remain, but the critical mass of skilled researchers working together under the banner of the Florey Neuroscience Institutes (FNI) heralds a new and exciting era for brain research.

The united intellectual capacity of the FNI scientists, working alongside scientists from the University of Melbourne and the Mental Health Research Institute, will create a powerhouse of neuroscience.

From genetic brain disorders to tragic accidents, the FNI scientists will pool together their areas of expertise and build on their knowledge of the brain’s response to injury and potential for repair.

Millions of Australians affected directly and indirectly by brain disorders will benefit from the research undertaken at the FNI. Whether it is a precious new baby or the slow and debilitating decline of a family member, our researchers will work to make the discoveries that will improve the health and wellbeing of Australians.

Better prevention. Better treatment. Better likelihood of a cure for many brain disorders. That is why our merging of minds is something the whole world will notice.

Why amalgamate?
The three institutes have come together to realise the efficiencies and potential for discovery that joining forces offers. By bringing together the inquisitive minds of brilliant scientists and equipping them with the tools for discovery, we will truly harness the capability to change disease outcomes. Areas of common interest and research activity will immediately benefit from the sharing of scientific knowledge and resources.

The Brain Research Institute's (BRI) research aims to understand the structure and function of the human brain and has a strong clinical and imaging focus. Research dedicated high field Magnetic Resonance Imaging (MRI) is a mainstay of BRI’s research platforms, opening up new and challenging areas of neuroscience and biotechnology.

Principal areas of research include:
- High field MRI
- Functional brain imaging, particularly language
- Epilepsy, stroke, dementia and other neurological diseases
- Brain function in health and disease.

Established in 1971, the Howard Florey Institute (HFI) has focused purely on neuroscience for more than a decade. HFI scientists undertake basic and clinical research of relevance to neurological and psychiatric disorders.

Principal areas of research include:
- Brain development
- Brain injury and repair
- Ion channels and human disease
- Multiple sclerosis
- Neuroimaging
- Neuropeptides
- Systems neurobiology.

The National Stroke Research Institute (NSRI) is one of the few institutes world-wide focused entirely on stroke research. The emphasis is on translational research from bench to bedside with a vertically integrated structure of divisions ranging from the basic sciences through to public health.

Principal areas of research include:
- Basic sciences
- Neuroimaging
- Ultrasound
- Clinical trials
- Neurorehabilitation
- Epidemiology
- Public health.
These three institutes have come together to share their expertise and collaborate in an environment of mutual trust and respect. Their research programs are aimed at developing ways to prevent, treat and potentially cure brain disorders.

**State-of-the-art facilities**

With more than 500 scientific staff and two new purpose-built facilities in Melbourne, the FNI will deliver an intellectual assault on brain disorders. The major building will be constructed on the University of Melbourne’s Parkville campus and the other facility will be built at the Austin Hospital in Heidelberg. Both buildings are in the final stages of design, with completion of construction anticipated in 2011 and 2010 respectively.

**A beacon to the world**

The FNI is the largest neuroscience institute in the Southern Hemisphere. The cross fertilisation and commitment to discovery fostered at the FNI will help retain the brightest and most innovative young researchers in Australia. With first-class facilities, equipment and support services, international scientists will also be attracted to Melbourne to collaborate with FNI scientists.

**Financial support**

The formation of the FNI and construction of two new research facilities is a project strongly supported by the Victorian and Federal Governments, in particular the Victorian Department of Innovation, Industry and Regional Development. The building scope of both new research facilities to be constructed includes provision of space for scientists from the University of Melbourne, and co-location with the Mental Health Research Institute. This $225 million dollar project has already received, or has received commitments, for the following funding:

- **Victorian Government** $53 million
- **Federal Government** $37 million
- **The University of Melbourne** $57 million
- **The Ian Potter Foundation** $15 million
- **The Myer Foundation and family** $5 million
- **FNI Board members** $2.6 million
- **Individual contributions** $4.5 million

A major fundraising campaign is underway to seek further funds to support the project for new facilities, additional researchers and shared equipment (see page 36 for details of The Brain Appeal).
Engineering great change
Creation of the Florey Neuroscience Institutes marks completion of our initial phase in a grand plan. Its creation necessitated repeal of the Howard Florey Institute of Experimental Physiology and Medicine Act 1971, incorporation of the Howard Florey Institute under the Corporations Act 2001, and on 4 April 2007, the Florey Neuroscience Institutes itself was incorporated.

Our vision is to create a major neurological institute in Melbourne and make it one of the truly great brain research institutes in the world. The amalgamation of the Brain Research Institute, the Howard Florey Institute and the National Stroke Research Institute is the culmination of several years of intense activity. The activity has involved many players; the institutes themselves, the State and Federal Governments, as well as supporting partners, the University of Melbourne and the Mental Health Research Institute.

As Chairman of the Florey Neuroscience Institutes, I would like to express my appreciation of the enormous effort by the respective Boards and their staff and particularly Mr Martyn Myer, the past Chairman of the Howard Florey Institute, and Dr Alan Finkel in bringing this ambitious project together.

The formal amalgamation is the outward and visible sign of the new organisation. But behind the scenes a great deal has been happening. Under the careful hands of our new Chief Operating Officer, Mr Gary Gray, the administration is being overhauled so that our scientists can continue their research in a seamless way.

The three institutes will retain their identities under the umbrella of the new FNI; the scientists continuing to operate in the same scientific framework as they have before. We have a new Board that includes the Scientific Directors of the three institutes, as well as other committed scientists, health professionals and business people. In an advisory role, we have a Council of Governors, which has retained a wide range of experience and talent from the Institutes’ former Boards. Also retained are our Members-at-Large; a wider group of people who have a special interest in the various neurological activities undertaken by the institutes. The FNI is well structured to forge ahead.

Building works
Apart from our scientific focus, we have the enormous and exciting task of constructing two new very large buildings; one on the University of Melbourne’s Parkville campus and the other at Austin Health in Heidelberg. The University of Melbourne and the Mental Health Research Institute will also co-locate staff at both sites and will contribute to the construction costs. Both buildings are currently in the design phase with our architects, Lyons Architects, and we expect to award construction contracts during 2008 with a view to occupying the buildings in 2011 and 2010 respectively. Mr Martyn Myer is chairing the Project Committee monitoring this work, which is so critical to realising the vision of expanding our research efforts.

Our new buildings will be state-of-the-art in terms of facilities, equipment and design. The scientific and wider community should expect the buildings to look modern and facilitate high quality science. Our scientists are first-class and they deserve first-class support.
Financial support
Our cutting-edge research is not possible without money. We remain extremely grateful to the many donors, large and small, who demonstrate the value they hold for our research. We rely on their ongoing support for much of the cost of running the Institutes.

The upcoming construction activity is obviously a major investment over and above our normal operating costs. To date we have been very generously supported by the State and Federal Governments, the Myer Foundation and family, the Ian Potter Foundation, members of the Board and many large individual donors.

Unfortunately, we are still significantly short of our $225 million project target. Our Brain Appeal Committee, led by Mr Harrison Young, is working very actively to raise the $48 million necessary to complete the buildings. We hope all the ‘friends of the Institutes’ will help broadcast this message and the importance of this project in delivering the critical mass for major neurological discovery.

World-class team
In the meantime, our scientific research into brain disorder and disease continues. Judging from the awards, grants and honours bestowed upon our scientists, we are clearly world-class. There is no merit in second-class research and the assessment of the quality of our research is one of the critical and most difficult roles of the Board.

We are fortunate to have outstanding leaders in our three institutes: Prof Frederick Mendelsohn, Prof Graeme Jackson and Prof Geoffrey Donnan. These visionary scientists have been the driving force behind their respective institutes, ensuring we remain at the forefront of science.

The current Director of the FNI, Prof Frederick Mendelsohn, has indicated he wishes to retire at the end of 2008 and the Board has initiated a process to identify a suitable successor. His replacement will have big shoes to fill. Prof Mendelsohn, an esteemed career scientist, has for the past 11 years led the Howard Florey Institute and now the FNI to the world stage. We are very grateful for his remarkable contribution and the dedication and passion he has applied to neuroscience.

The next five years will be particularly exciting for the FNI. Set in the context of the evolving revolution in neuroscience, the FNI with its new facilities and a new Director will be well placed to contribute significantly to global advances in neuroscience.

Mr Charles Allen AO
Chairman
The power to affect great change

I am very excited about the future of neuroscience discovery in Australia.

The Florey Neuroscience Institutes contains a remarkable collection of enthusiastic scientists who can sense major change in the wind. The kind of change that puts scientific discovery on the front pages of the international press. The kind of change that retains young Australian scientists in their country of schooling and training. Change that rewards them with funding and recognition for commitment to their research.

This change is the Florey Neuroscience Institutes.

The FNI will rapidly build on our knowledge of how the normal brain functions and how it malfunctions in brain disorder.

Through amalgamation we are greatly strengthening our clinical research capacity through advanced neuroimaging at the Brain Research Institute, clinical epilepsy research with Prof Samuel Berkovic, and increasing the strong translational research capabilities of the National Stroke Research Institute.

The amalgamation of these three highly successful, independent neuroscience institutes into one is very exciting. The combined force of the FNI will help laboratory discoveries to be conveyed to trial and patient outcomes.

Major progress

The Howard Florey Institute, the Brain Research Institute and the National Stroke Research Institute amalgamated on 1 July 2007 to form a new institute, Florey Neuroscience Institutes, under a new Board chaired by Mr Charles Allen.

The Mental Health Research Institute (MHRI) will co-locate its activities with the FNI primarily at Parkville, with some activities, such as neuroimaging, at Austin Health in Heidelberg. This move is supported by a State Government grant of $8 million. Although not formally a ‘partner’, the eminence of the MHRI’s Director, Prof Colin Masters, will enhance the research efforts of FNI scientists.

The University of Melbourne has committed the site of its old Biochemistry building to the project. This is a prime site abutting Royal Parade on its Parkville campus. Austin Health has provided the site of the current 3KZ building adjacent to the new hospital buildings and abutting Burgundy Street, Heidelberg.

The University of Melbourne will co-locate nearly 180 of its neuroscientists into the Parkville building. This has required expansion of the project from 16,600m² floor space to 23,650m² (18,650m² at Parkville and 5,000m² at Heidelberg). The University of Melbourne has agreed to make a funding commitment of $57 million.

Lyons Architects have been selected to design the new buildings on the basis of an architectural competition chaired by the Vice-Chancellor of the University of Melbourne, Prof Glyn Davis. After extensive consultation with the four stakeholders (FNI, MHRI, University of Melbourne and Austin Health) the Design Brief was completed and detailed design has commenced.

Project Managers and Quantity Surveyors, Donald, Cant, Watts and Corke, have been appointed to oversee the work.

Demolition of the old Biochemistry building on the University of Melbourne site has commenced.

The estimated cost of the buildings is $204 million and the total cost, including attracting key scientific teams, is $225 million.
The Brain Appeal Committee has been established to raise the extra funds. An additional $15 million must be raised over the next 18 months in order to sign the building contract and fit-out at least 30% of the buildings.

Scientific community endorses FNI success
The creation of the FNI has already significantly leveraged the performance of the science, particularly in the area of competitive peer reviewed research funding. The burgeoning activity in neuroscience and the growth of individual research teams will increase further as the synergies of amalgamation are realised.

FNI success is demonstrated in the recent highly competitive and prestigious awards:

- Prof Samuel Berkovic of the University of Melbourne and the Brain Research Institute has been elected a Fellow of the Royal Society in London. He has also been awarded a prestigious Australia Fellowship, worth $4 million over five years.
- Prof Geoffrey Tregear, Deputy Director of the Howard Florey Institute, has been awarded the degree of Doctor of Science honoris causa by Monash University, the highest degree the University can award.
- The Pfizer Australia Research Fellowship, worth $1 million over five years, has been awarded to A/Prof Anthony Hannan at the Howard Florey Institute.
- In the 2007 round of National Health and Medical Research Council Project Grant applications, the Howard Florey Institute had a success rate of 54%, nearly twice the national average of 28%. These successful grant applications yielded $11 million in new research project funding.

Searching for answers
Brain and mind disorders represent the major cause of disability in Australia. They will become more prevalent and more expensive as our population ages. It is estimated that dementia, alone, costs in excess of $400 million in medications and $2 billion in indirect costs annually. Without major progress in treating these disorders, costs will grow alarmingly. Investment in basic neuroscience is essential to make the progress so surely needed.

Only the dedicated, inquisitive minds of the best neuroscientists in the world will uncover answers to the brain disorders that plague us. Valuable work and discovery is being made by the FNI scientists. I am very optimistic about the potential for major breakthroughs in the coming decades.

It is our vision that some of the best neuroscientists in the world will be here, in Melbourne, as members of FNI research teams. Young Australian scientists will have improved career opportunities and will contribute to better treatments and ultimately cures for some of the major brain disorders. I hope you will share the vision and help us to make it a reality.

Prof Frederick Mendelsohn AO
Director
Embarking on a bold journey

It is imperative that major change in any organisation is thoughtfully and strategically planned. Major change takes time, commitment and a detailed road map.

This year, the 1971 legislation that created the Howard Florey Institute of Experimental Physiology and Medicine was repealed. A new Howard Florey Institute was created to allow for amalgamation with the Brain Research Institute and the National Stroke Research Institute as subsidiaries of the Florey Neuroscience Institutes.

The past six months has seen substantial progress on bedding down the new Florey Neuroscience Institutes.

Administrative changes

All three institutes have their own distinguished histories, their own policies and practices. Drawing three entities together is no easy task. Accounting is the first challenge. Much work has taken place to prepare a consolidated 2008 budget and reporting format across the group.

The amalgamation of three distinct entities also requires a major review of human resource policies, practices and structure. A review has been initiated by the Board and KPMG has been appointed to report their findings.

KPMG’s initial report identified areas within the new organisation where inconsistencies or gaps appear in human resource practices. In 2008 we will see the development of human resource policy and practice that will span the group, whilst respecting the needs of each of the members.

Implementation of the human resource development plan will be overseen by the People and Remuneration Committee, a sub-committee of the FNI Board.

The process of reviewing and developing an FNI investment policy is also underway. The Investment Committee, again a sub-committee of the Board, has invited submission of proposals from several firms with a view to appointing a fund manager early in 2008.

It is important that we maximise all income streams to support the science of the organisation as a whole.

Shaping a new organisation

The review of organisational structure has already had two major implications. All administrative staff now have a single point of accountability. Also, changes to the Parkville executive management team have resulted in a greater breadth of scientific talent engaged in decision making, policy direction and implementation.
The Scientific Directors meet regularly with structured, formal meetings. They facilitate a high level review and determine actions required to support the scientific vision within sound management practice. The staff and scientists at the FNI are very fortunate to have such a united and effective decision making team. There is a very strong commitment to realising the benefits of amalgamation.

We expect significant productivity increases in management resources over the next three to five years, as the entity realises its growth potential.

Structures and processes will alter with the development of key strategies. The facilities management strategy will be critical as we move towards turning the turf on our two building sites. Our communications strategy for internal and external stakeholders will also be reviewed.

Looking ahead
During the next few years, the bold journey of the Florey Neuroscience Institutes will unfold. We will have state-of-the-art buildings that will begin to take shape and a new organisational culture to mould. We must embrace the change. By sharing our expertise, our resources and our vision, we will have the capacity to affect remarkable scientific outcomes. Embracing change will underpin our future growth and success.

The amalgamation of three research institutes, with the goal of impacting global health, is inspirational. It has been the vision of many individuals, including former Chief Operating Officer of the Howard Florey Institute, Dr Graeme Chandler, who was a key player in development and implementation. We extend our thanks and appreciation for Dr Chandler’s contribution.

The FNI Board is set on realising the scientific benefits that amalgamation offers, as well as maximising philanthropic opportunities and realising gain from low risk commercial ventures.

The Florey Neuroscience Institutes will leave a significant footprint on the Australian and global scientific landscape in coming years.

Mr Gary Gray
Chief Operating Officer

The FNI logo was created to be a modern, flexible and memorable image that will not date. The logo represents two intertwining ‘architectural’ DNA strands. The design is aimed to brand and locate the FNI visually as distinctively Australian.
CHAIRMAN
Mr Charles K Allen AO
(MA MSc)
Mr Charles Allen was born and educated in England. His working career was in the oil and gas industry, initially as an exploration geophysicist with Shell in various parts of the world, and later in production and general management. He was posted to Australia in 1979 as Executive Director of Woodside Petroleum Ltd. and Chairman of the North West Shelf LNG project, the largest undertaking by a non-government organisation in Australia at that time. He became Managing Director of Woodside in 1982 and retired in 1996 when the project was complete. He was appointed AO in 1990. He has been a Director and Chairman of CSIRO, National Australia Bank and Air Liquide Australia. He has also been a Director of Metals Manufactures, Amcor and is presently on the Board of AGL Energy.

FNI DIRECTOR AND HFI SCIENTIFIC DIRECTOR
Prof Frederick A O Mendelsohn AO
(MD PhD FRACP FAA)
Prof Frederick Mendelsohn is Director of the Howard Florey Institute and R Douglas Wright Professor of Experimental Physiology and Medicine at the University of Melbourne. He has held a Personal Chair in Medicine at the University of Melbourne since 1990 and prior to 1997 was Senior Physician at the Austin & Repatriation Medical Centre. His research focuses on chemical transmitters in the brain. He was a member of the Wills Committee on Health and Medical Research Strategic Review (1998-2000), and was the Eccles Lecturer to the Australian Neuroscience Society (2001). He was elected a Fellow of the Australian Neuroscience Society.

NSRI SCIENTIFIC DIRECTOR
Prof Geoffrey Donnan
(MBBS MD FRACP FRCP (Edin))
Prof Geoffrey Donnan is Director of the National Stroke Research Institute and Professor of Neurology, University of Melbourne, Austin Hospital. His research interest is clinical stroke management and he was co-founder of the Australian Stroke Trials Network. He is President of the World Stroke Organisation. He received the American Stroke Association William Feinberg Award for Excellence in Clinical Stroke Research in 2007.

BRI SCIENTIFIC DIRECTOR
Prof Graeme Jackson
(BSc (Hons) MBBS FRACP MD)
Prof Graeme Jackson is the founding Director of the Brain Research Institute and a Neurologist at the Austin Hospital. He receives international recognition for his work in new MR technologies, particularly in the field of epilepsy. He is a Professorial Fellow of the Department of Medicine and Adjunct Professor in the Department of Radiology, University of Melbourne; an Honorary Neurologist at the Royal Children’s Hospital in Melbourne and a Board member of Neurosciences Victoria.
Dr Alan Finkel AM  
PhD  
Dr Alan Finkel was the founder and CEO of Axon Instruments, an ASX-listed, US biotech company. He was also a co-founder of the ASX-listed company Optiscan Imaging and served as a Director until 2002. After Axon was acquired in 2004, Dr Finkel co-founded and currently serves as Chairman of Luna Media, the publisher of Cosmos Magazine and G Magazine. Dr Finkel is Chairman of the National Research Centre for the Prevention of Child Abuse, a Governor of the Clunies Ross Foundation, the publisher of Cosmos Magazine and G Magazine, and the Chancellor of Monash University.

Ms Margaret A Jackson AC  
BEc  
Ms Margaret Jackson has an extensive business background and is a former partner of KPMG Peat Marwick’s Management Consulting Division. A professional company director since 1992, Ms Jackson is the recently retired Chairman of Qantas, current Director of Australia and New Zealand Banking Group Limited, Director of Billabong International Limited and President of Australian Volunteers International. She also Chairs FlexiGroup and the Asia Pacific Business Coalition on HIV/AIDS; is a Fellow of the Australian Institute of Company Directors; a Member of the Foreign Affairs Council and the Melbourne University Business School Association; and Fellow of the Institute of Chartered Accountants.

Mr Mark Jones  
BA (Hons) (Sheff) MBA (MBS)  
Mr Mark Jones is a Partner in KPMG’s Risk Advisory Services practice with national responsibility for corporate governance and internal risk management. He has previously provided external audit, internal audit, and accounting and advisory services to clients. Mr Jones is a Fellow of the Institute of Chartered Accountants in England and Wales, and is a member of the Institute of Chartered Accountants in Australia, CPA Australia and the Australian Institute of Company Directors. Mr Jones is the alternate Director for Ms Margaret Jackson AC and Dr Thomas Schneider.

Prof John A McKenzie  
BSc (Hon) PhD (La Trobe) FAA  
Prof John McKenzie is Deputy Vice-Chancellor (Research) at the University of Melbourne. He has been Dean of the Faculty of Science and Head of the Department of Genetics. Prof McKenzie has been a Councillor of the Australian Academy of Science and is a past President of the Genetics Society of Australia. He is on the Boards of several institutions.
Ms Naomi Milgrom  
BA DipEd
Ms Naomi Milgrom is the Executive Chair and Chief Executive Officer of Sussan, Suzanne Grae and Sportsgirl, Australia’s largest women’s apparel retail group. She is Chair of the Melbourne Fashion Festival and a former Trustee of the National Gallery of Victoria. She is also a Councillor on the Australia Business Arts Foundation and an inaugural Board member of the Family Business Council. In 2003 Ms Milgrom was awarded the National Council of Jewish Women of Australia’s Woman of Achievement Award for her contribution to business, she was also the recipient of the Centenary of Federation Medal. In 2005 Ms Milgrom was appointed Chair of the Australian Centre for Contemporary Art.

Dr Brendan Murphy  
MBBS PhD FRACP FAICD
Dr Brendan Murphy was appointed as Chief Executive Officer of Austin Health in January 2005. Prior to this appointment he was Chief Medical Officer and Medical Program Director at St. Vincent’s Health, Melbourne. He was also Professor/Director of Nephrology at St. Vincent’s from 1992-2005 and has only ceased clinical practice as a physician and his research career since taking up the Austin Health appointment. Dr Murphy was previously a Board member of the Royal Victorian Eye and Ear Hospital, a Director of Kidney Health Australia and President of the Australian and New Zealand Society of Nephrology. He is also Chair of the Victorian Health Department Management Innovation Council.

Mr Martyn K Myer  
BEng MEngSc MScM (MIT)
Mr Martyn Myer is a Director of the Myer Foundation and holds a number of non-executive Board positions including positions at SP AusNet Transmission and Diversified United Investments Ltd, and is Chair of Cogstate Ltd, a listed health services software company working in the neurodegenerative arena. He has founded and run an equity funds management company and has also been involved in product development and marketing for hi-tech export orientated manufacturing companies.

Mr Allan J Myers AO QC
Mr Allan Myers is a Queens Counsel and has practised as a barrister, principally in Victoria, although his professional work has led to appearances in all jurisdictions within Australia. He has lectured in law at universities in Melbourne, England and Canada, published legal articles in Australia and elsewhere, and regularly presented papers at legal, business and educational conventions. He is currently the President of the Council of Trustees of the National Gallery of Victoria.
Dr Thomas J Schneider
AB magna cum laude with highest hons (Harvard)
D Phil (Oxon) JD (Harvard) Hon D Laws (Deakin)
Dr Thomas Schneider is the President and CEO of Restructuring Associates Inc. in Washington, DC and is the Chairman and CEO of Schneider (Australia) Consulting Pty. Ltd. in Melbourne. He is Of-Counsel to the law firm of O'Connor & Hannan in Washington, DC. Dr Schneider is a Board member of the Venter Institute and the American Australian Educational Leadership Foundation. He was a member of the US Secretary of Energy’s Advisory Board from 1994-2000, and was the Science and Technology Policy Advisor for Presidential candidate Bill Clinton in 1992 and for General Wes Clark in 2004.

Mr Robert Trenberth
BEng (Melb) MA Sc (Waterloo, Canada)
MBA (Harvard) FAICD
Mr Robert Trenberth began his professional career as a structural engineer and he now serves as Chairman and Director of a number of companies and not-for-profit organisations. His corporate business career includes consulting with McKinsey & Company, followed by senior executive appointments with Carlton and United Breweries Ltd and McPherson’s Ltd, following which he was appointed Chief Executive Officer of Ajax McPherson’s Ltd, the international publicly listed manufacturing group. In 1991 he was appointed Deputy Secretary of the Federal Department of Industry Science and Technology, returning to the private sector in 1996 as a Non-Executive Director. His current company appointments include Chairman of Riviera Properties Ltd and of Upstream Print Solutions and Director of the CRC for Polymers. His not-for-profit appointments include Chairman of the Australian Sustainable Industries Research Centre and Vice President and Director of the National Stroke Foundation.

Mr John Wylie AM
BCom (Hons) (UQ) M Phil (Oxon)
Mr John Wylie is a former Rhodes scholar educated at the University of Queensland and Oxford University. He is Head of Investment Banking at Lazard Carnegie Wylie and is Chairman of the Melbourne Cricket Ground Trust.

Mr Harrison Young
AB cum laude (Harvard)
Mr Harrison Young retired as Chairman of Morgan Stanley Australia in 2007. In a 32-year investment banking career, he was based in New York, London, Bahrain, Hong Kong, Beijing and Melbourne. He has also been a reporter for The Washington Post, a Captain in the US Army, and Chief Operating Officer of the Federal Deposit Insurance Corporation in Washington. He is now a Non-Executive Director of the Commonwealth Bank of Australia, Chairman of the Asia Society AustralAsia Centre, and a Director of the Financial Services Volunteer Corps in New York.
Focusing on the brain

Established in 1971, the Howard Florey Institute (HFI) was named after the Australian Nobel laureate, Lord Howard Florey, whose research on penicillin continues to save millions of lives each year.

In 1997 the HFI Board made the strategic decision to focus the Institute’s research on the brain. The HFI then grew into Australia’s largest brain research institute, with around 300 staff and graduate students.

Brain and mind disorders cause widespread suffering to individuals, their families, carers and communities. Indeed, brain disorders cause as much disability as all other causes combined.

These conditions affect young and old. In young people, mood disorders, addiction and schizophrenia can rob them of an enjoyable life. Older people are affected by stroke and neurodegenerative disorders, such as Alzheimer’s disease, Parkinson’s disease and motor neuron disease. In any one year, over three million Australians experience one or more episodes of a major brain or mind disorder.

Neuroscience is an extremely broad field. At the Howard Florey Institute we utilise all our scientific knowledge and research expertise to explore basic neuroscience through to a wide range of brain disorders.

The scientific techniques we use to build our knowledge include neuroimaging, our understanding of neuropeptides, systems neurobiology, ion channels, and brain development to interweave across our basic research. The collaboration between our research teams means that each single piece of the puzzle helps to complete the picture.
The HFI’s scientists concentrate on research that will shed light on major brain disorders including:

- Parkinson’s disease
- Motor neuron disease
- Multiple sclerosis
- Epilepsy
- Traumatic brain and spinal cord injury
- Huntington’s disease
- Dementia
- Addiction
- Schizophrenia
- Brain function in health and disease.

Dr Verena Wimmer monitors nerve cell activity in her epilepsy research.

Dr Judith Field is researching the genetic aspects of MS.

Dr. Verena Wimmer monitors nerve cell activity in her epilepsy research.

Dr. Judith Field is researching the genetic aspects of MS.

Searching for answers to devastating brain disorders.

GROUND

We live in an age where talented minds can affect great change,

BREAKING

LIFE CHANGING

and deliver new hope for those plagued by brain disorders.

DISCOVERIES.

plagued by brain disorders.
PARKINSON’S DISEASE

Parkinson’s disease is a progressive, degenerative neurological condition that impairs the control of body movements. Both genes and environment influence the risk of developing the condition. Symptoms result from the progressive degeneration of nerve cells, including those that make dopamine, a chemical messenger necessary for smooth, controlled movements.

Parkinson’s disease is Australia’s second most common neurological condition and affects around 80,000 Australians. On average, 25 Australians are diagnosed every day and one in seven of those will be under 50 years of age. Patients in the advanced stages depend on 24-hour care from loved ones or professionals.

Research highlights

Our Parkinson’s disease research team, led by Prof Malcolm Horne, is working to understand the causes of Parkinson’s disease in order to improve diagnosis and treatment of the disease. They have recently developed two diagnostic tests for Parkinson’s disease. One is a blood test that can diagnose the disease before symptoms appear and the other is a genetic test, developed by Dr Justin Rubio. The researchers are also using neural stem cells to determine whether this form of therapy could repair brains damaged by Parkinson’s disease.

MOTOR NEURON DISEASE

Motor neuron disease (MND) is a cruel and debilitating brain disease. It often begins with weakness of the muscles in the hands or feet. It eventually leads to generalised paralysis, including an inability to speak or even swallow. The nerve cells that activate the muscles fail to work normally and the muscles gradually waste away. People with MND become entirely dependent on help with daily activities and have a life expectancy of three to five years after diagnosis. Around 400 Australians are diagnosed with the disease annually and more than 100,000 people around the world die from it each year.

Research highlights

Prof Malcolm Horne, Prof Philip Beart and Dr Julie Atkin are researching the events that lead to MND, with a view to creating ways to block the disease’s progression. There are two types of cells that become inflamed and kill neurons. Working with mouse spinal cord cultures, the HFI researchers now know one of the cell types (astrocytes) has a much bigger role to play in the disease than previously thought.
If these astrocytes can be manipulated early, it might be possible to slow the progression of the disease.

**MULTIPLE SCLEROSIS**

Amongst young Australians, multiple sclerosis (MS) is the most common chronic disease of the central nervous system. The cause of MS is unknown. However, treatments are available to ease the symptoms and modify the course of the disease.

The health effects of MS are varied. Some people with MS may become seriously disabled, whilst others can have one or two attacks and then remain symptom free for the rest of their lives. The frequency and severity of attacks cannot be predicted.

**Research highlights**

Prof Trevor Kilpatrick and his research team are taking different approaches to investigate this complex disease. The first is to influence and promote the survival of nerve cells called oligodendrocytes, which die in MS. They are also establishing ways to replenish lost oligodendrocytes and to slow down immune activity that causes nerve cell damage. In addition, the researchers are developing new neuroimaging techniques to improve clinical trials of potential new therapies.

The MS research scientists are actively involved in large collaborative projects across Australia aimed at enhancing understanding of the genetic and environmental factors that drive MS. Identification of these factors should improve our capacity to diagnose MS and to predict its subsequent course.

In other research, the HFI’s neuroimaging experts are collaborating with the MS researchers to use Magnetic Resonance Imaging (MRI) to identify key elements of the neuropathology of MS in humans and of its counterpart in animal models. The target tissue is the optic nerve, which is often affected in patients with their first MS attack. Neuroimaging technology is evolving rapidly. One year ago the researchers could not see degeneration in the human optic nerve, but now they can see the abnormal nerve and degenerating axons, which is a marker for MS in humans. This makes the optic nerve a very attractive region for study.

**EPILEPSY**

Epilepsy affects up to 3% of the population at some time in life. It can be a devastating condition, particularly in childhood. In about 30% of patients, anti-epileptic drugs do not adequately control their seizures and many drugs have side-effects such as rashes, lethargy and memory problems.

**Research highlights**

Dr Steven Petrou and his team are working to understand the fundamental process of epilepsy in order to help develop better anti-seizure therapies. More than half of the group are working on a genetically modified epileptic mouse, which the researchers hope will help them better understand the genesis of epileptic seizures. The ‘GABA mouse’ is a collaboration with Prof Samuel Berkovic. Together they are employing a multi-disciplinary effort using cell and molecular biology, clinical genetics, electrophysiology, computational work and whole animal behaviour.
TRAUMATIC BRAIN AND SPINAL CORD INJURY

In car accidents, head trauma can kill millions of brain cells. In the weeks following a traumatic brain event neurons continue to die. This often leads to permanent brain damage.

Survivors of brain injury can experience a range of lasting impairments, including problems with speech, emotion, sensation, movement, or thinking. Many face the prospect of experiencing significant disabilities for the rest of their lives.

Research highlights

Prof Seong-Seng Tan has discovered a brain protein that can save neurons from dying after experiencing traumatic brain injury. The protein works by using the cell’s waste disposal system to flush away toxic and damaged proteins produced after injury. This appears to tip the balance towards nerve cell survival, instead of death.

The challenge for researchers now is to understand how this protein performs its neuron-saving function and develop drugs that can do the same thing. Such a drug would limit damage to the brain, as well as protect surrounding healthy neurons that can be damaged by injured nerves in the hours and days after injury.

HUNTINGTON’S DISEASE

Huntington’s disease is an inherited and fatal disease of the brain. The single-gene abnormality responsible for the illness causes neurons in the brain to die. The symptoms include jerky movements of the limbs, difficulties with speech, swallowing, concentration, depression and eventually dementia.

Research highlights

A/Prof Anthony Hannan and his team have established that in mice, the disease’s onset and progression can be delayed with enhanced mental and physical exercise. The findings have been supported by clinical evidence in humans, which may have important implications for other illnesses such as depression and Alzheimer’s disease.

The HFI scientists aim to identify molecules to facilitate the development of a new class of therapeutic drugs which, in combination with exercise and mental stimulation, could help stave off degenerative brain diseases.

A/Prof John Drago has also identified the importance of D1 neurons in causing the disabling symptoms of Huntington’s disease. This discovery gives researchers hope in the potential for natural repair to occur and prevention of further damage in the Huntington’s diseased brain.
DEMENTIA

Alzheimer’s disease is the most common form of dementia, accounting for between 50% and 70% of all cases. As the disease progressively affects the brain, certain functions or abilities are lost.

In its early stages, the symptoms are subtle and can include forgetfulness, and taking longer to do routine tasks. As the disease progresses, the symptoms become more obvious until, in the final stages, the person is unable to care for themselves.

Research highlights
Dr Siew Yeen Chai and her team have discovered a protein involved in memory that has the potential to lead to a treatment for dementia. They have identified compounds that act on this protein in the brain called insulin-regulated aminopeptidase (IRAP) to enhance learning and memory, as well as reverse memory deficits.

This research was accelerated in 2007 after it was chosen to be one of the first experiments conducted on Australia’s new synchrotron. Data from the experiment will help the scientists refine the structure of these compounds, which is the next step in developing a drug that enhances and restores memory.

In other research, Dr Michael Farrell, PhD student Leonie Cole and collaborator A/Prof Stephen Gibson from the National Ageing Research Institute have been using MRI to study the brain activity in patients with Alzheimer’s disease when exposed to mild pain. Patients with Alzheimer’s disease receive fewer painkillers than people without the disease, which sparked the question – do people with the disease feel less pain? The researchers found that the Alzheimer’s patients’ pain circuitry was intact, which means that clinicians need to be diligent in assessing pain. They suspect some Alzheimer’s patients don’t report pain because their memory is impaired, and because intermittent pain can be forgotten.

ADDICTION

Alcohol and drug addiction has a devastating impact on our society and economy. Chronic alcohol and drug use can lead to a powerful cycle of addiction and, in some cases, damage the brain and other organs. An addict can lose control of their life and suffer severe consequences. The HFI’s addiction researchers are investigating how alcohol and drugs change the brain’s structure, chemistry and function.

Research highlights
Significant progress has been made in understanding how addiction involves the brain’s ‘reward pathway’ including new approaches to prevent addiction and relapse after withdrawal. The aim is to develop effective treatment and prevention strategies.

Orexin, discovered nine years ago, is known to regulate appetite and the sleep-wake cycle. Prof Andrew Lawrence and his team have recently discovered that orexin also plays a critical role in alcohol addiction. The research shows that the craving for alcohol, as well as relapse after recovery, can be stopped by a drug that blocks orexin’s actions in the brain. This significant Florey discovery could also lead to treatments for eating disorders, such as chronic over-eating.
SCHIZOPHRENIA

Schizophrenia is a complex brain disorder that affects about one in 100 Australians. The illness is characterised by a breakdown of thinking and emotions, and a loss of contact with reality. It usually begins in late adolescence or early adulthood. About 20% to 30% of people with schizophrenia experience only a few brief episodes. For others, it is a chronic condition. Approximately 10% of people with schizophrenia commit suicide.

Research highlights

A/Prof Anthony Hannan, Dr Caitlin McOmish and Emma Burrows have established that enhanced exercise and activity can help ameliorate schizophrenia-like symptoms in a mouse model of the disease. Anti-psychotic drugs used by humans also improved the mouse’s condition. Furthermore, Dr Laura Gray has shown that a different line of mice with a mutation in a related gene also respond to the same therapeutic drug. These findings have implications for the future development of new treatments for schizophrenia.

BRAIN FUNCTION IN HEALTH AND DISEASE

HFI scientists dedicate themselves to building their knowledge of how the healthy brain functions and how it becomes dysfunctional in disease. By studying the brain’s development and how the brain manages our body’s basic functions, they are piecing together the complex puzzle that is our brain.

Research highlights

Prof Seong-Seng Tan and his team are using cells that glow with the addition of a fluorescent protein and are producing videos of brain cells moving into place in the early stages of a laboratory rodent’s life. The equivalent stage in humans is a foetus between 10 and 20 weeks of pregnancy. The brain is extremely fragile in this early stage of pregnancy. Research shows that interruption to the wiring process can cause serious damage to a developing brain. In human pregnancy, a serious event in this crucial stage, such as increased body temperature, could affect brain development and pose a risk to the unborn child.

Dr Robin McAllen’s work on tracking brain pathways that deal with temperature regulation is making excellent headway. Working with Dr Mutsumi Tanaka and Prof Michael McKinley, the team examined control by the rat brain of nerve activity to blood vessels in the skin and tail. To their surprise, they found that these nerves were controlled by different brain pathways that had little in common, except for a sensitivity to body temperature. They now believe there are four independent pathways that are activated by cold, and also by fever, which all have a critical synapse in the brain stem region.
Work with animals has examined drinking behaviour, and showed thirsty younger animals drink more than thirsty older animals after both had been deprived of water for one day. This experiment has been repeated in humans in work with the Florey’s neuroimaging expert, A/Prof Gary Egan. However, Dr Michael Mathai discovered that giving older rodents a diet that contains omega 3 fatty acids improved their thirst so that their water intake matched that of younger animals.

RELAXIN – A HORMONE WITH MANY ACTIONS
Relaxin, viewed mainly as a hormone of pregnancy, is now known to have wider functions and therapeutic applications. Relaxin acts on connective tissues and collagen production, relaxes blood vessels, improves blood flow, and promotes new blood vessel formation.

Research highlights
Under Prof Geoffrey Tregear, the HFI has been investigating relaxin for more than 25 years. Central to Prof Tregear’s group’s work is to further understand how relaxin interacts with the body’s receptors; this work is headed by Dr Ross Bathgate. This research is essential because peptides and proteins are not useful drugs because they cannot be taken orally as the body breaks them down before their active properties can have an effect. The goal is to create a small organic molecule, as a conventional drug, that mimics the desired effect of relaxin.

A/Prof Andrew Gundlach’s team continues to uncover the workings of the most recently discovered relaxin, relaxin 3. Initial studies in animals indicate that relaxin 3 is involved in feeding and metabolism, behavioural responses to stress, and in learning and memory. These studies suggest relaxin may have possible therapeutic roles in the brain.
The Florey lights the way for young scientists

Science is where solutions lie to the health problems that cause pain and suffering. Science has an increasingly important role to play in our future. Australia has no shortage of talented science students who are nurtured and developed through their secondary schooling. Our universities produce world-class, passionate individuals who are eager to apply their deep understanding of scientific principles to basic research.

The outstanding calibre of our neuroscientists ensures the Florey is an attractive place for students to undertake postgraduate research.

Our broad expertise attracts multi-disciplined students with backgrounds in medicine, science and engineering.

The Florey fosters a trusting and encouraging environment for students to gain a thorough grounding in research practices. In a supportive learning atmosphere, students work as equals in teams alongside experienced scientists.

As well as developing their scientific skills, the Florey implements a formal training and mentoring program for all PhD students. Each student is mentored by a more senior colleague who understands the challenges and pressures facing a PhD candidate.

Our students are high achievers. Their time spent at the Florey develops not only their scientific nous, but also their confidence, insight and the interpersonal skills necessary for long and successful careers.
Adding value through commercial opportunities

Outstanding research delivers more than health benefits to the community. Our brain research also holds enormous commercial value. The Florey has continued to build its commercial profile and sought new opportunities to identify, protect and generate income from the intellectual capital held by our scientists.

Our commercial revenue continues to grow; up from 3.7% in 2000 to more than 12% in 2007. This income is reinvested in new staff, equipment and resources that underpin our fundamental research efforts.

The Florey has joint venture companies both locally and internationally. Health service providers, biotechnology and pharmaceutical companies, as well as the Federal Government join and support our low-risk business development endeavours. They recognise the value in commercialising our discoveries so they can be developed into treatments to improve public health. We currently have established joint venture commercial programs taking place in Australia, the USA and Europe.

Our research continues to offer exciting commercial possibilities. New approaches to neuropathic pain, epilepsy, neuronal survival post injury, learning and memory, and Parkinson’s disease are examples of where future commercial opportunities will emerge.

Our path to commercial success is assisted by the HFI Commercialisation Committee. They provide valuable expert advice and guidance on all matters related to intellectual property and commercial arrangements.
A history of commitment

The Brain Research Institute (BRI) was established in 1996 with a mission to understand the function of the human brain in health and disease.

Magnetic Resonance Imaging (MRI) is the principal tool we use to get information from inside the living human brain and greatly increase our knowledge on its structure and function in ways that no other technique can provide.

Many years ago, we sowed the seed of bioimaging pre-eminence. That seed has grown and is now flourishing with the fruits of international recognition, an outstanding reputation in scientific communities, and a growing skill base.

We are the proud owner of two of the most powerful MRI machines in Australia. These 3 Tesla (3T) machines are fully dedicated to research. We also have research teams that are internationally recognised for their work in developing new MRI techniques for studying the brain. The power of MRI in this context is extraordinary. Integrated with Positron Emission Tomography (PET) scanning at Austin Health, this provides enormously powerful tools for both clinical investigation and neuroscience research. The exciting potential of this skill and equipment platform within the multi-disciplinary environment of the Florey Neuroscience Institutes is remarkable.

Dedicated supporters

In our 11 year history, the BRI has developed a profile as a leader in neuroscience. Our success has come with strong corporate, government and philanthropic support.

Those same financial supporters are backing our journey as a member of the new Florey Neuroscience Institutes. Our strong scientific output, the success of our model of private and government partnership, and the international reputation of our research, has led to support for us to make the visionary step to amalgamation. The new facilities to be built at Parkville and Austin Health will house the critical mass of scientists that will forge the exciting 21st century pathway to discovery.
Improving outcomes

We believe a long-term outcome of our collaboration and research will deliver paradigm shifts in health care delivery. With a rapidly ageing population and spiralling health care costs, new approaches are required. Improved diagnostic methods, coupled with enhanced recovery strategies will see a change in the current model of hospital based care.

With our strong historical ties with Austin Health, our research is applied in new and improved treatments, procedures and processes. Our collaborative approach to research and its application in a clinical setting makes BRI an important partner at the FNI table.

EPILEPSY

The BRI is undertaking world-leading clinical research and family studies of epilepsy. Despite the relatively high incidence of epilepsy in the general population (approximately 1 in every 140 people), the mechanisms of seizure generation remain unclear, and a significant proportion of epilepsy sufferers are resistant to anti-seizure drugs. Frustratingly, no effective treatments exist for some patients.

The BRI has three chief investigators on a National Health and Medical Research Council program grant that involves strong collaboration with the Epilepsy Research Centre, Howard Florey Institute, Monash Medical Centre and the University of Adelaide. This is one of the premium epilepsy programs in the world.

We are dedicated to linking our research to an ultimate cure for people who suffer from seizures.

Research highlights

Using the combination of neuroimaging techniques, we have made significant breakthroughs to help shed light on what generates a seizure. We look at electrical activity in the brain, the brain’s blood flow response to events, and neurophysiological changes immediately before the onset of a seizure.

Also under investigation are the internal characteristics, such as an individual brain’s structure, shape, internal connections and functional organisation. These characteristics are combined with other data, such as genetic profile and clinical symptoms, to help us better understand the disease.

The BRI has an important collaboration with Prof Anne Berg at the Northern Illinois University, USA. This project is an investigation of long-term outcomes of childhood onset epilepsy. We are providing the MRI technical capability to address questions of brain structure as it relates to these issues. This is one of the largest studies of its kind, and with the assistance of a National Institutes of Health project grant, we will monitor our sample over more than eight years. The results will help us to use MRI parameters at the onset of disease to predict future outcomes. This will be a major advance for the treatment and counselling of childhood epilepsies.
BRAIN FUNCTION

In a normal brain, information is transmitted rapidly, criss-crossing between different regions. Each region has a critical role to perform in task processing and also has a particular functional specialisation.

By probing brain function, we seek to understand how the brain can recover important functions after injury.

Research highlights

BRI researchers are exploring the brain networks associated with language, memory and motor function. Cognitive functions such as language involve a network of focal brain regions, together with the connections between them. Disorders of brain function can be considered as primarily disruptions of local cortical function (such as stroke), miscommunication between focal regions (as suggested for schizophrenia), or both (possibly in epilepsy).

Climate of collaboration

The BRI has historically supported the work of other research groups and the climate of collaboration will continue within the new Florey Neuroscience Institutes. We:

- examine the recovery and reorganisation of brain function after stroke
- identify markers for disease in patients at risk of developing full-blown schizophrenia. These markers will allow for earlier administration and improved drug treatments
- examine the central and peripheral effects of Botox injections on upper limb function of children with cerebral palsy
- conduct Magnetic Resonance investigation of obstructive sleep apnoea
- investigate Magnetic Resonance characterisation of brain abnormalities in patients with Parkinson’s disease
- look at the effects pre- and post-therapy on cognition in Huntington’s disease
- examine brain response to treatments of anorexia nervosa in young people
- study central nervous system changes in young people with type 1 diabetes.

BRI has been crucial in establishing a study of traumatic brain injury in children. This is an important initiative that shows the strength of our collaboration with the Murdoch Children’s Research Institute. Also lending their scientific expertise and technologies in this study is University College London.

Another exciting collaboration is with the Biomedical Imaging Group, eHealth Research Centre at CSIRO. BRI will use CSIRO’s technique of cortical thickness mapping to study epilepsy, as well as in applications of BRI’s fibre tracking technology to increase our understanding of Alzheimer’s disease.

Cross-disciplinary research in specialist fields of technical development, particularly in a neuroscience applications environment is very important. Our work with Prof Iven Mareels and Dr Leigh Johnson from the Department of Electrical and Electronic Engineering at the University of Melbourne is of immense value.

Commercial interactions
The BRI scientists have a history of close scientific and commercial interactions with Siemens in Erlangen, Germany. The technical team has contributed previously to the software packages that Siemens use in diffusion and perfusion MRI, as well as in functional MRI. This commercial collaboration is continuing, and gives major international significance to developments occurring here in Melbourne.
Stroke causes major neurological problems

Stroke is one of the most important public health problems globally. It is the second most common cause of death and the major cause of acquired disability world-wide.

There are two types of stroke. An ischaemic stroke occurs when the blood supply to the brain is interrupted, usually by a blood clot. The second type is haemorrhagic stroke, which occurs when there is bleeding in or around the brain. Severe stroke may lead to paralysis, loss of consciousness or death.

The nature and severity of the resultant neurological problems caused by stroke vary according to the location and size of the stroke. Weakness affecting one side of the body is the most recognised sign of stroke but there are many other signs including speech disturbance, visual loss, double vision, memory loss, tingling and numbness, difficulty swallowing and dizziness.

Our history

The National Stroke Research Institute (NSRI) was established in 1994 to tackle the devastating impact of stroke on the community. NSRI is the only research institute in Australia dedicated to stroke research. The Institute’s structure of seven vertically integrated research divisions allows the problem of stroke to be addressed across its entire spectrum, from laboratory research to clinical trials and public health. NSRI has formal links with seven Australian collaborating centres and strong international collaborative links with laboratories in Germany, USA, UK, Singapore and Sweden. The Institute is internationally recognised for its high quality research with an output of an average of 40 peer reviewed journal publications annually.

NSRI scientists have identified specific interventions that have proven benefit for patients of acute stroke. The research has contributed to well established interventions to help prevent and lower the probability of recurring stroke.

For acute stroke the three proven interventions that have a dramatic benefit for patients are:

- the use of a clot dissolving drug called TPA within three hours of stroke
- oral aspirin within 48 hours
- patient management in a stroke unit.

For secondary prevention we have also contributed to research showing the benefits of:

- the use of anti blood-clotting agents
- treatment of high blood pressure
- the use of blood thinning drugs for patients with atrial fibrillation
- carotid artery surgery for those with narrowing of the vessel
- cholesterol lowering drugs known as statins.

Despite these significant advances in care and prevention strategies, much work still needs to be done.
DIVISION OF BASIC SCIENCES

Our scientists’ laboratory research focuses on neuroprotection and neuroregeneration after stroke. We have two specific aims:

• to understand the value of specific classes of drugs
• to determine whether a combination of drug therapy offers any advantage over use of a single drug.

Research highlights

If nerve cells in the brain can be protected from damage after stroke, then the damage caused will be reduced. Having performed an extensive review of neuroprotection after stroke in the laboratory, we have determined the most effective therapies and plan to test these in human trials.

While many projects have studied damage to nerve cell bodies after stroke, few have studied the damage caused to connections between nerve cells (axons). We are now studying how axons are injured and if they regenerate after a stroke, and whether new connections between nerve cells are made.

Another of our major projects aims to understand the mechanisms that underlie the development of epilepsy after a stroke. Video-EEG is being used to determine the time of onset, frequency and nature of seizures after stroke.

DIVISION OF CLINICAL TRIALS

Clinical trials are a major focus of the NSRI, with around 30 trials underway at any one time.

Our main interest continues to be in acute stroke therapy as well as secondary prevention. Our clinical trials depend upon the support and collaboration of a large number of centres and investigators both within Australia and internationally.

Research highlights

Reducing both the personal and community burden of stroke is a primary aim of the very early rehabilitation research program. A Very Early Rehabilitation Trial (AVERT) has the largest sample size for this type of trial in the world. In this innovative study, the hypothesis that earlier and more intensive mobilisation of stroke patients will improve outcomes is being tested. In addition, the cost effectiveness of the intervention will be established. More than 200 stroke patients have been recruited to the trial from hospitals across Australia and internationally.

In the secondary prevention field, a large number of studies are continuing using anti blood-clotting agents and anticoagulants, as well as agents designed to reduce the risk of surgical procedures such as carotid endarterectomy.
DIVISION OF IMAGING AND ULTRASOUND

The ischaemic penumbra continues to be an important focus of our research. This term refers to brain tissue that is damaged but may have the capacity to recover. We now have the ability to create images that differentiate between dead brain tissue and potentially salvageable tissue using Positron Emission Tomography (PET) and Magnetic Resonance Imaging (MRI).

Research highlights

The images created with our sophisticated tools are helping us identify brain inflammation, haemorrhage and the cognitive change seen after stroke. These pictures of the stroke affected brain may ultimately help us to minimise the damage caused from stroke.

NSRI researchers and a Melbourne-based ultrasound company are investigating the clinical significance of a newly appreciated ultrasound sign, referred to as ‘small vessel knock’.

Our research involves correlating the presence of small vessel knock with clinical and radiological findings to determine its usefulness in clinical management of stroke cases.

DIVISION OF EPIDEMIOLOGY

The ongoing impact of stroke can seriously affect the quality of life of the stroke patient. Depression, recurring stroke and impairment in memory and cognitive ability are all quite common. Our research in this area attempts to quantify the impact over time.

Research highlights

The major findings from our longitudinal Incidence Study indicate the dramatic increase in the incidence of stroke with age. Stroke occurs in one in every 900 people aged in their 40’s and increases to one in every 25 people older than 85. The cost of stroke has also been quantified, with the present value of lifetime costs estimated at $1.3 billion. First-time stroke patients receive an estimated $21.7 million in informal care in the year after stroke.

The longitudinal Follow-up Study has already assessed many stroke survivors to five years and aims to follow up outcomes to 10 years. The study has major implications for post-stroke patient care and management.

The findings suggest that treating post-stroke depression and anxiety may be an important way to help reduce disability after stroke. Also, interventions that target disability and mood have the potential to improve health-related quality of life. The data also highlights the importance of secondary prevention in minimising stroke-related dementia and hypertension.
DIVISION OF PUBLIC HEALTH
The work of this division focuses on disease prevention and evidence-based clinical management in hospitals. Through extensive hospital audits over time, empirical data has been gathered that concentrates on the structure, process and outcomes of care.

Research highlights
Combined quantitative and qualitative research is ongoing to determine the differences in stroke unit care between Austin Health in Melbourne and St Olavs Hospital in Trondheim, Norway. The objective is to identify factors that might be associated with better stroke outcomes, particularly in relation to early rehabilitation practices. This information may be used to help improve care in existing stroke units, or inform the development of new stroke units.

The NSRI assisted the National Stroke Foundation evaluate a pilot program for self-management. The eight-session, community-based program for stroke survivors and carers was designed to promote self-efficacy.

Other areas of research include sleep disordered breathing in stroke survivors, and an economic appraisal of the potential health benefits and cost implications of a national public health program for stroke. It has been found that blood pressure lowering interventions are the most influential in producing health gains and relieving the cost burden of stroke.

DIVISION OF NEUROREHABILITATION AND RECOVERY
The brain must re-learn movement and sensory (feeling) functions after stroke. Our studies focus on the processes in the brain underlying recovery of movement and feeling with and without training. Researchers and clinicians from multiple disciplines collaborate in the research. Occupational therapy, physiotherapy, neurology, physics and experimental psychology are all involved.

Research highlights
Using Positron Emission Tomography and functional Magnetic Resonance Imaging, NSRI researchers have identified changes in brain activity associated with recovery of movement over a six-month interval following stroke.

Evidence gathered from the re-training studies indicates that clinically-focused sensory discrimination training programs have enormous benefit in stroke recovery. Patients experience improvement in texture discrimination, limb position sense, tactual object recognition and hand function following Stimulus Generalisation Training.

Our sensory research is unique and will provide direction for the development and testing of scientific-based interventions designed to maximise recovery by driving reorganisation of brain functions.

DIVISION OF STATISTICS AND DECISION SUPPORT
The objective of the Division of Statistics and Decision Support within the NSRI is to provide expertise in data, quantitative, and statistical aspects of research projects carried out in the divisions of the NSRI. An important source of that expertise is our own research in a number of areas of modelling methodology of relevance for promoting the use of high-standard, rigorous quantitative methods to support decision making in the disciplines making up our institutional environment.
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### INCOME STATEMENT

<table>
<thead>
<tr>
<th>Description</th>
<th>Florey Neuroscience Institutes</th>
<th>Consolidated Group</th>
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<tr>
<td>Revenue from ordinary activities</td>
<td>1,270,529</td>
<td>17,973,644</td>
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<td>Salary and employee benefits</td>
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<td>Depreciation</td>
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<td><strong>NET SURPLUS</strong></td>
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The Florey Neurosciences Institutes consolidated group includes: Florey Neuroscience Institutes, Howard Florey Institute, Brain Research Institute, National Stroke Research Institute, Howard Florey Institute Foundation and Genvartec Pty Ltd.

### 2007 REVENUE SOURCES

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<th>Revenue Source</th>
<th>Actual</th>
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<td>Government and Statutory Bodies</td>
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<td>Other Peer Review Funding</td>
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<tr>
<td>Commercial Collaborations</td>
<td>1,400,287</td>
<td>8%</td>
</tr>
<tr>
<td>Miscellaneous Income</td>
<td>800,786</td>
<td>4%</td>
</tr>
<tr>
<td>Investment Income</td>
<td>895,154</td>
<td>5%</td>
</tr>
<tr>
<td><strong>TOTAL</strong></td>
<td>17,973,644</td>
<td>100%</td>
</tr>
<tr>
<td></td>
<td>Florey Neuroscience Institutes</td>
<td>Consolidated Group</td>
</tr>
<tr>
<td>--------------------------</td>
<td>-------------------------------</td>
<td>--------------------</td>
</tr>
<tr>
<td><strong>BALANCE SHEET</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Current Assets</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Cash and cash equivalents*</td>
<td>11,798,901</td>
<td>70,036,499</td>
</tr>
<tr>
<td>Trade and other receivables</td>
<td>-</td>
<td>4,696,805</td>
</tr>
<tr>
<td>Prepayments</td>
<td>-</td>
<td>120,959</td>
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<tr>
<td><strong>Total Current Assets</strong></td>
<td>11,798,901</td>
<td>74,854,263</td>
</tr>
<tr>
<td><strong>Non-Current Assets</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Property, plant and equipment</td>
<td>-</td>
<td>9,180,981</td>
</tr>
<tr>
<td>Assets under construction</td>
<td>649,310</td>
<td>1,245,442</td>
</tr>
<tr>
<td>Investments</td>
<td>-</td>
<td>11,341,953</td>
</tr>
<tr>
<td><strong>Total Non-Current Assets</strong></td>
<td>649,310</td>
<td>21,768,376</td>
</tr>
<tr>
<td><strong>TOTAL ASSETS</strong></td>
<td>12,448,211</td>
<td>96,622,639</td>
</tr>
<tr>
<td><strong>Current Liabilities</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Trade and other payables</td>
<td>1,249,243</td>
<td>2,688,943</td>
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<tr>
<td>Provisions</td>
<td>-</td>
<td>2,978,928</td>
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<tr>
<td>Other - unearned revenue</td>
<td>10,549,658</td>
<td>58,215,737</td>
</tr>
<tr>
<td><strong>Total Current Liabilities</strong></td>
<td>11,798,901</td>
<td>63,883,608</td>
</tr>
<tr>
<td><strong>Non-Current Liabilities</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Provisions</td>
<td>-</td>
<td>906,616</td>
</tr>
<tr>
<td><strong>TOTAL LIABILITIES</strong></td>
<td>11,798,901</td>
<td>64,790,224</td>
</tr>
<tr>
<td><strong>NET ASSETS</strong></td>
<td>649,310</td>
<td>31,832,415</td>
</tr>
<tr>
<td><strong>Funds</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Funds and reserves</td>
<td>-</td>
<td>30,476,923</td>
</tr>
<tr>
<td>Current year profits</td>
<td>649,310</td>
<td>1,355,492</td>
</tr>
<tr>
<td><strong>TOTAL FUNDS</strong></td>
<td>649,310</td>
<td>31,832,415</td>
</tr>
</tbody>
</table>

*Includes funds contributed for the construction of the new neuroscience centre.
A united front to battle brain and mind disorders

Visionary leadership has brought about a meeting of minds. Neuroscience in Australia is positioned to participate in ground-breaking discoveries in the coming decades.

The FNI uniquely links real clinical medical issues with basic science questions. It is one institute with the combination of talent and capacity to find the answers we urgently seek.

The FNI is empowered by strategically assembled technology and human capability. We have two 3T MRI systems fully devoted to brain research. Major equipment such as specialist microscopes, genetic techniques, animal behaviour assessment and many other tools are on hand for cutting-edge research.

The combination of technical capability, supported by highly trained researchers, provides the unique power of the FNI to make progress in a range of brain diseases.

Building the vision

Equipping Australia's leading researchers with the tools of neuroscientific discovery and housing them in dedicated new buildings is critical in waging the battle against brain disease.

The Parkville building will consist of seven floors and contain 25 laboratory spaces, specialised equipment, an education centre, a 250 seat auditorium and reception area with display space, offices and a café.

The building will be accessible from Royal Parade and from the University of Melbourne.

The Austin building will consist of three floors containing offices, state-of-the-art neuroimaging facilities, laboratories, and a reception area with display space and clinical suites including consulting and family interview rooms. The building will be accessible from Burgundy Street and from the Austin Hospital.

The resulting powerhouse of intellectual capacity and research strength will attract the best neuroscientists from around the world, making Melbourne the leading centre for brain research in the Southern Hemisphere.

What price for progress?

What is our health worth? How much are we prepared to invest in our quest to answer the brain disorder questions that challenge us? What price do we place on reducing disability and saving lives?

Research by Access Economics recently found that for every dollar invested in medical research, five dollars is returned to the Australian economy. If that estimate is only half right, it is still a healthy return on investment. Imagine the benefit to the economy when we achieve the main prizes – preventing some of the brain disorders that plague our community.

The Brain Appeal

An appeal has been launched to raise the $225 million necessary for this visionary project.

The State and Federal Governments, the University of Melbourne, The Ian Potter Foundation, The Myer Foundation and family, and a number of other generous donors have already committed $172 million to this appeal.
We need your help
Please support the Brain Appeal. Donations are tax deductible. Share the vision so that as a community we can reap the rewards.

So many of us are touched by the random and indiscriminate afflictions of brain disorders. Friends, family, neighbours, colleagues. We all know someone who suffers the pain, disability, stigma or death that brain disorders deliver.

Please support the Florey Neuroscience Institutes and help turn the tide on brain disease.

Donate today
Donations to the Brain Appeal are tax deductible when made payable to:

Florey Neuroscience Institutes
161 Barry Street, Carlton South, Victoria 3053, Australia

For more information contact:
Mr Alun Evans
Fundraising Director
Florey Neuroscience Institutes
(03) 8344 1629
alun.evans@florey.edu.au

HELP
To make a donation
TURN THE TIDE
ON BRAIN DISEASE.

phone (03) 8344 1629
or email alun.evans@florey.edu.au
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