



# ANNUAL **REPORT** 2013-2014



**neurosciences**victoria

Neurosciences Victoria acknowledges the support of the following.



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# ▶ CHAIRMAN AND CEO REPORT

Neurosciences Victoria's activities in 2013 / 14 continued the Company's strong focus on generating, marketing and managing research programs that capture the world class preclinical and clinical expertise in the Victorian neuroscience community.

NSV's expertise in developing collaborative initiatives across universities, research institutes and hospitals provides the neuroscience community with a significant advantage in accessing and working with providers of research funding. Our independence allows for marketing of opportunities for the neuroscience community as a whole, complementing the work of individual research organisations. This approach has generated more than \$80m in research funding since NSV's incorporation over fourteen years ago.

*NSV's focus at present lies in the following three programs:*

## ▶ THE CENTRE FOR BRAIN INJURY

Traumatic brain injury, including concussion, is a major cause of disability and serious distress for individuals and their families. The issue generates significant media and political attention across a variety of industries.

NSV has catalysed a globally significant, multi-million dollar brain injury program in the sport, road and defence sectors to initiate a proposed Centre for Brain Injury. The Centre will bring together world class trauma expertise from a number of Victorian institutes to collaborate with industry end users.

NSV's clinical research partners, including Alfred Health, The Australian Centre for Posttraumatic Mental Health, Federation University Australia, the Florey Institute of Neuroscience and Mental Health, Melbourne Health, Monash University and The University of Melbourne will work with leading industry organisations to develop innovative technologies to reduce the societal and economic impact of brain injury. The opportunities to develop partnerships with government and industry are significant.

## ▶ STRATEGIC RELATIONSHIPS IN NEUROSCIENCE - INDIA

NSV is in the second year of a three year program to market Victorian neuroscience to India. This activity receives funding from Austrade as part of the Asian Business Engagement Plan, as well as from the Victorian Government. With excellent assistance from both Austrade and Victorian Government personnel in India, the program is generating new partnerships in education, training and research. Importantly, the strategy of holding regular visits to key stakeholders in India is demonstrating considerable benefit through the development of relationships across industry sectors. We are confident that, in collaborating with our academic partners, this approach will develop significant long term, mutually beneficial business opportunities with India.

► **MENTAL ILLNESS RESEARCH FUND**

NSV continues to add strength to its reputation for delivery on government programs, facilitating opportunities for partnering in future major government initiatives. In particular, our collaboration with the Victorian Department of Health in the provision of management services for the Mental Illness Research Fund (MIRF) is progressing well. This four year, \$10 million initiative provides funding to five multidisciplinary and cross-sector collaborative research projects that have the potential to provide tangible improvements for Victorians with mental illness and their carers. The first year of the MIRF program has been completed, with all five funded projects showing considerable promise.

The Company recognises that the present government and industry funding environment for medical research is difficult. We believe NSV's strategies for development of large, cross-institute programs that address the needs of both government and industry are effective and will assist NSV's financial position over the short to medium term. An important factor in this regard is the strong leadership provided by NSV's Scientific Council, a representative body of neuroscience leaders, in identifying directions and opportunities.

NSV's operational activities in 2013 / 14 generated a loss of \$168,000; net assets as of 30 June 2014 were \$2,074,000. We are strongly focussed on a strategy of a sustainable, long term future for NSV and believe that major programs under development will lead to an improved financial situation over the next year or so.

We look forward to 2014 / 15 being a strong year for Victorian neuroscience and NSV. We would like to thank all of the stakeholders in NSV; our Member institutes, our valued colleagues in the Victorian neuroscience community and the Victorian and Australian Governments, for their continued support and involvement. Finally, we wish to recognise our staff and fellow Directors for another year of significant effort and achievement.



**Bill Burdett**  
Chairman



**Andrew Milner PhD**  
Chief Executive Officer and Managing Director

# ► OVERVIEW

Neurosciences Victoria was formed in 2001 and is a not-for-profit company that facilitates technology transfer and inward investment in collaborative, cross-institute research programs for the world-class Victorian neuroscience community.

To date NSV has generated in excess of \$80 million in programs from both industry and government.

NSV offers a single access point to a range of neuroscience platforms and disease specialisations, backed by leading neurology and psychiatry resources. A focus of NSV is to facilitate seamless contractual relationships between industry, government and the Victorian neuroscience cluster of universities, medical research institutes and hospitals.

*NSV works with the following disease specialisations:*

- ▶ Multiple sclerosis
- ▶ Schizophrenia
- ▶ Alzheimer's disease
- ▶ Epilepsy
- ▶ Neurodevelopmental disease
- ▶ Depression and bipolar disorder
- ▶ Huntington's disease
- ▶ Motor neurone disease / ALS
- ▶ Neurotrauma
- ▶ Parkinson's disease
- ▶ Stroke

*The neuroscience community has a range of technology platform capabilities.*

A feature of the Victorian neuroscience community is the wide range of platform capabilities available to researchers in both academia and industry. These are highlighted in the Victorian Platform Technologies Network website. (<http://www.platformtechnologies.org/>)

A number of the world class neuroscience-specific platforms are listed below.

## **NEUROIMAGING**

The neuroimaging platform has successfully evolved into a self-sustained organisation as The Victorian Biomedical Imaging Capability (VBIC). The VBIC provides a coordinated network of capabilities and research capacity in biomedical imaging to support universities and medical research institutes in neuroscience. Capabilities include research dedicated 3T MRI, 7T MRI, PET / CT, Animal MRI and Animal CT, co-ordinated across multiple Victorian sites. All facilities provide access and expertise for all Victorian researchers.

## **AUSTRALIAN BRAIN BANK NETWORK**

A consortium of brain banks across Australia that facilitates research into brain and mind disorders, provides neuropathological diagnostic services and supports brain donor programs. Access is provided to human brain tissue which has been carefully collected, processed and stored and is from a wide range of neurological and psychiatric conditions.

## **NEUROSCIENCE TRIALS AUSTRALIA**

A neuroscience dedicated contract research organisation that provides a single point of contact for a range of clinical trial services. These include: clinical program development, study design, protocol review, regulatory advice, study feasibility, site selection, statistical advice and data management, medical writing, project management and monitoring.

## NEUROPROTEOMICS

The platform advances studies examining the role of proteins, metalloproteins and biomarkers in the nervous system. The facility has a unique capability to directly measure metalloproteins as well as general capabilities for proteomics and trace element analysis. The facility is equipped with instruments to probe secondary structure including Circular Dichroism (CD), pulsed paramagnetic resonance (EPR, Bruker) and equipment for proteomics including mass spectrometry (Agilent QTOF 6550 with chipcube) and large format 2D gels (9500 Typhoon imager and associated gel equipment). For trace element analysis we have two inductively coupled mass spectrometers (Agilent 7700 and the new Agilent 8800) and are equipped to conduct laser ablation studies of trace elements which reveal the spatial distribution of trace elements such as iron in central nervous system tissue.

## CLINICAL NEUROBIOLOGY OF PSYCHIATRY

The technology and capabilities of this platform have moved into the Monash Alfred Psychiatry research centre (MAPrc). MAPrc coordinates and facilitates all research performed within The Alfred's Department of Psychiatry, aiming to develop new treatments, new understanding and new services for mental illness.

## NEURO RESEARCH SERVICES

A preclinical contract research organisation providing proof of concept and efficacy testing services to the CNS drug discovery market. Facilities include preclinical study design and assessment selection, rodent models of human diseases, behavioural testing, surgical services, pharmacokinetics, rodent neuropathology, imaging and analysis.

## CELLULAR PHYSIOLOGY

Provides access to state of the art automated planar patch clamp platforms, two electrode voltage clamp and manual patch clamp services for analysis of ion channel function for mutation analysis, drug discovery and safety pharmacology. In addition, this facility offers multielectrode array services in brain slices or neuronal cultures for assessment of drugs on neuronal network function, LTP, LTD and other assays.

## NEUROINFORMATICS

Neuroinformatics capabilities have substantially evolved and improved over the last decade. This platform has been integrated into other bioinformatics initiatives within the national research computing landscape. For example, the DaRIS bio-medical imaging data management capability, developed at the University of Melbourne, is now deployed nationally at nodes of the National Imaging Facility (and other locations).

## HISTOPATHOLOGY, HISTOLOGY AND IMAGING

The Histopathology and Organ Pathology Service (HOPS) that was established by NSW provides histopathology services to all biomedical researchers across Australia for the evaluation of animal models of disease. HOPS has a specific consulting service in Neuropathology. It specialises in the evaluation and phenotyping of modified, treated or genetically engineered mice at all developmental stages.

This service provides the specialised equipment and technical expertise for histopathological analysis of whole organs, soft and hard tissues, to help researchers gain a better understanding of their animal model's phenotype. It is delivered by a team of experienced medical and veterinary pathologists, mouse pathobiologists and imaging experts implementing comprehensive anatomical pathology and histopathology evaluation procedures.

HOPS has teamed with the Florey Institute of Neuroscience and Mental Health to establish a sophisticated digital slide scanner, the Metasystems V-Slide Scanner, that provides four colour fluorescence and interference contrast images of individual slides of brain or other tissues. HOPS evaluation includes professional commentary and secure online access to large format, interrogatable histological images created utilising state of the art image acquisition systems using the Mirax Digital Slide Scanner and the Metasystems V-Slide Scanner.

The service is linked to the Australian Phenomics Network that brings together mouse production, strain storage, pathology capabilities and RNAi / genomics services.

## ► DIRECTORS

The Board of Directors of Neurosciences Victoria brings together a strong mix of scientific, clinical, public policy and commercial expertise.

### **MR BILL BURDETT**

*BSc (Hons), ASIA*

#### **Chairman**

Mr Burdett graduated in geology at the University of Western Australia and worked in oil exploration for nine years before moving to Melbourne to start a mining research department for the stockbroking firm of A.C. Goode & Co. He became a partner of the firm and in 1984 was appointed Executive Director in charge of Institutional Sales, Research and Corporate Finance.

Following the sale of A.C. Goode & Co. to the National Australia Bank in 1987, Bill became Founding Chairman and Chief Executive of Burdett, Buckeridge & Young, an institutional stockbroker. His previous appointments include: Director of Investment Technology Group, Inc., Director of IRESS Market Technology Ltd, Director of Nossal Institute Limited, Council Member of the Nossal Institute for Global Health and Director of the Victorian Neurotrauma Initiative Limited.

Bill is currently a Director of Australian Friends of Asha Slums.



### **MRS JAN WEST AM**

*B.Comm, FCA GAICD*

#### **Deputy Chair**

Mrs West is a non-executive Director with experience in public sector, community and private organisations. A Chartered Accountant with 23 years' previous experience as a Partner at Deloitte, Jan is a Director of Australian Red Cross and Retail Responsible Entity Ltd.

Her experience offers the Board a depth of knowledge and skills in audit, corporate governance, risk and general business acumen. Jan is a past President of The Institute of Chartered Accountants in Australia (ICAA) and currently chairs the Institute's Professional Conduct Tribunal. She has been a member of the Financial Reporting Council since 2005 and is also an Independent Member, Audit and Risk Management Committee, Victorian Department of Health.

She was appointed a Member of the Order of Australia in 2007 and awarded the Governor General's Centenary Medal in 2001. Jan is a Fellow of the ICAA and of CPA Australia and a Graduate Member of the Australian Institute of Company Directors.



### **DR ANDREW MILNER**

*BSc (Hons), MSc, PhD, FASM*

#### **Chief Executive Officer and Managing Director**

Dr Milner has been the CEO and Managing Director of Neurosciences Victoria since 2006. Andrew obtained his BSc (Hons) and MSc degrees at the University of Melbourne and his PhD at the John Curtin School of Medical Research at the Australian National University.

Andrew is a Member of the Advisory Board of the Melbourne Neuroscience Institute at the University of Melbourne and the Chair of the Australian Research Infrastructure Network Advisory Group.

He is a Fellow of the Australian Society for Microbiology and has worked in animal health and agriculture as Head of Molecular Biology at the Victorian Institute of Animal Science and subsequently as Operations Manager at Daratech Pty Ltd. In the medical arena, he has worked as Pricing Manager for Zeneca and AstraZeneca in Australia, as Director of Development and Commercialisation for Kendle (Australia) and as Managing Director of Mimitopes Pty Ltd.



### **MS DEBBIE BEADLE**

*BSc (Chem) (Hons), FIPTA*

Ms Beadle completed a Bachelor of Science with Honours majoring in chemistry from The University of Melbourne before commencing her training as a patent attorney in 1988.

She registered as a patent attorney in 1993 and became a Principal of Griffith Hack in 2003. Debbie has primarily practised as a patent attorney in the fields of chemistry and pharmaceuticals.

From 2009-2011, Debbie had the role of National Practice Group Leader of the Life Sciences and Chemical Group and was elected to the Board of Griffith Hack in November 2011.

Debbie is a Fellow of the Institute of Patent and Trade Mark Attorneys of Australia and a member of Ausbiotech, BioMelbourne Network, Royal Australian Chemical Society, Intellectual Property Society of Australia and New Zealand, Asian Patent Attorneys Association, Association Internationale pour la Protection de la Propriété Intellectuelle and the Australian Institute of Company Directors.



**PROFESSOR  
STEPHEN DAVIS AM**

*MD, FRCP, Edin FRACP*



Professor Davis is the inaugural Professor of Translational Neuroscience at the University of Melbourne. He is based at the Royal Melbourne Hospital (RMH) where he is the Director of Neurology and the Director of the Melbourne Brain Centre at the RMH.

He is the immediate past President of the Australian and New Zealand Association of Neurologists and a past President of the Stroke Society of Australasia. He was the first Co-Chair of the Australasian Stroke Trials network and has extensive experience in stroke trials. He is the President of the World Stroke Organisation, Co-Chair of the World Stroke Academy and is the Co-Chair of Neuroscience Trials Australia. He has been a Trustee of the RMH Neuroscience Foundation since its formation in 1992.

He was appointed a Member of the Order of Australia in 2013. He received the M.J. Eadie Award in 2004 by the Australian and New Zealand Association of Neurologists for career achievements in neuroscience research and the Victorian Health Minister's Award for outstanding individual achievement in the 2008 Victorian Public Healthcare awards. He is the 2011 recipient of both the American Stroke Association's William Feinberg Award and the Bethlehem Griffiths Research Foundation Medal.

He is the joint recipient of a National Health and Medical Research Council program grant in stroke. He is a Consulting Editor for Stroke and has co-authored three books, numerous book chapters and over 300 peer-reviewed papers.

His major research interests involve clinical trials in stroke and the use of neuroimaging, particularly multimodal MRI, in the selection of acute stroke treatments. He is the Co-Principal Investigator with Professor Donnan of the EXTEND trial, a stroke trial aimed at extending the time window for thrombolysis using MRI in treatment selection.

**PROFESSOR  
GEOFFREY DONNAN AO**

*MBBS, MD, FRACP, FRCP*



Professor Donnan is the Director of the Florey Institute of Neuroscience and Mental Health. He is Professor of Neurology at the University of Melbourne and Head of the Florey Department of Neuroscience and Mental Health, University of Melbourne.

His research interest is in clinical stroke management and he was co-founder of the Australasian Stroke Trials Network and Neuroscience Trials Australia. He is past President of the World Stroke Organisation and received the American Stroke Association William Feinberg Award for excellence in clinical stroke research in 2007. In 2012 he was appointed an Officer of the Order of Australia for his distinguished service to neurology and research contributions. He is the recipient of a number of international awards including the World Stroke Organisation Leadership Award (2012), Karolinska Institute Award (2012) and Wepfer Award of the European Stroke Congress for excellence in stroke research (2014).

**PROFESSOR  
PAUL FITZGERALD**

*MBBS, MPM, PhD, FRANZCP*



Professor Fitzgerald is Professor of Psychiatry, Deputy Director and Consultant Psychiatrist at the Monash Alfred Psychiatry research centre, a joint research centre of Monash University and the Alfred Hospital in Melbourne. He is also the Director of the TMS program and research unit at The Victoria Clinic, Prahran and a Member of the Scientific Advisory Board of Bionomics.

Paul is a psychiatrist, has a Masters of Psychological Medicine and a research PhD. He runs a substantive research program utilising brain stimulation and neuroimaging techniques including transcranial magnetic stimulation, functional and structural MRI, EEG and near infrared spectroscopy. The program has focused on the conduct of investigative studies of brain function / dysfunction, as well as the conduct of a variety of novel clinical trials in mood, psychotic and developmental disorders.

**PROFESSOR  
GRAEME JACKSON**

*BSc (Hons), MD, FRACP*

Professor Jackson is Senior Deputy Director of the Florey Institute of Neuroscience and Mental Health.

He is a Professorial Fellow of the Florey Department of Neuroscience and Mental Health, University of Melbourne.

His primary research interest is the application of Magnetic Resonance Imaging techniques to the understanding of epilepsy and brain function. His work is recognised for advancing the diagnosis and treatment of patients with epilepsy. Graeme is a neurologist at the Austin Hospital.

In 2008 he was awarded the National Health and Medical Research Council Excellence Award.



**PROFESSOR  
TREVOR KILPATRICK**

*MBBS, PhD, FRACP*

Professor Kilpatrick is a Professor of Neurology and Director of the Melbourne Neuroscience Institute at The University of Melbourne. He is the leader of the MS Division at the Florey Institute of Neuroscience and Mental Health and is a neurologist and Head of the MS Unit at the Royal Melbourne Hospital.

Trevor is a clinician scientist whose basic research focuses on the neurobiology of multiple sclerosis (MS), in particular oligodendrocytic biology and regenerative medicine.

Trevor has initiated a number of productive clinical research projects and established multicentre collaborations to study the genetics and epidemiology of MS and is developing translational platforms for therapeutics that target neurodegenerative diseases.



**MR BRUCE KEAN AM**

*Dip ChemE, FIEAus, FTS, FAICD, FRSA*

Mr Kean was educated in Melbourne, studying chemical engineering and economics. He has served on the boards of many public companies, including as Managing Director of Boral Ltd (1987-1994) and as a Director of AMP (1989-2000).

In community affairs, Bruce is a Director of the APEC Study Centre Advisory Board of the Royal Melbourne Institute of Technology and is a Governor of the Florey Institute of Neuroscience and Mental Health.

He was Chair of the Committee for Economic Development of Australia (1994-2002), Chair of The Sir David Martin Foundation (1994-1998), Chair of The Mental Health Research Institute of Victoria (2001-2008) and Chairman of the ATSE Clunies Ross Foundation. He was a Member of the Prime Minister's Economic and Planning Advisory Committee (1992-1994) and Chair of the Commonwealth Government's Committee of Inquiry into the Standards and Conformance Infrastructure of Australia (1994-1995). In 1994 he was appointed a Member of the Order of Australia, in 2001 the Governor General's Centenary Medal and in 2013 the inaugural ATSE Medal.



**PROFESSOR  
CHRISTOPHER ROWE**

*FRACP, MD*



Professor Rowe is the Director of the Department of Nuclear Medicine and Centre for PET and a consultant neurologist to the Memory Disorders Clinic at the Austin Hospital, Melbourne.

He has published extensively on SPECT in epilepsy and beta-amyloid imaging in Alzheimer's disease. He applies state-of-the-art neuroimaging technology to develop and confirm new diagnostic tests and biomarkers.

Chris is a Professorial Fellow, The University of Melbourne and the Florey Institute of Neuroscience and Mental Health. He is the Neuroimaging Stream Leader of the Australian Imaging, Biomarker and Lifestyle Flagship Study of Ageing (AIBL) and of the CRC for Mental Health and the former Chair, Neuroimaging Professional Interest Area, US Alzheimer's Association.

In 2011 he received the Kuhl-Lassen Award, US Society of Nuclear Medicine, for his work in developing a test for the treatment of epilepsy and the diagnosis of Alzheimer's disease. He is the first Australian researcher to receive a major international award from this Society.

**PROFESSOR  
IAN SMITH**

*PhD*



Professor Smith is Vice-Provost (Research & Research Infrastructure) at Monash University and has responsibility for the oversight and management of the University's research alliances and research infrastructure as well as developing and implementing strategies to meet future University infrastructure needs. Ian completed his first degree in Newcastle upon Tyne, England and moved to Australia in 1984 to complete his PhD at Prince Henry's Institute, Melbourne. In 1991 he moved to the Baker Heart Research Institute and was Associate Director until his move to Monash University in 2004.

Ian is also a Professorial Fellow in the Department of Biochemistry & Molecular Biology at Monash University where he runs his research group. He is an accomplished medical researcher and is recognised as a leader in his field. His research applies proteomics technologies to study the proteases involved in the generation and metabolism of peptide regulators involved in both brain and cardiovascular function. This research has resulted in over 230 publications and many patents. He receives regular invitations to speak at international meetings, many as a plenary speaker. His research has had a direct impact on human health and has led to changes in clinical practice.

Ian is a co-founder of a proteomics-based, publicly listed, biotechnology company and he continues to collaborate and consult widely with the pharmaceutical and biotechnology industry. Ian serves on six international editorial boards and over the years has held office-bearing positions in a number of national and international societies and had an active involvement in the organisation of numerous national and international scientific meetings. He has held and continues to hold, a variety of senior government and non-government advisory board / committee memberships.

**PROFESSOR  
ROB SHEPHERD**

*BSc, DipEd, PhD*

Professor Rob Shepherd is the Director of The Bionics Institute and the Head of the Medical Bionics Department at The University of Melbourne.



Rob has an international reputation as an expert in the field of neural prostheses. He led the preclinical teams that have demonstrated the safety and efficacy of Cochlear's bionic ear in both adults and children and more recently his team developed a prototype bionic eye as part of an Australia-wide collaboration – Bionic Vision Australia – to develop a commercial bionic eye.

In his administrative role, Rob has overseen the expansion of the Bionic Ear Institute into the Bionics Institute and has widened the research portfolio to include cochlear implants, retinal prostheses and the development of a neurobionic platform technology designed to alleviate a range of intractable and debilitating central nervous system disorders (e.g., epilepsy, Parkinson's disease and pain management) via central nervous system based neural prostheses.

**RETIRED**

Professor John Furness and Professor Colin Masters retired as Directors of Neurosciences Victoria on 19 November 2013.

**▶ STAFF**

**ANDREW MILNER PhD**

Chief Executive Officer and Managing Director

**CLARE FAUX PhD**

Office Manager and Researcher

**IRWIN SAUNDERS**

Chief Financial Officer

**JACKIE THOMPSON**

Accounts

**MARION THOMPSON**

Company Secretary

# ▶ RISK AND AUDIT COMMITTEE

The Risk and Audit Committee is a Committee of the NSV Board which oversees the audit and risk functions of the Company. The Committee is comprised of the Chair of the Board and non-executive Independent Directors.

*The primary objective of the Committee is to assist the Board in fulfilling its responsibilities by:*

- ▶ Overseeing the internal control functions of the Company and its corporate entities.
- ▶ Reviewing the relationship of those functions to external audit.
- ▶ Reviewing the financial statements and reports.
- ▶ Identifying the areas of risk affecting the Company and its corporate entities.
- ▶ Monitoring the Company's development, implementation and audit of policies and practices in relation to risk.
- ▶ Monitoring compliance with law.
- ▶ Assisting the Company to identify and manage risks and opportunities in the commercialisation of intellectual property.
- ▶ Reviewing proposals for resource allocation and making recommendations to the Board.

The Committee also oversees the activities of the Remuneration Committee, which has carriage of the remuneration framework and level for the CEO as well as the CEO's performance plan.

## MEMBERSHIP

Mrs Jan West AM – Chair

Mr Bill Burdett

Ms Debbie Beadle

Mr Bruce Kean AM

# ▶ SCIENTIFIC COUNCIL

The Scientific Council is a committee of the NSV Board, established to generate initiatives and facilitate collaboration and the sharing of knowledge, skills and resources across a widely representative neuroscience community.

The Council is chaired by Professor Graeme Jackson and is comprised of representatives from each of NSV's Members, as well as scientific Directors of the NSV Board.

*The strategic aims of the Council are:*

- ▶ To focus the Council to that of a strategic and operational interaction between Members, directed towards development of Melbourne as a global centre for neuroscience.
- ▶ To identify and fast track major initiatives and maintain strong communication with government, industry and philanthropy where appropriate.
- ▶ To provide a forum for senior management across the Melbourne neuroscience cluster to identify and manage priorities and strategies for the Victorian neuroscience community.

*These strategic aims will be achieved by the following operational activities:*

- ▶ Maintain an awareness of issues relevant to neuroscience across the sector, locally, interstate and internationally.
- ▶ Identify and coordinate new program development where there is a major technology gap in Victoria; identify world class staffing for these initiatives.
- ▶ Support important capability areas where there is opportunity.
- ▶ Form working groups as required of Members or non-Members to facilitate liaison and development of initiatives.

## ▶ MEMBERS

Neurosciences Victoria is proud to be associated with its Members – leaders in neuroscience research.

- ▶ Austin Health
- ▶ The Bionics Institute
- ▶ The Florey Institute of Neuroscience and Mental Health
- ▶ Melbourne Health
- ▶ Monash University
- ▶ Swinburne University of Technology
- ▶ The University of Melbourne

## AUSTIN HEALTH

Austin Health is the major provider of tertiary health services, health professional education and research in the north-east of Melbourne and is world renowned for its research and specialist work in neurology, cancer, liver transplantation, spinal cord injuries, endocrinology, mental health and rehabilitation.

Eight independent research institutions are based at Austin Health, where leading research on cancer, diabetes, respiratory disease, liver disease, heart disease, stroke, epilepsy and psychiatry is conducted. In 2011, the Melbourne Brain Centre opened at the Austin Hospital at Heidelberg, housing some of Australia's top researchers in neurosciences and mental health.

In the area of neuroscience, Austin Health is a leader in the diagnosis and management of epilepsy, stroke and dementia and has sub-specialist clinics for these and other neurological disorders including Parkinson's disease and multiple sclerosis.

The Austin Health Centre for PET is a world leader in the development of scans for earlier and more accurate detection of Alzheimer's disease, Parkinson's disease and other neurodegenerative conditions. It is the Australian imaging lead site for national and international multi-centre studies such as the Australian Imaging, Biomarkers and Lifestyle Study of Ageing (AIBL), the Dominantly Inherited Alzheimer's Network (DIAN) and the CRC for Mental Health. The neuroscience research group within the Centre for PET has extensive collaborations with both academic sites and major pharmaceutical companies worldwide.

Professor Christopher Rowe, the leader of the neuroscience PET research team and the Director of Nuclear Medicine and the Centre for PET was awarded the Kuhl-Lassen Award for outstanding contribution to brain imaging by the US Society of Nuclear Medicine in 2011. His group publishes 25 papers per year and receives over \$2.5 million annually in research funds. The Centre for PET provides direction, expertise and radiopharmaceuticals for the new PET research facility at the Melbourne Brain Centre in Parkville.

### VISION

Austin Health will be renowned for excellence and outstanding leadership in healthcare, research and education.

### MISSION

Austin Health is the major provider of tertiary health services and health professional education and research in the north-east of Melbourne.

### VALUES

Our values guide our behaviour.

- ▶ Integrity – we exercise honesty, candour and sincerity.
- ▶ Accountability – we are transparent, responsible and answerable.
- ▶ Respect – we treat others with dignity, consideration, equality and value.
- ▶ Excellence – we continually strive for excellence.

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

## THE BIONICS INSTITUTE

The Bionics Institute is an independent, not-for-profit research organisation working in the field of medical bionics.

### VISION

To lead the world in the development of innovative bionic health solutions through research.

### MISSION

- ▶ Research, innovate and deliver bionic technologies that improve human health.
- ▶ Undertake high quality research that spans the biological, physical, engineering and medical sciences to achieve clinically relevant outcomes and train and inspire the next generation of researchers.
- ▶ Ensure our knowledge, technologies and skills provide an effective pathway from world class research to advancing the Australian medical bionics manufacturing industry.

Using a multidisciplinary approach, the Institute's research aims to deliver new solutions to major health problems and builds on years of research experience and technological expertise in cochlear implants. The Institute brings together researchers from a diverse range of disciplines and collaborates with eminent clinicians from Melbourne's major hospitals to ensure that its work and bionic technologies result in clinical outcomes.

The Institute is focused on providing bionic solutions for otherwise untreatable or drug-resistant conditions of the nervous system. Our three research programs – Neurobionics, Bionic Vision and Bionic Hearing – encompass the improvement and development of devices to address hearing loss, severe vision impairment and a range of intractable central nervous system and psychiatric disorders.

## NEUROBIONICS

Implantable devices are being developed to detect, predict and suppress abnormal neural activity in the brain or elsewhere in the body. Such devices incorporate many of the successful elements of the cochlear implant and insights obtained from the ongoing development and testing of the prototype bionic eye. Our current research is focused on:

- ▶ The development of an advanced deep brain stimulation (DBS) system to treat movement disorders such as Parkinson's disease.
- ▶ The development of a safe and effective diagnostic device for epilepsy and blackouts.
- ▶ Optimising outcomes in movement disorder patients with existing DBS devices.

The overall goal of our neurobionics research is to develop a sophisticated and flexible platform technology that can be tailored to treat a wide range of neurological disorders that have not responded to conventional treatments, including certain severe psychiatric conditions (e.g. obsessive compulsive disorder).

## BIONIC VISION

Our research aims to develop safe and effective retinal prostheses for blind patients. In 2012 and as part of the Bionic Vision Australia consortium, three patients with retinitis pigmentosa were implanted with Australia's first prototype bionic eye. The Institute used its engineering expertise and experience in safety and biocompatibility studies to establish safe surgical procedures and effective electrical stimulation strategies for this prototype device. Ongoing research is evaluating the visual perceptions evoked by the device and is testing the safety and effectiveness of the next generation wide-view device (for navigation) and a high-acuity device (for more detailed visual images). We are also investigating novel stimulation methods to create 'virtual' electrodes in retinal prostheses.

## THE BIONICS INSTITUTE

### BIONIC HEARING

Our research aims to develop new technologies and strategies that will improve the performance of cochlear implants and other hearing devices. Specific projects include:

- ▶ Designing new sound processing strategies to enhance the perception of music and the perception of speech in noisy environments.
- ▶ The development of an automatic system to program cochlear implants, particularly important for those too young to provide feedback as to a sound's volume.
- ▶ The development of non-invasive and objective measures of hearing to improve detection and diagnosis of hearing problems, improve the fitting of cochlear implants and hearing aids and understand the variability of outcomes in users of these devices.
- ▶ The development of techniques to introduce therapeutic drugs into the inner ear to support or halt the degeneration of the hearing nerve following deafness.
- ▶ Investigation of neuroplasticity and how the brain responds to long-term electrical stimulation.

[www.bionicsinstitute.org](http://www.bionicsinstitute.org)



## THE FLOREY INSTITUTE OF NEUROSCIENCE AND MENTAL HEALTH

The Mission of the Florey Institute of Neuroscience and Mental Health is to improve lives through brain research. The Institute is one of the world's top four brain research centres. Led by the Director, Professor Geoffrey Donnan AO, some 600 people are committed to addressing the causes of brain disease affecting up to one in five Australians.

The Florey has strong partnerships with Austin Health, the Royal Melbourne Hospital and the University of Melbourne conducting research that underpins the future of brain health. Our imaging facilities offer unparalleled access to the workings of the brain and internationally, staff are recognised for maximising the benefits of our state-of-the-art magnetic resonance equipment.

### RESEARCH FOCUS

Ground-breaking work continues at the Florey with research undertaken in a number of laboratory and clinical areas. Better treatments are sought for:

- ▶ Alzheimer's disease
- ▶ Depression
- ▶ Epilepsy
- ▶ Parkinson's disease
- ▶ Huntington's disease
- ▶ Bipolar disorder
- ▶ Stroke
- ▶ Motor neurone disease
- ▶ Multiple sclerosis
- ▶ Schizophrenia
- ▶ Addiction
- ▶ Autism
- ▶ Cardiovascular disease
- ▶ Pain
- ▶ Traumatic brain and spinal cord injury

### RESEARCH DIVISIONS

#### Multiple Sclerosis

*Professor Trevor Kilpatrick*

Spanning the Florey, the University of Melbourne and the Royal Melbourne Hospital, the Division adopts a multifaceted approach to researching multiple sclerosis. The research recognises the need to understand the genetic determinants, environmental precipitants and molecular drivers of the disease if we are to prevent or reduce damage. The Division has developed strong collaborations with colleagues throughout Australia in order to assemble large cohorts of patients to interrogate the genetics and epidemiology of the disease and to access biological samples to adopt a fully integrated translational approach.

#### Stroke

*Associate Professor David Howells and Associate Professor Julie Bernhard*

The Division has five main research teams: Stroke Preclinical Science, the AVERT Early Intervention Research Program, the Neurorehabilitation and Recovery Laboratory, Epidemiology and Public Health and Clinical Trials. Investigations into neuroprotective and neuroregenerative drugs, advancing stroke care and predicting further incidence of stroke through biomarkers and imaging are part of this Division's work.

#### Neurodegeneration

*Professor Phil Beart*

This Division focuses on how neurones live, die and can be rescued to improve brain function in Parkinson's and Motor neurone diseases. The Division has five research areas; Parkinson's disease, Motor neurone disease, Neuropharmacology, Steroid Neurobiology and Stem Cell Therapies.

## THE FLOREY INSTITUTE OF NEUROSCIENCE AND MENTAL HEALTH

### Mental Health

*Professor Colin Masters*

This Division undertakes basic scientific, clinical and public health research. This includes not only work in laboratories but also working with the community to run trials that help gather information about the illnesses studied. The work continues to enrich our understanding of mental illness, including depression, bipolar disorder and schizophrenia and neurodegenerative illness, including Alzheimer's disease and Parkinson's disease. The Division includes the Australian Imaging, Biomarker and Lifestyle (AIBL) Study of Ageing. The aim of AIBL is to discover which biomarkers, cognitive characteristics and health and lifestyle factors determine subsequent development of symptomatic Alzheimer's disease.

### Systems Neurophysiology

*Professor Robin McAllen and  
Professor Richard Macdonell*

This research area focuses on brain function in health and disease. One particular focus is on how the brain controls basic bodily functions such as blood pressure, body temperature, body fluids and breathing. A second focus is on the ways that disease processes change the excitability of neurons. A third focus is on the heart and its complex interactions with the nervous system in health and disease.

### Imaging

*Professor Alan Connelly and Professor Graeme Jackson*

The Division studies many disease states, particularly epilepsy. Other disorders studied include multiple sclerosis, stroke, tumours, dementia and a range of mental health disorders such as schizophrenia. The Magnetic Resonance Imaging (MRI) Technical Development Program is world-leading in the highly active field of diffusion MRI.

### Neuropeptides

*Associate Professor Ross Bathgate*

This Division conducts multi-disciplinary studies on the relaxin family of peptides / hormones and their receptors. The Division focuses on determining the role of these peptides and the receptors they target in a wide range of physiological and disease states.

### Behavioural Neuroscience

*Professor Andrew Lawrence and Dr Amy Brodtmann*

This Division focuses on cognitive disorders of the brain in humans and the use and development of animal models. The latter reflects aspects of human disorders such as addiction, anxiety, depression, schizophrenia, autism and neurodegenerative conditions such as Huntington's disease.

### Brain Development and Regeneration

*Professor Seong-Seng Tan*

Research is conducted to understand how new brain cells are generated, become connected and survive during stress, which is pivotal to preventing and treating brain disorders. The underlying drivers of brain cell assembly are undoubtedly genetic, but the outcomes are also shaped by environmental influences. Such knowledge will provide new understanding of the causes of mental illnesses such as autism, schizophrenia and epilepsy.

### Epilepsy

*Professor Graeme Jackson and  
Associate Professor Steven Petrou*

At the Florey's Austin campus, researchers have been undertaking high impact research using MRI for more than fifteen years to understand the structural and functional basis of human epilepsy. At the Florey's Parkville campus, research has revealed many of the fundamental neurobiological mechanisms by which genetic abnormalities give rise to epilepsy.



## THE FLOREY INSTITUTE OF NEUROSCIENCE AND MENTAL HEALTH

*The Florey hosts the following important medical infrastructure services.*

### **Neuroscience Trials Australia**

Led by Dr Tina Soulis, Neuroscience Trials Australia is an Australian-based, not-for-profit clinical trials management service specialising in neuroscience.

### **Psychotropic Drug Advisory Service**

Led by Associate Professor Suresh Sundram, pharmacist Christine Culhane of the Psychotropic Drug Advisory Service provides an independent central advisory and contact service with regard to the interaction between medicines used to treat mental illnesses and other drugs that affect the way we think, feel and behave.

### **Australian Brain Bank Network**

Led by Professor Catriona McLean, the Network collects, processes and stores post-mortem human brains and related samples from individuals who have had neurological diseases (i.e. Alzheimer's disease, Motor neurone disease and Parkinson's disease), psychiatric disorders (i.e. bipolar mood disorder, depression and schizophrenia) as well as normal 'control' cases.

*The Florey is closely involved in the operations of the following neuroscience platforms.*

- ▶ Human and animal MRI
- ▶ Positron Emission Tomography – Computed Tomography (PET-CT)
- ▶ Advanced microscopy
- ▶ Core animal services
- ▶ Behavioural services
- ▶ Histology services
- ▶ Fluorescence-activated cell sorting facility
- ▶ Statistics and decision analysis

[www.florey.edu.au](http://www.florey.edu.au)

## MELBOURNE HEALTH

Melbourne Health is one of Australia's leading public healthcare providers whose mission is simple – to provide world-class healthcare for our community by embracing discovery and learning, building collaborative relationships and engaging patients in their care.

Services are delivered through The Royal Melbourne Hospital, one of Australia's pre-eminent hospitals, NorthWestern Mental Health, the largest mental health provider in Victoria and the internationally renowned Victorian Infectious Diseases Reference Laboratory.

Melbourne Health serves a population base of more than one million Melburnians as well as regional and rural Victorians and interstate patients. Today we are a partner in the internationally renowned Parkville Precinct with vibrant research programs turning medical research into excellent clinical outcomes for the public.

### VISION

Passion for Caring – Achieving the Extraordinary

### MISSION

To provide world-class health care for our community. We will embrace discovery and learning, build collaborative relationships and engage our patients in their care.

### VALUES

- ▶ Respect for the dignity, beliefs and abilities of every individual
- ▶ Caring and compassion
- ▶ Unity as a team and in embracing our communities
- ▶ Integrity by being open, honest and fair
- ▶ Discovery through passion for innovation

The Melbourne Health Strategic Plan 2010-2015 is part of a broader strategic planning and performance framework, designed to enable the organisation to translate long-term strategic goals into day-to-day operations. The five strategic goals in the Plan reflect both the organisation's response to the changing health care environment and our key challenges.

### STRATEGIC GOALS

- ▶ Develop our workforce
- ▶ Improve the quality and safety of our services
- ▶ Develop and encourage strategic relationships
- ▶ Foster a culture of research and innovation
- ▶ Build a sustainable organisation

### MELBOURNE HEALTH COMPRISES

- ▶ The Royal Melbourne Hospital – City Campus and Royal Park Campus
- ▶ NorthWestern Mental Health
- ▶ Victorian Infectious Diseases Reference Laboratory

The Royal Melbourne Hospital is one of two adult trauma centres in Victoria and is home to one of the three nodes of the Melbourne Brain Centre, a state-of-the-art neurosciences facility offering new hope for Australians suffering from acute brain episodes such as stroke and degenerative brain disorders.

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

## MONASH UNIVERSITY

Monash University is strong and very active in neuroscience research and takes a multidisciplinary approach, involving the faculties of Medicine, Nursing and Health Sciences, Pharmacy (MIPS), Engineering, Science, Art and Design, as well as the major Monash affiliated teaching hospitals, all supporting wide ranging programs of research.

*Monash neuroscientists conduct leading edge research and clinical investigation in key areas of neuroscience and mental health. These include:*

- ▶ Neuroimaging
- ▶ Neuroinflammation
- ▶ Developmental neuroscience
- ▶ Developmental brain injury
- ▶ Regenerative medicine
- ▶ Ageing and neurodegeneration
- ▶ Brain plasticity and repair
- ▶ Huntington's disease
- ▶ Cognition
- ▶ Control of movement and emotions
- ▶ Anxiety disorders
- ▶ Alzheimer's disease
- ▶ Stroke
- ▶ Sensory physiology
- ▶ Schizophrenia
- ▶ Depression
- ▶ Autism
- ▶ Attention deficit hyperactivity disorder
- ▶ Traumatic brain injury
- ▶ Bipolar affective disorder
- ▶ Intellectual disability
- ▶ Metabolic neuroscience

*Major Collaborating Research Groups and themes include:*

- ▶ Monash Biomedical Imaging (MBI) Facility – Professor Gary Egan
- ▶ Ritchie Centre at the Monash Institute for Medical Research – Professor Graham Jenkin
- ▶ Stroke and vascular disease – Professor Chris Sobey
- ▶ Brain development and vision – Dr James Bourne
- ▶ Molecular neurotrauma and haemostasis laboratory (Monash University, Alfred Hospital campus) – Professor Rob Medcalf
- ▶ Traumatic brain injury (Alfred Hospital) – Professor Russell Gruen
- ▶ Biomarkers for traumatic brain injury and Recovery (Monash) – Professor Ramesh Rajan
- ▶ Neuroscience research in ocular immunology – Professor Paul McMenamin
- ▶ The Monash Alfred Psychiatry research centre (MAPrc) – Professor Paul Fitzgerald
- ▶ Higher order processing of vocalisations in the auditory areas of the cortex – Professor Ramesh Rajan

### **'DIRECT TO BRAIN' BIONIC EYE – MONASH BIONIC VISION GROUP**

Professor Jeffrey Rosenfeld AM, OBE is a Principal Investigator in the Monash Bionic Vision Group that aims to develop a bionic vision direct to brain implant (The 'Gennaris'). This is a multi-tiled microelectrode wireless device implanted in the primary visual cortex of adults with acquired blindness. The tiles are connected to a digital camera via an advanced vision processor mini-computer. This is a key example of 'bench to bedside' translational research and has taken place in the last five years. It is an inter-disciplinary research program that includes Monash University departments of Electrical Engineering (Professor Arthur Lowery), Physiology (Professors Marcello Rosa and Ramesh Rajan), Surgery and Design. The Alfred Hospital (Neurosurgery and Ophthalmology) is the clinical site for the first in human trial planned for 2015.

## MONASH UNIVERSITY

Australian industry partners have been involved with the research program from the outset and are manufacturing the device (MiniFab and Gray Innovation). This research program was awarded \$8.2 m in 2009 and a further \$1.9 m in 2013 by the Australian Research Council and is at the forefront of the world's bionic vision research.

*Research at the University is underpinned by a series of core technology platforms, including:*

- ▶ Structural biology / Cryo EM / high-throughput protein production
- ▶ Genomics, bioinformatics and proteomics
- ▶ Optical imaging
- ▶ Monoclonal antibody production (MATF)
- ▶ Mouse phenomics / transgenics
- ▶ Biomedical imaging and image processing
- ▶ Drug design and development
- ▶ Biostatistics, data-management and bio-banking
- ▶ Engineering
- ▶ Material sciences
- ▶ Nanofabrication
- ▶ Drug discovery, medicinal chemistry, drug candidate optimisation
- ▶ Clinical trials

*The University has a strong international reputation in medical research, including:*

- ▶ Regenerative medicine, stem cells and developmental biology
- ▶ Cardiovascular and thrombosis
- ▶ Cancer
- ▶ Structural biology and drug development
- ▶ Public health and epidemiology
- ▶ Infection and immunity
- ▶ Inflammation, allergy and autoimmunity
- ▶ Health science and global health
- ▶ Rural health
- ▶ Indigenous health
- ▶ Mental health and cognitive neurosciences
- ▶ Medical engineering

## MEDICINE, NURSING AND HEALTH SCIENCES

The Faculty of Medicine, Nursing and Health Sciences offers outstanding training through courses that include Medicine, Psychiatry, Behavioural Neuroscience, Biomedical Science, Psychology, Radiography and Medical Imaging. The Faculty has strong links with research institutes such as the Baker / IDI Research Institute, the Prince Henry's Institute for Medical Research, the Macfarlane Burnet Institute for Medical Research and Public Health, as well as with our major teaching hospitals, principally Monash Medical Centre, The Alfred Hospital and Box Hill Hospital. In total, the Faculty operates in 125 practices and 68 hospitals, providing outstanding facilities and resources for clinical teaching.

## MONASH AT A GLANCE

- ▶ Monash is Australia's most internationalised university.
- ▶ Monash has more than 62,000 students from over 100 countries.
- ▶ Monash is a member of the prestigious Group of Eight (Go8) universities, recognised for excellence in teaching, learning, research and graduate outcomes.
- ▶ The Monash / Clayton cluster is home to CSIRO, the Australian Synchrotron, Monash Medical Centre, Melbourne Centre for Nanofabrication (MCN) and the Australian Regenerative Medicine Institute (ARMI).
- ▶ Monash has eight campuses: six in Australia, one in Malaysia, one in South Africa and a centre in Prato, Italy.
- ▶ Monash has formed strong strategic partnerships in the UK (Warwick and Newcastle Universities), China (South East University, Suzhou) and India (Indian Institute of Technology Bombay, Mumbai).

[www.med.monash.edu.au](http://www.med.monash.edu.au)

## SWINBURNE UNIVERSITY OF TECHNOLOGY

Swinburne University of Technology is committed to quality research with real-world applications. We deliver innovative research solutions to industry problems and our world-class research reputation is growing fast. We have a vibrant academic community and we invest strategically in advanced facilities. We draw on our internationally recognised expertise and our outstanding infrastructure when collaborating with industry to produce quality solutions; solutions that often result in the commercialisation of new ideas or products.

Swinburne gives its Masters by research and PhD candidates the chance to be exposed to big ideas and to learn what it takes to find solutions that advance our society. We offer our research students the opportunity to participate in world-changing projects and we back them with the right levels of funding. Swinburne has a selective and focused approach to the highest quality research. This approach has been proven to have merit with Swinburne now listed as one of the top 400 research universities in the world, according to the prestigious Academic Ranking of World Universities.

### **BRAIN AND PSYCHOLOGICAL SCIENCES RESEARCH CENTRE**

The principal aim of the Brain and Psychological Sciences Research Centre (BPsyC) is to conduct high quality research in psychological sciences and human neuroscience in order to improve understanding of the human condition across the lifespan and contribute to the wellbeing of individuals and communities. BPsyC encompasses basic research from cellular and genetic science all the way through to brain and behavioural sciences.

By increasing our understanding of human brain and psychological processes we aim to inform the development and evaluation of applications that improve the wellbeing of individuals with specific conditions and in specific contexts. We have particular interests in the study of compromised mental and cognitive health.

BPsyC brings together different disciplines with common interests in biopsychosocial factors associated with the healthy and dysfunctional human mind and brain. These include psychologists, psycho-physiologists, physicists, neuroscientists and medical researchers.

*Specific areas of interest include:*

- ▶ Brain functions, structures, connectivity and dynamics
- ▶ Cellular neuroscience
- ▶ Cognitive neurosciences and cognitive neuropsychology
- ▶ Social and affective neurosciences
- ▶ Clinical disorders and their treatment, including e-based interventions
- ▶ Clinical and forensic psychology
- ▶ Normal and abnormal ageing and infant development
- ▶ The neuroscientific study of decision-making

*Our state-of-the-art equipment includes:*

- ▶ Magnetic resonance imaging
- ▶ Magnetoencephalography
- ▶ Electroencephalography
- ▶ Trans-cranial magnetic stimulation
- ▶ A radiofrequency laboratory
- ▶ A computer-assisted interview facility
- ▶ A national internet-based psychological assessment and treatment centre (National e-Therapy Centre)

## SWINBURNE UNIVERSITY OF TECHNOLOGY

In addition, a clinical trials facility focuses on evaluating the effects of interventions on cognition, mental health, well-being and specific functions. Our research staff is actively involved in teaching and we have links to clinical services, industry and the community. Our partnerships and collaborations promote innovative solutions to scientific and community concerns. BPsyc strives to foster local and international research collaboration with government, industry and other academic institutions and has been successful in attracting nationally competitive grants, national and international industry contracts and government tenders.

Dr Joseph Ciorciari is the Acting Director of the BPsyc. Dr Ciorciari is a cognitive neuroscientist with many years of collaborative research experience in the study of normal and abnormal brain function, collaborating with researchers both nationally and internationally. Previously, as the Deputy Head of the Psychological Sciences and Statistics Department, he convened and led undergraduate programs associated with psychology and psychophysiology. More recently he designed and implemented a unique neuroscience undergraduate program. Dr Ciorciari is supported by the BPsyc Deputy Directors, Professor Susan Rossell and Professor Greg Murray, both of whom have clinical backgrounds and international reputations in their respective fields.

### BPsyc RESEARCH STAFF

- ▶ Dr Joseph Ciorciari – Acting Director
- ▶ Professor Susan Rossell – Deputy Director, Operations
- ▶ Professor Greg Murray – Deputy Director, Administrative
- ▶ Dr Jo Abbott
- ▶ Dr Claire Ahern
- ▶ Professor Glen Bates
- ▶ Dr Jennifer Beaudry
- ▶ Dr Sunil Bhar
- ▶ Dr Steve Bowe
- ▶ Dr Jay Brinker
- ▶ Associate Professor Roger Cook
- ▶ Dr Christine Critchley
- ▶ Dr Matthew Hughes
- ▶ Dr Jordy Kaufman
- ▶ Associate Professor Ann Knowles
- ▶ Professor Michael Kyrios
- ▶ Professor David Liley
- ▶ Dr Michelle Lim
- ▶ Dr Clare McMahon
- ▶ Associate Professor Denny Meyer
- ▶ Professor Sue Moore
- ▶ Dr Maja Nedeljkovic
- ▶ Dr Richard Nibbs
- ▶ Dr Julian Oldmeadow
- ▶ Dr Conrad Perry
- ▶ Dr Jeffrey Pfeifer
- ▶ Dr Diane Sivasubramaniam
- ▶ Dr Neil Thomas
- ▶ Dr Ben Williams
- ▶ Professor Andrew Wood
- ▶ Dr Will Woods

[www.swinburne.edu.au/lss/bpsyc](http://www.swinburne.edu.au/lss/bpsyc)

## THE UNIVERSITY OF MELBOURNE

The University of Melbourne has an exceptional international profile in neuroscience-related research and the Melbourne Neuroscience Institute (MNI) continues to champion those endeavours. The Melbourne Neuroscience Institute is built on the energy and drive of University researchers and that drive is evident in the many successes and achievements of the Institute.

Advances in neuroscience and the merging of disciplines encompass the translational potential of our brain disease-oriented research and projects in fields as broad as Medicine, Mental Health, Engineering, Optometry and Vision Sciences, Ophthalmology, Law, Economics and Social Sciences.

The MNI has been successful in attracting a broad base of internal and external stakeholders, with over 400 affiliates. Engagement activities during 2013 included the MNI public seminar series, the annual Melbourne Brain Symposium, the Festival of Ideas' *Brains and Mind for a Healthy Society Day*, workshops on traumatic brain injury and PET / CT applications, the Brain Bee challenge, Advanced Neuroscience Workshops, work experience for secondary school students and hands-on education programs for primary school students. The MNI proudly hosted Professor Glenn Schellenberg, Professor of Psychology, University of Toronto, as the 2013 MNI International Guest Keynote Lecturer. Glenn tackled the popular idea that music makes you smarter.

The MNI has continued to develop partnerships with industry, academia and key local groups including GlaxoSmithKline, l'Université Pierre et Marie Curie, the Hotchkiss Brain Institute, the World Presidents' Organization and the Committee for Melbourne. The MNI also takes the lead role in the University's involvement in the management of Australia's largest brain research collaboration, the Melbourne Brain Centre; a partnership between the Florey Institute of Neuroscience and Mental Health (the Florey), Austin Health, Melbourne Health and the University of Melbourne.

The MNI continues to support and promote four interdisciplinary research themes: the Music, Mind and Wellbeing Initiative, the Centre for Neural Engineering, the Melbourne Brain Centre Imaging Unit and Stem Cells Australia. A recent development has seen the MNI now able to act as a conduit for philanthropic giving.

*There have been a number of significant achievements for neurosciences at the University over the past twelve months.*

- ▶ Collaborative research on mental health issues, from schizophrenia to disaster mental health, will be the focus of a new University of Melbourne and Peking University centre. The University of Melbourne-Peking University Centre for Psychiatric Research and Training will bring together world experts from both institutions to study all aspects of mental health, from biological to epidemiological and psycho-social issues. It will also provide co-supervision of PhD students and support post-doctoral exchanges.
- ▶ The University has entered an agreement with US start-up company Procypra Therapeutics LLC to develop a class of drugs for treating neurological diseases such as Parkinson's disease. Cross-disciplinary research at the University and the Florey has found that a class of synthetic compounds called copper bis (thiosemicarbazones) can potentially treat Parkinson's disease and other neurodegenerative diseases such as motor neuron disease.
- ▶ New research has found a well-known compound that influences copper levels may help treat a progressive and incurable disease that attacks a person's nervous system. In Australia, amyotrophic lateral sclerosis (ALS) – or Lou Gehrig's disease – kills approximately two people every day. An international team including researchers from the University and the Florey has reported in *The Journal of Neuroscience* that the aforementioned compound can improve mobility and significantly extend life in an animal model of the disease.

## THE UNIVERSITY OF MELBOURNE

- ▶ A small device implanted in the brain has accurately predicted seizure occurrence in humans in a world-first study led by Professor Mark Cook, Chair of Medicine at the University of Melbourne and Director of Neurology at St Vincent's Hospital. Alongside Professors Terry O'Brien and Sam Berkovic, Professor Cook worked with researchers at Seattle-based company NeuroVista, to develop this device which monitors long-term electrical signals in the brain (EEG data). Professor Cook hopes to replicate the findings of the study in larger clinical trials and is optimistic the technology will lead to improved management strategies for epilepsy. Collaborators on the study included the Royal Melbourne Hospital and Austin Health.
- ▶ Professor Trevor Kilpatrick, Director of the Melbourne Neuroscience Institute and Associate Professor Helmut Butzkueven are part of a research team that has made a major breakthrough in unravelling the cause of multiple sclerosis by identifying 48 previously unknown genetic variants that influence the risk of developing this auto-immune disease. The findings from this international research program almost double the number of known genetic risk factors for this disease, which affects some 23,000 Australians. These discoveries will bring researchers a step closer to developing the first curative treatments. The research was published in the journal *Nature Genetics*.

These achievements are a testimony to the expertise and fortitude of MNI researchers and also to the support offered the University's scientists by the Melbourne Research Office and, in particular, the Faculty of Medicine, Dentistry and Health Sciences, the Melbourne School of Engineering and the Faculty of Science.

*Major neuroscience initiatives at the University of Melbourne sponsored by MNI include:*

### **CENTRE FOR NEURAL ENGINEERING**

*Professor Stan Skafidas*

The Centre for Neural Engineering (CfNE) was officially launched in 2011. CfNE draws together leading neuroscientists, neurologists, psychiatrists, cell biologists, geneticists, electrophysiologists, chemists, physicists and engineers to work on cutting edge bionics, computational neurobiology, sensors and imaging and stem cell and disease model based research. The core goals of the CfNE are to develop new approaches to facilitate an understanding of how neurons, neural networks and ultimately, the whole brain functions. CfNE aids this through the creation and use of key technologies to enable the development of neural prostheses.

### **MUSIC MIND AND WELLBEING**

*Professor Sarah Wilson*

The world-first Music, Mind & Wellbeing (MMW) initiative links neuroscience with music and social wellbeing through a unique set of collaborations spanning music, science, health, education and industry. The MMW's bold research agenda involves a globally unique set of multi-disciplinary collaborations between researchers. MMW researchers are developing new scientific approaches to music that incorporate perspectives from multiple disciplines. The integration of complementary perspectives is generating a new theoretical framework for music that is both translational and transformative.

### **MELBOURNE BRAIN CENTRE IMAGING UNIT**

*Professor Roger Ordidge*

The Imaging Unit within the Melbourne Brain Centre at Parkville houses a PET-CT scanner and a 7T MRI scanner. In combination, these cutting-edge imaging technologies will lead to advances in the diagnosis and the eventual treatment of a wide range of neurological disorders. This involves close collaboration between the University's scientists and engineers, as well as researchers in associated institutes, in particular the Florey, public teaching hospitals, and national and international centres of research excellence.

## THE UNIVERSITY OF MELBOURNE

### NEUROSCIENCES AND BEHAVIOURAL SCIENCES DOMAIN

*Coordinator: Professor Andrew Allen*

Research in neuroscience requires expertise that crosses all of the traditional disciplines. Consequently, interactions between neuroscientists and neurologists with different expertise are essential for advancing the field. An important role of the Neurosciences and Behavioural Sciences Research Domain is to develop and facilitate those interactions. The coordination of such interactions occurring between University departments, institutes and hospitals is a key focus for the Domain.

The Domain's research interests are grouped into four broadly inter-related groups that provide researchers with the opportunity to engage closely with people who share an interest in their particular area of research focus. The groups; Neurological Disorders, Behavioural Neurosciences / Psychology and Mental Health, Basic Neurosciences and Advanced Technologies, are further segmented into specific subdomains, recognising that many researchers have overlapping interests in more than one of these areas. These are:

- ▶ Neurological disorders
- ▶ Clinical neurology
- ▶ Neurodegenerative disease
- ▶ Epilepsy
- ▶ Stroke
- ▶ Neurotrauma and neural regeneration
- ▶ Behavioural neurosciences / psychology and mental health
- ▶ Human cognition and behavioural neuroscience
- ▶ Social psychology and human development
- ▶ Clinical psychology and clinical neuropsychology

- ▶ Psychiatry
- ▶ Basic neurosciences
- ▶ Developmental neurobiology
- ▶ Neurophysiology and neuropharmacology
- ▶ Autonomic and sensory systems
- ▶ Molecular and cellular neuroscience
- ▶ Advanced technologies
- ▶ Stem cell sciences
- ▶ Neural engineering
- ▶ Neural imaging

### STEM CELLS AUSTRALIA

*Professor Martin Pera*

Stem Cells Australia (SCA) is an Australian Research Council funded initiative that brings together Australia's premier life scientists to tackle the big questions in stem cell science. By linking Australia's leading experts in bioengineering, nanotechnology, stem cell biology, advanced molecular analysis and clinical research, the Stem Cells Australia collaboration is uncovering the fundamental mechanisms involved in stem cell regulation and differentiation. SCA will translate that knowledge into innovative biotechnological and therapeutic applications. The unique multidisciplinary approach will also foster and train the next generation of Australian stem cell scientists, cementing Australia's future position in the field.

The University, in partnership with the Florey, continues to optimise the quality of the research experience and productivity of research higher degree students who are focusing on the neurosciences, whether their projects are undertaken within University laboratories or those of independent medical research institutes.

[www.neuroscience.unimelb.edu.au](http://www.neuroscience.unimelb.edu.au)

# ► FINANCIALS

## NEUROSCIENCES VICTORIA LIMITED ABN 56 094 548 973

### STATEMENT OF COMPREHENSIVE INCOME

FOR THE YEAR ENDED 30 JUNE 2014

	2014 \$	2013 \$
Revenues	633,277	616,313
Employee benefits expense	-555,325	-641,731
Depreciation, amortisation and impairment losses	-3,459	-9,775
Business development expense	-61,033	-69,854
Insurance expense	-11,368	-12,712
Professional fees	-62,179	-73,617
Travel expense	-66,421	-41,118
Occupancy expense	-8,484	-31,706
Other expenses	-33,900	-27,253
Scholarships	-	-25,000
Write-off of non-recoverable debts	1,271	-13,976
<b>Profit before tax</b>	<b>-167,621</b>	<b>-330,429</b>
Income tax expense	-	-
<b>Profit for the year</b>	<b>-167,621</b>	<b>-330,429</b>
Other comprehensive income/ (expense)	-	-
<b>Total comprehensive income/(expense) for the year</b>	<b>-167,621</b>	<b>-330,429</b>

### STATEMENT OF FINANCIAL POSITION

AS AT 30 JUNE 2014

	2014 \$	2013 \$
<b>Current assets</b>		
Cash and cash equivalents	462,634	1,074,418
Trade and other receivables	68,002	143,608
Other financial assets	2,000,000	1,600,000
Other assets	143,569	111,902
<b>Total current assets</b>	<b>2,674,205</b>	<b>2,929,928</b>

<b>Non-current assets</b>		
Property, plant and equipment	10,149	10,890
Financial assets	7	7
<b>Total non-current assets</b>	<b>10,156</b>	<b>10,897</b>
<b>Total assets</b>	<b>2,684,361</b>	<b>2,940,825</b>

<b>Current liabilities</b>		
Trade and other payables	141,886	210,390
Employee benefit liabilities	140,179	130,114
Other liabilities	327,574	355,867
<b>Total current liabilities</b>	<b>609,639</b>	<b>696,371</b>

<b>Non-current liabilities</b>		
Employee benefit liabilities	753	2,864
<b>Total non-current liabilities</b>	<b>753</b>	<b>2,864</b>
<b>Total liabilities</b>	<b>610,392</b>	<b>699,235</b>
<b>Net assets</b>	<b>2,073,969</b>	<b>2,241,590</b>

<b>Equity</b>		
Reserves	2,248,420	2,248,420
Retained earnings	-174,451	-6,830
<b>Total equity</b>	<b>2,073,969</b>	<b>2,241,590</b>



**NEUROSCIENCES VICTORIA LTD**

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