



THE UNIVERSITY OF
MELBOURNE



NEUROSCIENCE
Research Institute

MELBOURNE NEUROSCIENCE INSTITUTE

Annual Report 2011

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Front Image Caption: Associate Professor Andrew Metha,
Deputy Head, Department of Optometry and Vision Sciences, Faculty of Science

INTRODUCTION



Background

The calendar year of 2011 has been an exciting year for the Melbourne Neuroscience Institute (MNI). University neuroscientists, together with neuroscientists from the Florey Neuroscience Institutes and Mental Health Research Institute relocated to purpose-built laboratories within the Parkville and Austin campuses of the Melbourne Brain Centre.

The MNI draws on the astounding breadth of neuroscience research activity at the University of Melbourne, whilst retaining and respecting the individual discipline strengths. This has been demonstrated by continued advances in the field of neuroscience led by our neuroscientists.

Professor Ingrid Scheffer, a paediatric neurologist, is one of five international scientists to win the prestigious L'Oréal-UNESCO Women in Science Award for her ground-breaking research into epilepsy, and who is only the third Australian to receive the award.

Dr Ben Emery was awarded a NHMRC career development fellowship for his project 'Understanding Central Nervous System myelination' to commence in 2012. This project aims to characterize how a master gene functions to promote myelination and to assess the role of the gene in myelin repair.

The University is the administering organisation for Stem Cells Australia (SCA), a new \$21m Australian Research Council Special Research Initiative bringing together Australia's leading stem cell scientists. Professor Martin Pera, the University's Chair in Stem Cell Sciences, heads up SCA. Professor Pera's key areas of research include investigating the use of stem cells to rejuvenate and repair damaged and diseased cells in organs such as the heart, brain and blood that are affected in conditions such as heart disease, Parkinson's disease, stroke and leukemia.

The Centre for Neural Engineering (CfNE) is equipped with state-of-the-art facilities, offering its researchers, students and collaborators a world-class research environment. Launched in 2011, the Centre aims to deliver new biotechnologies, and improved engineered systems that replicate biological networks. In addition, the Centre will create the next generation of neural prostheses and implants resilient to faults.

MNI facilitated the purchase of the \$2.75M Siemens PET/CT scanner which will dramatically enhance the quality of imaging services for patients, researchers and physicians. Purchased via the Victorian Biomedical Imaging Capability award from the Department of Industry, Innovation and Research Development (DIIRD), the imaging facility being established within the Melbourne Brain Centre is a joint initiative of the University of Melbourne, Florey Neuroscience Institutes, Mental Health Research Institute, Austin Health and Melbourne Health.



Ms Stacey Jackson,
Research Assistant, Centre for Neuroscience



Dr Ben Emery, recipient of NHMRC
career development fellowship



Dr Neil Killeen with the Siemens
PET/CT Imaging Scanner



Message from the custodial Dean

The Melbourne Neuroscience Institute (MNI) provides important leadership, focus and branding for the University of Melbourne's activities in the neurosciences and related disciplines. The MNI is one of five recently commissioned university-wide institutes dedicated to areas of important societal impact including materials science, sustainability, energy and broadband. In the short time since its inception, the MNI has had considerable impact by fostering key initiatives such as the Centre for Neural Engineering, Stem Cells Australia, the Melbourne Brain Imaging Centre and the Music Mind and Wellbeing Initiative. Each of these developments emphasizes that MNI has been able to achieve important connectivities between mainstream neuroscience and related disciplines, whether it be in the physical sciences, social sciences or the arts. In so doing the MNI has played its part in advancing the profile of the University of Melbourne as one of the World's truly great academic institutions, focusing on issues of fundamental importance to the global community. I look forward to continuing successes for this important initiative.

I thank Professor Trevor Kilpatrick for taking the leadership role for the University in the MBC as Director MNI. His vision, organisational skills and leadership have ensured that the University is well placed to partner with MHRI and FNI in the Melbourne Brain Centre at Parkville and Austin campuses.

James A Angus

Professor James A Angus AO

Dean, Faculty of Medicine, Dentistry and Health Sciences

The Melbourne Neuroscience Institute is a University of Melbourne funded initiative designed to promote the breadth of neuroscience research and teaching at the University. It aims to effect ground-breaking research via interdisciplinary partnerships, collaborations and new strategic initiatives with the view of translation of these outputs to improved health and teaching outcomes. Our annual funding allocation from the University supports a core administrative team and research and RHD initiatives, including academic research salary support (including junior fellowships, recruitment of senior personnel), seed grants for the development of new interdisciplinary research projects as well as key thematic areas.

The Melbourne Brain Centre (MBC) was launched in 2011. This is a collaborative facility that incorporates three sites and is one of the largest neuroscience facilities in the world. The Melbourne Brain Centre houses researchers of the Florey Neuroscience Institutes, the Mental Health Research

Institute and the University of Melbourne. Staff from each of the three core partners have now moved into the new facilities and we are already seeing the results of such close collaboration. The opportunity to bring together so many outstanding academics has strengthened connections between researchers and clinicians, enhancing their ability to work on common problems that are of importance to the community'. We expect that this will help to attract and retain the best and brightest scientific minds from around the world. The MBC has developed into a vibrant research community across both main facilities and in the broader scientific and research communities in the Parkville precinct and at Austin Health. To mark the launch of the MBC we held a day long Melbourne Brain Symposium. The Symposium was a great success, indicating that the partners are effectively contributing to each others research activities. The Symposium saw seven Australian and International speakers present informative, thought-provoking seminars on topics



MNI Team: Professor Trevor Kilpatrick, Ms Amy Bugeja, Dr Rozanne Blok, Ms Carmel McFarlane

OVER 250 RESEARCHERS AND INTERESTED PARTIES TOOK ADVANTAGE OF THE OPPORTUNITY TO BECOME AN AFFILIATE IN 2011.

ranging from Alzheimer's disease to the application of vision and navigation strategies used in insects to aeronautical engineering.

Our research effort is also highly collaborative: our researchers are constantly engaging with collaborators elsewhere in Australia and overseas. The move to the MBC has allowed researchers from each of the partner organizations to work together in close proximity to maximise "critical mass" and to optimise research expertise.

Given the challenges of moving to the MBC and the added role as the facilitator for the University of Melbourne's personnel relocating to the facility, the MNI has devoted itself to ensuring the efficient and effective management and utilization of shared spaces, equipment and technology platforms within the centre. A key role has been to strengthen existing organizational and scientific linkages and connections between the MBC partners. In 2012, we look forward to a sustained focus on science, a range of public and scientific symposia and events, the development of communication tools,

and establishing new ways to engage our scientific community. The role of the MNI is maturing from that of facilitator to become the flagship for branding of University neuroscience and our vehicle for undertaking 'grand challenges' in the neurosciences and related disciplines.

Over 250 researchers and interested parties took advantage of the opportunity to become an affiliate in 2011. Our outreach efforts have not gone unrewarded, with excellent engagement at a number of events, including the launch of the MBC, CfNE, Stem Cells Australia, Melbourne Brain Symposium and Student Symposium, and Interact 2011.

I am delighted with the excellent administrative and scientific advice that MNI has been provided with. In particular, I would like to thank the members of the Advisory Board and Executive Committee who have collectively provided excellent advice to MNI, particularly in the strategic arena. One of our key goals, with the aid of our advisory bodies is to establish, maintain and enhance disciplined-based research strength. By

engaging with our stakeholders outside the University, we aspire to build relationships that endure and to ensure that we are a prominent voice in neuroscience research. With the support and expert leadership and guidance of Advisory Board Chair, Professor Liz Sonenberg and the Executive Committee Chair, Professor John Furness, we are sure to achieve this.

Our MNI researchers have made a number of notable achievements in 2011. These achievements are a testimony to their skill and determination but also to the dedicated support offered by the Melbourne Research Office and, in particular, the Faculty of Medicine, Dentistry and Health Sciences, Melbourne School of Engineering, and the Faculty of Science

Finally, I would like to sincerely thank Rozanne Blok, Amy Bugeja and Carmel McFarlane for their significant support and commitment that is fundamental to our success. I look forward to a highly productive and fruitful year in 2012.



The Melbourne Brain Centre, Parkville



Professor Trevor Kilpatrick,
Director, Melbourne Neuroscience Institute

ENGAGEMENT AND PROFILE

**PROFESSOR INGRID SCHEFFER
WAS AWARDED THE ASIA-PACIFIC
L'OREAL-UNESCO WOMEN IN SCIENCE
FOR 2012, HONOURING HER AS
LAUREATE FOR HER GROUND-
BREAKING RESEARCH THAT HAS
ESTABLISHED A GENETIC LINK
IN MANY FORMS OF EPILEPSY.**



Professor Ingrid Scheffer, L'Oréal-UNESCO Women in Science Award recipient

Associate Professor Dr Elizabeth Scarr

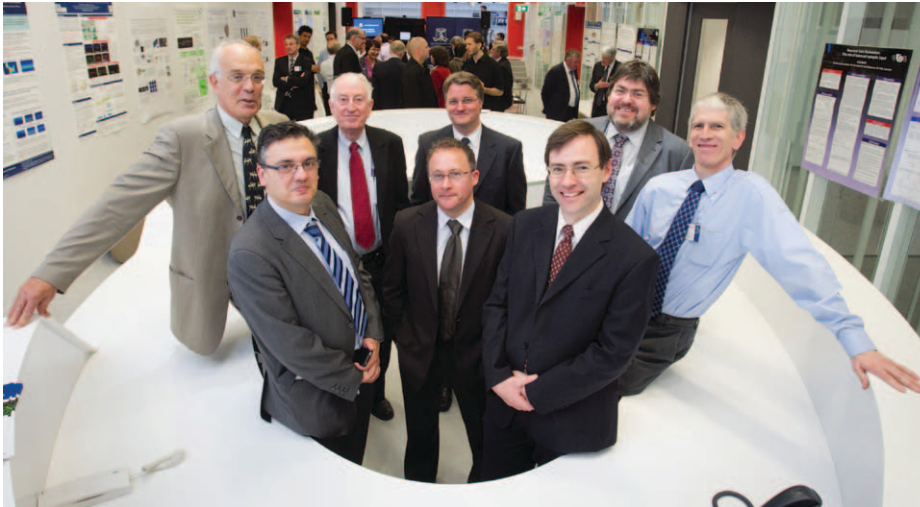
Associate Professor Elizabeth Scarr was awarded an ARC Future Fellowship for her research into understanding the changes in brain chemistry associated with schizophrenia. The funding is essential for Elizabeth's team to develop better therapies for patients diagnosed with schizophrenia. This is crucial as current drugs only work in 30% of patients. Elizabeth's research attempts to understand the changes in the brains of people with the disorder. This research will explore a chemical system in the brain that is changed in schizophrenia and will begin to investigate whether counteracting these changes are of therapeutic benefit.

Professor Ingrid Scheffer & Professor Sam Berkovic

Benign familial infantile epilepsy (BFIE) is a form of infantile seizures that runs in families sometimes associated with an intermittent movement disorder in later childhood. The cause of this condition is unknown. A team of clinical researchers led by Professor Ingrid Scheffer and Professor Sam Berkovic together with molecular genetic colleagues at the University of South Australia and University of Adelaide have identified a variation in a gene (PRRT2) which may cause the protein the gene encodes to form incorrectly, thus leading to BFIE. The discovery of this gene is vital for researchers to learn more about psychology and what causes seizures. The findings of this research

could assist with early diagnosis and treatment options for patients, and support families by helping them understand why their child has seizures.

Professor Scheffer was also awarded the Asia-Pacific L'Oréal-UNESCO For Women in Science Laureate for 2012. She is one of five international winners who will each receive US\$100,000 to support their research, in recognition of their contribution to the advancement of science.



Professor Bert Sakmann, Professor Peter Doherty, Professor Lloyd Hollenberg, Professor Steven Petrou, Dr John Wagner, Professor Stan Skafidas, Associate Professor Jeremy Crook, Associate Professor David Grayden



Professor Stan Skafidas speaking at the Centre for Neural Engineering Launch

Professor Trevor Kilpatrick

Multiple sclerosis (MS) is a destructive autoimmune disease that affects the central nervous system, which is made up of the brain, spinal cord, and optic nerves. MS affects the ability of nerve cells in the brain and spinal cord to communicate with each other effectively and can cause difficulty with speech, problems with movement and balance, chronic pain, and bladder and bowel difficulties.

Professor Trevor Kilpatrick has worked with a collaborative group to develop one of the largest human genetic studies ever undertaken which has shed critical light on what causes MS. In collaboration with colleagues at the Florey Neuroscience Institutes and leading research institutes around the world, Professor Kilpatrick's research team have identified the major common genetic variants that contribute to the cause of MS. This multinational collaborative study confirmed the presence of up to 57 MS genes with a remarkable pattern that shows

that the reason some people get MS and others don't is largely due to subtle, inherited differences in immune function. It points to a pivotal role for T cells – the 'orchestra leaders' of the immune system and supports the view that MS is very much an immunologic disease.

The results of the study are in the prestigious scientific journal, *Nature*. They represent years of work by the International Multiple Sclerosis Genetics Consortium (IMSGC) involving more than 250 researchers, in 15 countries, including from the University of Melbourne and Florey Neuroscience Institutes. Multiple Sclerosis Research Australia (MSRA), together with the Australian government, has supported MR genetic research programs in the Kilpatrick laboratories over the past ten years.

Centre for Neural Engineering Launch

The Centre for Neural Engineering was opened by Nobel Laureate Professor Bert Sakmann and Senator Jacinta Collins, Parliamentary Secretary for School Education on 4th October 2011 and has already had many achievements in its short life. Professor Stan Skafidas was appointed as Director of the initiative and Professor Steven Petrou appointed as Deputy-Director. Laboratory leaders have been appointed for the Bionics, Stem Cell and Disease Modelling and Sensors and Imaging Laboratories. Four new interdisciplinary projects initiated in the areas of autism, schizophrenia, epilepsy and imaging have commenced and CfNE researchers were successful in obtaining two University of Melbourne interdisciplinary grants. A total of ten papers were published in 2011, including some in leading international journals (including *Nature Biotechnology*).

THE CFNE DRAWS TOGETHER LEADING NEUROSCIENTISTS, NEUROLOGISTS, PSYCHIATRISTS, CELL BIOLOGISTS, GENETICISTS, ELECTROPHYSICISTS, CHEMISTS, PHYSICISTS AND ENGINEERS FROM THE UNIVERSITY OF MELBOURNE AND PARTNER INSTITUTIONS

RESEARCH



Music, Mind and Wellbeing Team: Ms Katrina McFerran, Dr Margaret Osborne, Associate Professor Sarah Wilson, Professor Gary McPherson and Associate Professor Neil McLachlan (not pictured)

Music Mind and Wellbeing

The world-first Music, Mind & Wellbeing initiative (MMW) links neuroscience with music and social wellbeing through a unique set of collaborations spanning music, science, health, education, and industry.

The founding members of MMW are all leading researchers in: brain mechanisms involved in listening to and engaging in music; social factors involved in music learning and participation; the role of music in individual and community wellbeing; and advanced music theory and technology.

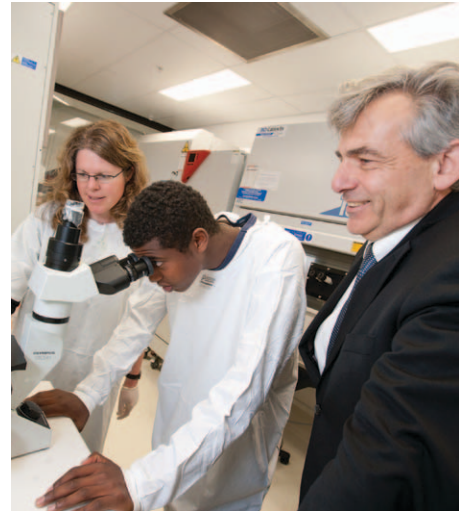
Recent findings from their research have revealed:

1. How exposure to music changes the brain and the ways it functions;
2. How different types of developmental assets, both personal and social, are acquired from learning music, and the positive consequences for music learners' emotional development; and
3. How music fosters wellbeing within societies and can be used to improve the quality of life for vulnerable people in the community.

The launch of MMW was attended by the Vice Chancellor and The Hon Peter Garrett AM MP highlighting the excellent support base this initiative has achieved. The Minister has requested MMW prepare a paper on introducing music education into the national curriculum and providing the science to support its use. The initiative is hosting monthly lecture series, is working with Melbourne Ventures, the Bionics Institute, the University's Early Learning Centre and the Faculty of Education on various projects and has received extensive media coverage.

MMW successfully obtained a seed grant to support a Centre of Excellence bid and have secured the involvement of key researchers in music and auditory psychology from across Australia and internationally, and will run a planning workshop in February 2012. Another active collaboration has commenced with the Bionics Institute on pitch processing in cochlea implant recipients and this has led to the co-supervision of a new PhD student.

STEM CELLS AUSTRALIA BRINGS TOGETHER A GROUP OF AUSTRALIA'S PREMIER LIFE SCIENTISTS TO TACKLE THE BIG QUESTIONS IN STEM CELL SCIENCE



Professor Martin Pera and Dr Mirella Dottori with students in the laboratory at the launch of Stem Cells Australia

Stem Cells Australia

Launched in November 2011, Stem Cells Australia links Australia's premier life scientists in a seven year \$21m Australian Research Council Special Research Initiative.

Through collaborations with Australia's leading experts in bioengineering, nanotechnology, stem cell biology, advanced molecular analysis and clinical research, the SCA initiative will explore the fundamental mechanisms involved in stem cell regulation and differentiation, and translate this knowledge into innovative biotechnological and therapeutic applications. Not only will this collaboration support excellence in stem cell research but it will also lead public debate and discussion about important ethical, legal and societal issues associated with stem cell science. The unique multidisciplinary approach of this initiative will also foster and train the next generation of Australian stem cell scientists, cementing Australia's future position in the field.

SCA has been established by the University of Melbourne, Monash University, University of Queensland, University of New South Wales, Walter and Eliza Hall Institute for Medical Research, Victor Chang Cardiac Research Institute, Florey Neuroscience Institutes, CSIRO, and the Australian Research Council. The University of Melbourne is the administering organisation for this initiative under Director Professor Martin Pera, who also holds the Chair of Stem Cell Sciences at the University of Melbourne.



Stem Cells Australia student laboratory visit



Biomedical Engineering, Melbourne School of Engineering

The key areas of scientific research include:

- Pluripotency and Reprogramming
- Cardiac Regeneration and Repair
- Neural Regeneration and Repair
- Haematopoiesis

SCA's research endeavours are supported by central infrastructure such as the dedicated bioinformatics platform, Stemformatics, and a new computational approach to explore gene regulatory networks in stem cell differentiation.

Given the high profile of stem cell research, SCA also views public engagement and research into related ethical and societal considerations as an essential component of the initiative and, in collaboration with Monash University, has established an Education, Ethics, Law and Community Awareness Unit based at the University of Melbourne, that will undertake important work in collaboration with sociologists and ethicists from around the country.

SCA has also provided submissions to several NHMRC public consultations related to stem cell research, and held a series of tailored workshops and information sessions for politicians, medical practitioners, allied health professionals, patients and their families and members of the broader community. These events were held in conjunction with partners including the Spinal Cord Injury Network, the NSW Stem Cell Network and MS Australia. A dedicated website was also established to promote the initiative and facilitate greater understanding of Australian stem cell science: www.stemcellsaustralia.edu.au

Centre for Neural Engineering

The Centre for Neural Engineering (CfNE) is an interdisciplinary centre, established to undertake research in neuroscience and neural diseases. The CfNE draws together leading neuroscientists, neurologists, psychiatrists, cell biologists, geneticists, electrophysiologists, chemists, physicists and engineers from the University of Melbourne and partner institutions including: Florey Neuroscience Institutes, NICTA, Bionic Vision Australia, Bionics Institute, Royal Melbourne Hospital, Austin Health, St Vincent's Hospital and other Australian and overseas partner universities and industry.

Administered by the University of Melbourne, with generous support from the Australian Government through an Education Investment Fund grant, the CfNE is equipped with state-of-the-art facilities and offers its researchers, students and collaborators a world-class research environment.

Divided into four research laboratories, the CfNE will focus its research on:

Bionics: integrating electronic systems in the body to replace or assist function by directly stimulating neurons. This has direct application to vision, hearing, epilepsy, Parkinson's disease and spinal injuries.

Computational Neurobiology: bridging the gap from molecular structure to human behaviour. We will use novel approaches for collecting data at different spatial and temporal scales to develop multi-scale models that help us understand brain function in health and diseases.

Sensors & Imaging: understanding the dynamics of neuronal networks to gain insight into the brain's information processing. By creating novel sensors of neural function, we can detect the electrical and chemical states of neurons and neural ensembles that can be exploited for the creation of novel drug therapies.

Stem Cells & Disease Models: combining our expertise in human stem cell biology, neurobiology, and cell and tissue engineering to model diseases of the human brain. In particular, we are using human neural and pluripotent stem cells to study illnesses such as schizophrenia, autism, epilepsy and stroke.

The CfNE has a commitment to research higher degree training, and provides an opportunity for engineering, medicine and science students, with an interest in neuroscience, to undertake cross-disciplinary research training within its four research areas. The CfNE will also offer exciting scholarship opportunities to attract the best and brightest students.

The CfNE has co-located researchers to address complex issues, provides access to state of the art laboratories and creates new means of problem solving.



Professor Roger Ordidge, Chair of Imaging Sciences



Associate Professor Ann Turnley, Research Domain Coordinator for the Neurosciences and Behavioural Sciences domain.

Melbourne Brain Imaging Centre

The Melbourne Brain Imaging Centre (MBIC) at Parkville is being established as a consequence of the procurement of major funding via the Federal Government Education Investment Fund (EIF) and the Victorian State Government Victoria's Science Agenda (VSA) Investment Fund, together with funds provided by the University of Melbourne, FNI and MHRI. The MBIC is being headed by Professor Roger Ordidge, Chair of Imaging Sciences with key establishment work being performed by Professor Ted Whitten of the School of Veterinary Science.

Equipment

VSA-procurement of a PET-CT scanner

The Imaging Unit within the Melbourne Brain Centre at Parkville will house a PET-CT scanner, which is being funded under the umbrella of a successful VSA bid submitted by the Victorian Biomedical Imaging Consortium (VBIC).

EIF fund-procurement of a 7T MRI

The University of Melbourne is a partner in a successful EIF3 application under the umbrella of the National Imaging Facility (NIF). The NIF is a national collaborative facility envisioned to provide openly accessible world-class facilities for basic imaging research allowing Australia to remain at the forefront in imaging-related science. The lead agent for the bid is the University of Queensland. The participating partners, which include the University of Melbourne as a new addition, will expand the NIF into an integrated network across 5 states providing landmark capabilities in animal and ultra high-field magnetic resonance imaging (MRI) and magnetoencephalography. The 7T MRI scanner will be housed on the ground floor of the Melbourne Brain Centre at Parkville.

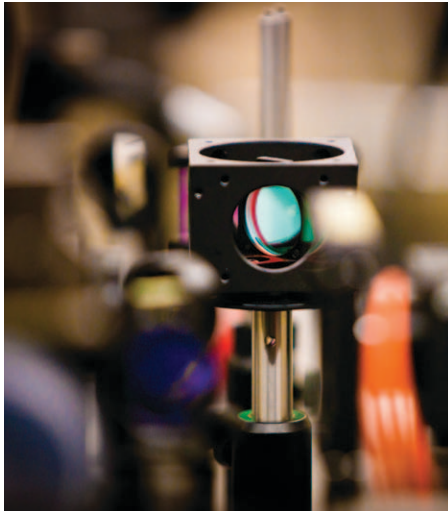
Although the MBIC is based around imaging machines, the consortium places emphasis on being engaged with the scientific community to enable appropriate use of the technologies. In combination, these advanced imaging technologies will lead to advances in the diagnosis and hopefully, the eventual treatment of a wide range of neurological disorder. This necessitates close collaboration between University of Melbourne scientists and engineers and those in associated institutes, public teaching hospitals, and national and international centres of research excellence.

Centre for Neuroscience

Research programs are currently being undertaken in the areas of neural regeneration and neurodegeneration, demyelinating disease and neuroscience informatics within the Centre for Neuroscience. CNS has several collaborative neuroscience research projects with many departments of the Faculty, and has established strong links through its involvement with Neurosciences Victoria, affiliated research institutes and the clinical units of the major teaching hospitals in the locale, encouraging the pursuit of excellence in basic and clinical neuroscience research, and in research training.

Neurosciences and Behavioural Sciences Domain

Within the Faculty of Medicine, Dentistry and Health Sciences (FMDHS), research strengths have been grouped into eight research domains, one of which is the Neurosciences and Behavioural Sciences Domain, led by Associate Professor Ann Turnley of the Centre for Neuroscience, FMDHS. The research interests of these researchers are grouped into sub-domains and include: clinical neurology/neurodegenerative disease, developmental neurobiology and stem cell science, neurogenetics, neurophysiology/autonomic and sensory systems, mental health, advanced technologies (including imaging), molecular and cellular neurobiology, auditory and visual sciences, behavioural neurosciences, social psychology, clinical psychology, epilepsy, stroke, and neurotrauma.



Department of Optometry and Vision Sciences



The Department of Zoology within the Faculty of Science is a participating partner in the Melbourne Neuroscience Institute.

Behavioural Neurosciences

The Melbourne School of Psychological Sciences is a participant in the Behavioural Neurosciences subdomain, and has a well established research reputation. In 2011, it was ranked the eighth most prestigious psychology department worldwide by QS World University Rankings (between Princeton and Yale). It comprises 45 academic staff in three sub-domains (1) Behavioural Neuroscience, (2) Clinical Psychology, and (3) Social Psychology, who collectively published 150+ research articles in 2011. In 2011 academics within the School were awarded eight new ARC or NH&MRC grants. In the last two years, seven new T&R academics have joined the School and a further three are expected in 2012, all of whom have been recruited from overseas. Five postdoctoral research fellows also joined the School. Most academics within the School collaborate with other national and/or international research groups, as well as with other University of Melbourne research groups.

The School is committed to professional and research training (currently, 150 PhD students are enrolled in the School). The School's off-campus Psychology Clinic was extensively renovated in 2011 to provide research and office space for clinical psychology PhD students. Researchers in the Social Psychology sub-domain published high-impact articles (e.g. Professor Yoshihisa Kashima's research on "tight" and "loose" cultures in Science) and were awarded competitive grants. New and established researchers in the Behavioural Neuroscience sub-domain continued to publish widely and be awarded grants.

Dr. Dan Little, for example, who joined the School from the University of Indiana as a level B academic, received two large ARC grants on neural modelling. We anticipate that our research activities will continue to expand in 2012.

The Clinical Psychology subdomain encompasses a diversity of projects ranging from concerns with identifying children and adolescents at risk of developing mental disorders, their functioning over time, and health and wellbeing in older age groups.

Sustained programs of research involve:

- (i) investigating social cognitive deficits in people with borderline personality (i.e., social perspective taking, theory of mind and capacity for empathy), and treatment of those individuals with borderline personality disorder;
- (ii) investigating medium term outcomes in those individuals diagnosed with early psychosis, and biological, social and psychological predictors of the outcomes;
- (iii) mechanisms underpinning hallucinations in both patient and nonpatient populations;
- (iv) the study of individuals at ultra high risk for psychosis with a particular interest in the role of stress, as well as the treatment of those at ultra high risk for psychosis;
- (v) anxiety and depression in midlife and older adults, as well the examination of attitudes towards older people.

A strand of sustained work that deserves highlighting is that conducted by Professor Nick Allen in the area of depressive disorders, which show significant incidence during adolescence. In 2011, Nick, together with local (e.g., Melbourne Neuropsychiatry Centre) and international (e.g., Oregon

Research Institute, USA) collaborators, completed a ten year longitudinal study that investigated how biological vulnerability factors, including brain development, interact with the family environment, to confer risk for adolescent depression. While analyses are ongoing, a number of significant findings have been published in high impact journals such as Archives of General Psychiatry. Nick and his team are currently working on other projects that assess risk factors for adolescent depression such as sleep and pubertal timing.

Newer work of the domain staff is:

- (i) investigating the effectiveness of the treatment of depression and anxiety in those newly diagnosed with multiple sclerosis; and
- (ii) the study of psychological variables underpinning worry.

The key collaborators of members of the clinical psychology subdomain involve members of the mental health subdomain (primarily members of the Department of Psychiatry, Orygen Research Centre, Melbourne Health, Royal Women's Hospital, National Ageing Research Institute, and the Melbourne Neuroscience Institute). Other collaborators are with the Melbourne Neuropsychiatry Centre, including Professors Christos Pantelis and Murat Yucel. Key overseas collaborations are with the Universities of Oregon, Pittsburgh, and Utah.

In 2011 publications continued to appear in international journals such as Schizophrenia Research, Psychological Medicine, Journal of Clinical Psychiatry, and specialist journals such as the Journal of Personality Disorders.

Domain supported events in 2011

The Neurosciences and Behavioural Sciences Domain supported a number of events in 2011. In March, during Brain Awareness Week, a networking event was held in the Executive Lounge of the Alan Gilbert Building, organised by the Victorian committee of the Australian Neuroscience Society (ANS) and supported by the domain as well as local universities, medical research institutes and the Victorian Neurotrauma initiative. In April, the Epilepsy Subdomain held a retreat to bring together University epilepsy researchers affiliated with St. Vincent's Hospital, the Austin Hospital, The Royal Melbourne Hospital, the Florey Neuroscience Institutes as well as biomedical engineers from the Melbourne School of Engineering, to spend time together and find common, overlapping interests. In October, an Enteric Nervous System workshop was organised and hosted by researchers in the Department of Anatomy and Cell Biology, with the aim of fostering collaboration between disparate University of Melbourne enteric nervous system basic research and clinical groups from several campuses and hospitals, as well as researchers from interstate and overseas. The major event hosted by the domain in 2011 was a Tech Forum, held in conjunction with the BioSciences domain. This event, held at the newly built Melbourne Brain Centre, highlighted technological advances and how to access them, with a focus on those of particular interest to neuroscientists. Professor John Mattick from the University of Queensland and the newly appointed director of the Garvan Institute, Sydney was the keynote speaker at the event. A number of similar events is planned for 2012.



Associate Professor Steven Petrou, Centre for Neuroscience

Epilepsy

Epilepsy research is a major strength at the University of Melbourne with the Departments of Medicine at the Austin, Royal Melbourne and St. Vincent's Hospitals having large programs in clinical and basic research. Major collaborative projects are underway across the three campuses involving clinical trials, including that of a novel implanted device to predict seizures, and in outcome studies of new onset and surgically treated cases allowing for the assembly of cohorts that will be potentially the largest in the world. The subdomain includes very close collaboration with scientists in the Florey Neuroscience Institutes involving neuroimaging and basic science aspects of the epilepsies, with the Royal Children's Hospital and with the University Department of Electrical and Electronic Engineering, as well as numerous other collaborations across Melbourne, Australia and internationally.

Research highlights for 2011 include the awarding of a large NIH Grant for sequencing of 4,000 genomes to members of the subdomain, major advances in seizure prediction by novel modeling procedures, successful implementation of massively parallel sequencing technology for gene discovery in epilepsy and ongoing developments in animal models to understand epileptogenicity, drug response and co-morbidities.

Other highlights include the recruitment of Professor Patrick Kwan from Hong Kong to the Royal Melbourne campus and the announcement of Professor Ingrid Scheffer at the Austin campus as the Asia-Pacific L'Oréal-UNESCO Laureate for Women in Science in 2012.

Neurotrauma

Neurotrauma research at the University of Melbourne encompasses brain and spinal cord injury. It ranges from basic science that aims to protect the healthy tissue around the injury site (neuroprotection) and to regrow and reconnect damaged nerve cells (neural regeneration) to clinical research that aims to limit primary damage and promote rehabilitation. Some research highlights for 2011 include the publication of findings that show that blocking the axon guidance molecule EphA4 promotes regeneration and functional recovery following spinal cord injury by University of Melbourne researchers Mary Galea from the School of Physiotherapy and Ann Turnley from the Centre for Neuroscience, in collaboration with researchers at the Queensland Brain Institute, the Queensland Institute of Medical Research and CSL Ltd. In order to identify genes that are involved in regeneration, the Saunders group in the Department of Pharmacology compared the proteome of the transected spinal cord of the American Opossum at a young age when substantial regeneration occurs to older animals where no regrowth occurs and found a number of potentially important genes that may be targeted to promote recovery. Other highlights include the presentation of the 2011 Australian Neuroscience Society Plenary Lecture "Mechanisms underpinning neuron survival following brain injury" by Seong-Seng Tan, from the Florey Neuroscience Institutes and Honorary member of the Centre for Neuroscience. Planned activities for 2012 include a Neurotrauma workshop to foster greater interaction and collaboration between the different groups in research departments and hospitals across the different University of Melbourne campuses.

KNOWLEDGE TRANSFER



Melbourne Brain Symposium guest speakers with Institute Directors

Melbourne Brain Symposium and Student Symposium

The Melbourne Brain Symposium is an annual event that is presented by the University of Melbourne, the Florey Neuroscience Institutes (FNI), and the Mental Health Research Institute (MHRI). This academic event regularly attracts an outstanding array of international and nationally renowned Neuroscientist speakers and 2011 was no different with the key note being delivered by Nobel Laureate Professor Bert Sakmann. Speakers included Professor Mandyam Srinivasan (Queensland Brain Institute, University of Queensland), Professor Konrad Beyreuther (Network Ageing Research University, Hamburg, Germany), Professor David Attwell (University College, London, England), Professor Alastair Buchan (University of Oxford, England) and Professor Sam Berkovic (Austin Health, University of Melbourne).

In 2011, the Melbourne Brain Symposium was complemented by the staging of the Student Brain Symposium which was the first ever brain-focused student symposium in Melbourne.

The 2011 Student Brain Symposium was hosted by the Melbourne-based Students of Brain Research (SOBR) network. SOBR is a new network for graduate research students from all Melbourne institutes and universities with an interest in Brain, Neuroscience, and Biomedical research. The aim of SOBR is to increase social and academic interactions between these students, by encouraging ongoing events and online communication.

Student professional development played a key role in the motivation for organising this student symposium. The program provided honours and research higher degree students with the

opportunity to present their work in an oral or poster format, including answering questions from judges and peers.

Both events were highly successful and were staged alongside the Cade Lecture and the Kenneth Myer Lecture, coordinated by MHRI and FNI respectively

The Australian Brain Bee Challenge

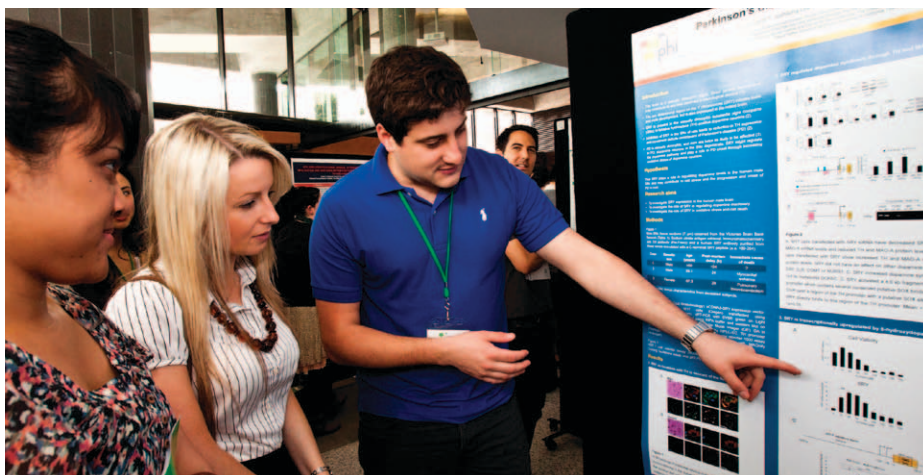
The MNI is a proud sponsor of Australia's only neuroscience competition for high school students.

The Australian Brain Bee Challenge motivates young people to learn about the brain – and has been created to inspire students to pursue careers in neuroscience research.

The Challenge is a test of knowledge about important facts concerning intelligence, memory, emotions, sensations, movement, stress, aging, sleep, Alzheimer's disease and stroke.

Research Australia National Youth Ambassador

Research Australia holds a National Youth Ambassador program each year to find leaders in each state that are interested in pursuing a career in science or health research. Winners are given the opportunity to meet with researchers and government leaders to help spread the message of the importance of science and research to other young people, business and government leaders. The MNI supported this initiative by hosting the 2011 Victorian Youth Ambassador, Tara Josem (from Shelford Girls' Grammar). Researchers working in research streams such as Epilepsy, Stem Cell science, Neurogenetics and Behavioural Neuroscience donated their time and expertise to provide Tara with mentoring and advice on career planning.



Student Symposium poster session



Stem Cells Australia team: Ms Jennifer Kendall, Ms Leanne McDonald, Professor Martin Pera, Dr Megan Munsie

Stem Cells Australia Outreach Program

Since its November 2011 launch by then ARC CEO Margaret Sheil, SCA members have been involved in a number of outreach and policy activities. For example, Professor Martin Pera participated in two NHMRC public consultations on the National Statement on Ethical Conduct in Human Research and the Australian Code of Practice for the Care and Use of Animals for Scientific Purposes.

SCA has actively engaged with the public and patient advocacy groups by co-hosting a series of workshops on stem cell science with the Australasian Spinal Cord Injury Network in Melbourne, Brisbane and Sydney in 2011 with further meetings planned in Adelaide and New Zealand. Dr Megan Munsie has appeared on various podcast programs and the Channel 31 disability program 'No Limits' discussing stem cell science and community expectations, and has held a 'meet the scientist' forum for high school students, presented to numerous Rotary meetings and has co-hosted a public forum at the ALP 2011 National Conference with MS Australia and the Coalition for the Advancement of Medical Research Australia.

SCA has also engaged with the Australian scientific and medical communities, with Professor Martin Pera delivering a Dean's Lecture and being invited to speak at the Australasian Society for Stem Cell Research 2011 Conference. SCA published an informative two part series on stem cell therapies – now and in the future in the 'How to Treat' section of the Australian Doctor magazine and co-hosted a series of workshops for physicians and GPs around Australia in collaboration with the NSW Stem Cell Network, an initiative funded by the Royal Australasian College of Physicians.

Music Mind and Wellbeing Community Program

Music, Mind and Wellbeing have been actively engaged outside of the University in 2011, focussing on the development of a spin-off joint venture company Harmonix Instruments with a suite of patents to commercialize music research, a research project on new approaches to classroom music education and free Public Lectures on the benefits of music for mind and wellbeing. The program has also co-hosted seminars in association with the Australian Music and Psychology Society and the Melbourne Recital Centre's Music on the Mind series.

Music, Mind & Wellbeing is proud to be associated with the Melbourne Recital Centre in their new "Music on the Mind" series. This series featured eminent minds and musicians discussing the relationship between music and the human brain and the related links to social wellbeing, participation, learning and development and the role of music in our contemporary communities.

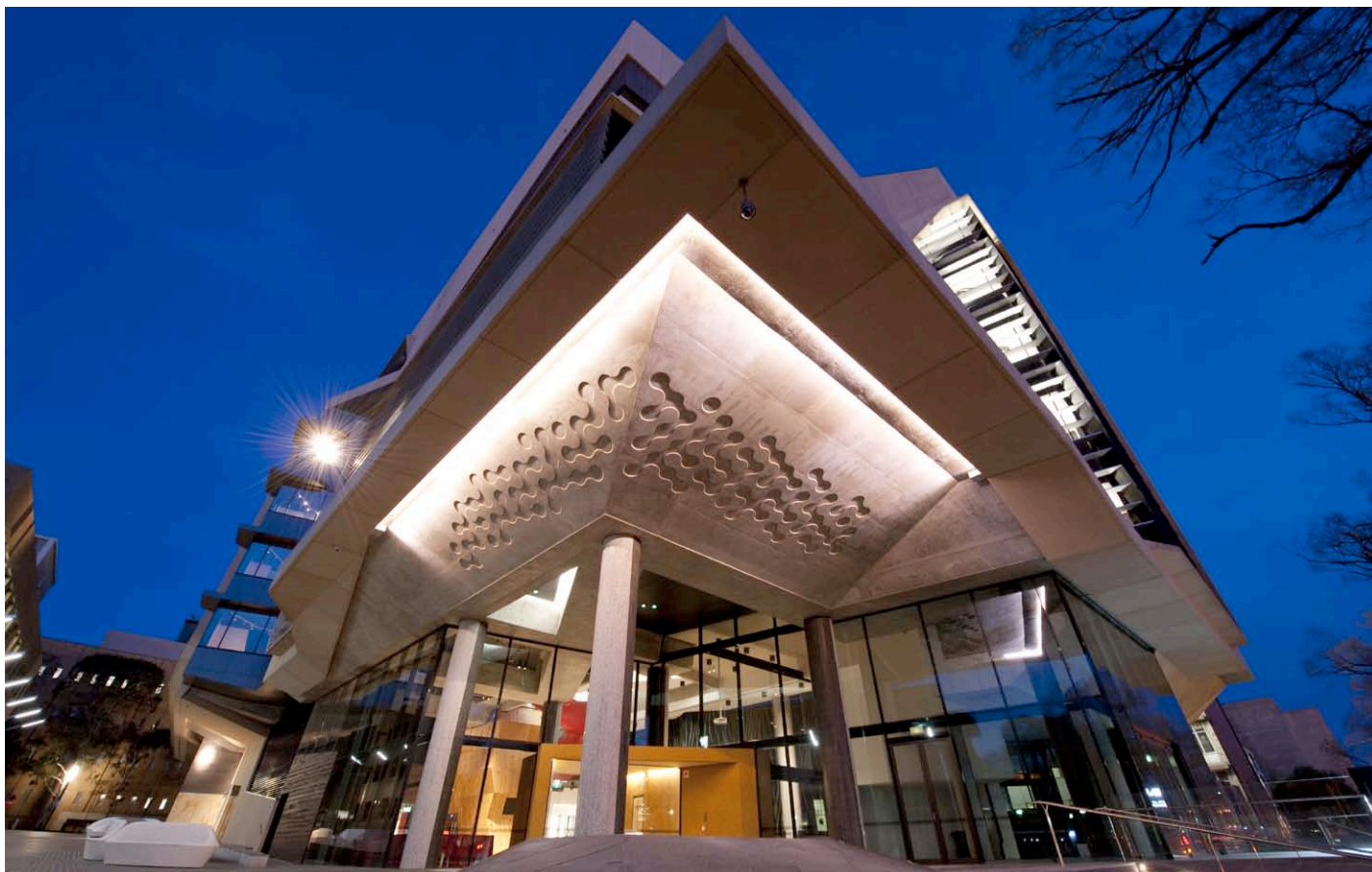


Music, Mind and Wellbeing community music workshops

Harmonix Instruments Pty Ltd is a spin-off joint venture company established by the University of Melbourne and Associate Professor Neil McLachlan to commercialize a new music pedagogy based on recent advances in music neuroscience and acoustics. Harmonix has patented the designs of a range of new harmonically tuned percussion instruments that comprise a classroom music ensemble, along with new digital interactive music notation systems. The instruments have been designed to be affordably mass produced and to dramatically reduce the effort required to develop instrumental skills, while the notation systems remove the need to decode complex traditional notation to understand and manipulate musical structure and form. The ensemble and pedagogy were successfully trialed in a composite year 3 and 4 class in a low socio-economic status school as part of an Honours research project in Psychological Sciences. Particularly pleasing was the high level of engagement of children with learning disabilities who played parts that were mutually supportive of more complex parts played by high functioning children.

THE 'MUSIC ON THE MIND' SERIES FEATURES EMINENT MINDS AND MUSICIANS DISCUSSING THE RELATIONSHIP BETWEEN MUSIC AND THE HUMAN BRAIN AND THE RELATED LINKS TO SOCIAL WELLBEING, PARTICIPATION, LEARNING AND DEVELOPMENT AND THE ROLE OF MUSIC IN OUR CONTEMPORARY COMMUNITIES.

PARTNERSHIPS/LINKAGE CREATION



Melbourne Brain Centre, Parkville

Melbourne Brain Centre

The \$225 million Melbourne Brain Centre (MBC) incorporates three sites and is one of the largest neuroscience facilities in the world. The MBC will house 700 researchers and professional staff from the Florey Neuroscience Institutes, the Mental Health Research Institute and The University of Melbourne. Researchers collaborate with clinicians from the Royal Melbourne Hospital and the Austin Hospital at the Centre and research a range of conditions including multiple sclerosis, stroke, Alzheimer's disease and epilepsy.

The MBC has nodes on the University's Parkville Campus and at each of the hospital sites. The \$200 million capital works development has provided state of the art facilities for our scientists, including key platform technologies such as advanced human and animal imaging, microscopy, a brain bank and animal house for multiple species ranging from xenopus through to non-human primates. The nature of the collaboration allows us to focus on major programs that are neuroscience-based but which also benefit from input from important areas of University-based expertise, ranging from the physical sciences, to chemistry, to engineering, to psychology and to the social sciences and arts. The affiliation with major public teaching hospitals also allows

us to promote our strengths in translation, recognizing that this is a bi-directional process that not only brings discoveries to the clinic but which also informs our basic research. The initiative has also allowed us, in partnership, to attract key scientific leaders to Melbourne who are now spearheading our collaborative initiatives in priority areas such as stem cell science and magnetic resonance imaging.

The MBC was launched by Premier Ted Baillieu on 17 October 2011. "The Brain Centre here in Melbourne has the potential to greatly reduce the level of suffering and premature death from diseases of the brain and of the nervous system," he told the audience, including former Premier John Brumby, at the opening. The building was named The Kenneth Myer Building to honour the significant philanthropic support and contributions of Kenneth Myer and the Myer Foundation.

The Federal Government contributed \$77 million towards the Centre, the State Government \$53 million, and the remainder of funding was provided by the University and the Myer and Ian Potter Foundations. The MBC creates the largest neuroscience and mental health research facility in Australia.

NSV, GSK, Vanderbilt

The Melbourne Neuroscience Institute has fostered interactions with a number of external partners for mutual benefit. These partners include Neurosciences Victoria, GSK, Vanderbilt University and CSIRO. The CEO of Neurosciences Victoria, Dr Andrew Milner sits on our Advisory Board. Together, we are currently exploring a range of initiatives in the areas of computational neuroscience and translational research. The Director visited Vanderbilt University in September 2010 and has since had ongoing dialogue with John Gore, from Vanderbilt concerning potential collaborative interactions in advanced human imaging. In addition, important links have been established between neuroscientists in Melbourne and Vanderbilt, in particular a suite of collaborative projects focusing on cellular and molecular neurobiology. The Director has also been focusing on developing commercial links with GSK China and in particular the prospect of a preferred partnership. It is anticipated that the Senior Vice President of GSK China, Professor Jingwu Zang will be visiting the University on 2012 to further these discussions. Professor Richard Head, who is in charge of the CSIRO clinical flagships program is a member of our Advisory Board. We are collectively exploring ways in which the University and CSIRO can optimize our interactions in particular in the field of biomarker-based research.

FUNDING INITIATIVES

MNI GRANTS

Patricia Desmond

Professor Desmond's research team has been studying the development of sodium imaging for translational neuroscience research. Sodium imaging produces images that have potential use in a number of diseases such as Alzheimer's disease, Multiple Sclerosis and Stroke.

A multinuclear spectroscopy will be installed in 2012 with Professor Desmond's team working to develop a sodium imaging sequence for the Siemens 3T MRI. The team have an ongoing collaboration with The University of Chicago.

Mirella Dottori

The aim of Dr Mirella Dottori's project 'Generating induced-pluripotent stem cell lines using piggyBac system', was to use the piggyBac transposon system to derive induced pluripotent stem (iPS) cell lines that do not contain extra genetic modifications and most closely resembles the host genome.

The molecular basis of reprogramming somatic cells to the embryonic-like state is through exogenous expression of transcription factors known to be required for pluripotency, including Oct4, Sox2, Klf4 and Myc. The common approach used to induce their expression in somatic cells involves viral-based methods, such as retroviruses and lentiviruses. This is not ideal as it can lead to additional mutagenesis within the host genome. Furthermore, ectopic expression of pluripotent factors can lead to tumour formation *in vivo*. Thus, an ideal system to generate iPS cells involves no insertional alterations to the host genome. The piggyBac system is ideal for generating iPS cell lines that are genetically identical to the original host's genome. This is highly relevant for deriving iPS cell lines from patients for their therapeutic use in transplantation/cell replacement. Importantly, the piggyBac technology produces a human cellular model system that is most closely related to the original tissue sample. Taken together, this technology is likely to become the standard for developing iPS cell lines from patients in the future.

The first years of this project was dedicated to establishing the piggyBac technology, which Dr Dottori's research team have successfully achieved using a human foreskin cell line and also adult fibroblasts. This technology will be utilized to generate iPS cell lines from diseased tissue samples, including Friedreich Ataxia (in collaboration with University affiliates) and Glaucoma (in collaboration with Dr Alex Hewitt, Centre for Eye Research Australia).

Litza Kiropoulos

Dr Litza Kiropoulos's team is engaged in a 'proof of concept trial' where they are developing and trialing a treatment for depression and anxiety (and related factors, such as pain and fatigue) in a depressed, newly diagnosed MS population. No trial of this sort has been undertaken before. The results of this proof of concept trial will establish the feasibility of a larger randomized controlled trial using this comprehensive and specialized treatment package. These results will also inform clinical practice and management of MS patients for health professionals such as clinical psychologists, psychiatrists, neurologists and rehabilitation physicians.

Dr Kiropoulos (Psychological Sciences) leads a cross-disciplinary team of researchers from various departments including: Dr Alex Holmes, (Department of Psychiatry, University of Melbourne, North West Mental Health), Assoc Prof Fary Khan (Department of Rehabilitation Medicine, Melbourne Health, Department of Medicine, University of Melbourne) and Professor Trevor Kilpatrick (Melbourne Neuroscience Institute, University of Melbourne).

The aim of the trial is to determine whether patients with newly diagnosed MS who undertake the 8 session Cognitive Behavioural Therapy program will display improved: psychological wellbeing, management of pain and fatigue symptoms, quality of life, psychological adjustment to their social, work and interpersonal roles, use of their social supports, problem solving and coping skills and illness acceptance.

Patrick Kwan

Epilepsy affects up to 1% of the population. Some 30% of patients continue to have seizures despite drug treatment. Anterior temporal lobectomy is recommended for selected candidates with drug-resistant temporal lobe epilepsy (TLE). However, pharmacoresistent seizures recur in approximately one third of patients postsurgery, and no reliable clinical predictive factor has been identified.

It is hypothesised that expression of efflux drug transporters, notably P-glycoprotein, in the epileptogenic temporal neocortex might be one such marker. P-glycoprotein, encoded by the ABCB1 gene, is the "prototype" multidrug transporter belonging to the superfamily of ATP-binding cassette (ABC) proteins that extrude substrates from the cell against the concentration gradient. These proteins have been extensively studied in oncology because of their putative role in multidrug resistance to cancer chemotherapy. In the normal brain, P-glycoprotein is expressed at a basal

physiologic level in capillary endothelial cells where it "pumps" a broad range of xenobiotics from intracellular space back to the capillary lumen, thereby maintaining the integrity of the blood-brain barrier and reducing the cerebral accumulation of substrate drugs. In a range of epileptogenic brain pathologies, upregulation of P-glycoprotein and other ABC multidrug transporters have been reproducibly demonstrated.

In a previous study of paraffinized temporal lobe tissues resected from drug resistant TLE patients who underwent surgery at the Royal Melbourne Hospital, Professor Kwan's team showed that those with recurrent seizures post-surgery had higher expression of P-glycoprotein. Professor Kwan's project aims to confirm the novel findings by studying fresh brain tissues frozen upon resection from patients with pharmacoresistant TLE at the Royal Melbourne Hospital, Austin Health and St. Vincent's Hospital in Melbourne, and the Prince of Wales Hospital in Hong Kong. Levels of P-glycoprotein mRNA and protein and other efflux transporters are being quantified. Their levels will be correlated with postsurgery outcome.

Neil McLachlan

'The neuroscientific basis of music', a project led by Assoc Prof Neil McLachlan examined the neurobiological mechanisms involved in the brainstem auditory processing that support sound recognition and pitch processing. High level computational models of these mechanisms were written in Matlab and Python and were shown to replicate key features of human auditory processing for both normal hearing and hearing with cochlea implants.

Behavioural experiments were run that tested the rate at which non-musicians could learn to match the pitch of single and concurrent pitches. Emotional affect was then measured for learnt and unlearned stimuli. The results of these studies support key predictions of the Object-Attribute Model and the computational models based on it, and have formed the basis of a new neuro-scientific account of music harmony based on brain plasticity.

Finally the computer model of pitch processing provided an insight into how waveform periodicity processing can boost the sensitivity of the auditory system to tonal (vocal) sound. The model was re-written as an algorithm for de-noising signals and has been patented. The model of sound recognition has also been patented as a new approach to automated sound and speech recognition that can adapt to changing environmental and target properties.

MNI FELLOWSHIPS

Dr Andrew Zalesky (Psychiatry) and Dr Peter Crouch (Pathology) have been named the inaugural Melbourne Neuroscience Institute (MNI) Fellows. The fellowships were awarded to outstanding researchers whose internationally competitive research excellence gives the University the opportunity to promote cross-disciplinary research in the neurosciences.

One of the successful Fellows, Dr Peter Crouch (Pathology) has had great success in 2011 with his project '*In vivo* studies on a novel therapeutic treatment for motor neuron disease'. Dr Crouch published a total of 14 papers after receiving his MNI Fellowship, three of which are of particular relevance to the MNI-supported project. The first of these papers, published in the *Journal of Biological Chemistry* (Soon et al, 2011), describes the therapeutic activity of a compound known as Cu(atsm) in a mouse model of motor neuron disease. The second paper published in the *Proceedings of the National Academy of Sciences USA* (Donnelly et al 2012) presents cellular information on the mechanism of action of Cu(atsm), and the third paper, published in the *Journal of Experimental Medicine* (Hung et al 2012), describes the therapeutic activity of the same compound in multiple mouse models of Parkinson's disease.

Central to all of these publications is the cross-disciplinary collaboration fostered by Dr Crouch and his colleagues. Dr Crouch's publications as the MNI Fellow were co-authored by researchers with expertise in biology, neuroscience, chemistry, and nuclear medicine. Demonstrating this cross-disciplinary research effort, the papers included researchers from a range of institutes and departments, including the Department of Pathology and School of Chemistry (University of Melbourne), the Bio21 Institute, the Mental Health Research Institute, the Florey Neuroscience Institutes, and Austin Health. For 2012, Dr Crouch was awarded the University's CR Roper Fellowship to be undertaken at the Department of Pathology, University of Melbourne.

Dr Andrew Zalesky's internationally competitive research project 'Neurobiological markers for machine-guided diagnosis in psychiatry' involves the further development of research links between psychiatry and computer science. Dr Zalesky worked alongside psychiatrists and specialist medical researchers which gave him access to cutting-edge data sets and insight into relevant problems hampering the analysis of these data sets.

The fellowship provided Dr Zalesky with unparalleled access to clinical neuroimaging data, which enabled him to develop, test and deliver relevant quantitative tools and

processing techniques. These tools were then put into practice by clinical researchers to better understand the biological basis of debilitating psychiatric disorders such as schizophrenia.

Director of the MNI Professor Trevor Kilpatrick said these fellowships provided an opportunity for the University to promote its strategic areas of research.

"The fellows are instrumental in facilitating the coming together of academic staff from across disciplines to work on projects consistent with our broad research objectives," he says.

"This type of work is most productive when performed within a strong collaborative research environment, and the Melbourne Neuroscience Institute brings together Australia's best neuroscientists from a broad range of clinical and research backgrounds."

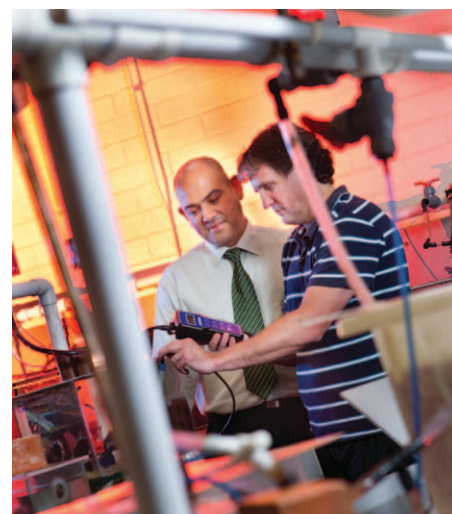
Interdisciplinary Seed Funding

The University of Melbourne Interdisciplinary Seed Funding (IDS) Grant Scheme is an initiative of Melbourne Research which commenced with 2010 funding. This scheme is intended to complement the funding of University Research Institutes and to further catalyse the drawing together of academic staff from across disciplines to engage in research addressing complex societal challenges.

The IDS grant scheme funds a range of highly innovative small- to medium-scale interdisciplinary research projects that show significant potential for future funding by external granting bodies. The Scheme has the benefit of drawing together of academic staff from across disciplines to work on interdisciplinary problems consistent with the broad research objectives of the Melbourne Neuroscience Institute.

Successful projects in 2011

Coordinating investigator	\$ awarded by Melbourne Research	\$ top-up by MNI	Project title
Brock, James	50,000	20,000	Nano-crystal laser interferometry microneurography for diagnosis and therapeutic evaluation.
Hollenberg, Lloyd	50,000	20,000	Nanowire biosensors for the next generation of high throughput screening devices.
Turnley, Ann	50,000	17,358	Magnetic resonance and optical imaging to study the dynamics of neural stem cell responses <i>in situ</i> using nanodiamonds.
Grayden, David	0	50,000	Anticipation of epileptic seizures using electrical probing of the cortex.
Miller, Kimberley	0	50,000	The F-AsTex: a new tool for measurement of tactile discrimination in the foot.



Dr Eugene Fredericks and Mr John Ahern, Department of Zoology, Faculty of Science

Strategic Research Australian Postgraduate Awards

The Strategic Research Australian Postgraduate Awards (STRAPAs) are allocated by the Deputy Vice-Chancellor (Research) to University of Melbourne research initiatives that are strategically advantageous to the research agenda of the University and align research and research training. These are being offered as part of a new initiative to promote multidisciplinary research in stem cell biology and regenerative medicine at The University of Melbourne.

The STRAPAs are designed to support research higher degree students participating in cross-disciplinary research programs involving more than one Faculty. The 2011 STRAPAs were available for projects in Blood Stem Cell Development, Neural Stem Cells, Pluripotent Stem Cells, Stem Cells and Development, and Stem Cells in Brain Repair.

STRAPAs were awarded to Jessica Kauhausen, Kathryn Potts and Yao Xing.

GOVERNANCE

Executive Committee

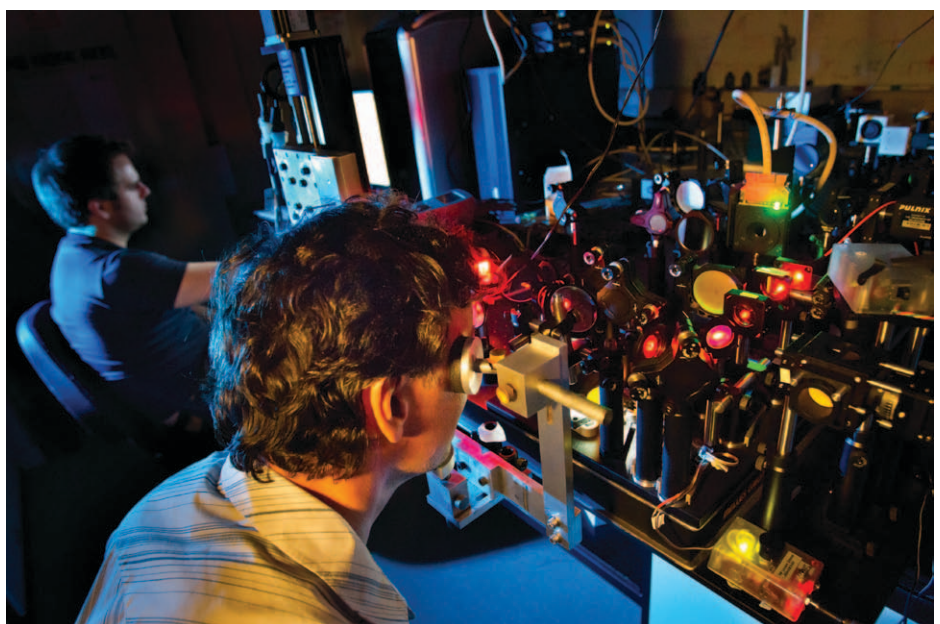
The Executive Committee contributes to the operations of the MNI, and ensures that the Institute meets challenges with a high level of collegial support. The Committee comprises eminent members from across the University's faculties, including the relevant Associate Deans of Research, in addition to the Director and the research initiative leaders.

The MNI Executive Committee assists the Institute achieve its goals, in Schools and Faculties across the University. The overarching aims of the Executive Committee are to:

- Promote MNI to researchers in each member's School/ Faculty and Department
- Assist in the selection of projects to receive seed funding from MNI
- Encourage interdisciplinary research, through the development of new research teams, comprising researchers from different Schools or Faculties
- Assist the MNI administration team in the development of University seminars series by encouraging University researchers to participate in MNI branded seminars
- Assist the MNI administration team in the development of a high profile public lecture series at MNI, by identifying high profile speakers
- Participate in MNI workshops, as appropriate
- Provide input into the strategic development of MNI, including on specific decisions or challenges that the MNI Director may bring to the Executive Committee table
- Provide pathways and introductions to potential industry partners and supporters for MNI
- Provide leadership in one or more of the MNI research themes.

The inaugural Executive Committee meeting was held on Tuesday 30 August 2011.

Members:	
Professor John Furness	Anatomy and Cell Biology (Chair)
Professor Trevor Kilpatrick	Melbourne Neuroscience Institute
Dr Rozanne Blok	Melbourne Neuroscience Institute
Professor Sam Berkovic	Medicine - Austin Health and Northern Health
Associate Professor Ann Turnley	Neurosciences/Behavioural Sciences Domain Coordinator
Professor Rob Evans	National ICT Australia
Professor Stan Skafidas	Centre for Neural Engineering
Professor Steve Davis	Centre for Translational Neuroscience, Department of Medicine (RMH)
Professor Martin Pera	Stem Cells
Professor Roger Ordidge	Imaging
Associate Professor Sarah Wilson	Mind, Music and Wellbeing Program
Professor Dick Strugnell	Pro Vice-Chancellor (Graduate Research)
Professor Philip Smith	Psychological Sciences
Professor Colin Masters	Mental Health Research Institute
Professor Philip Beart	Florey Neuroscience Institute
Professor Tony Bacic	Bio21
Professor Ian Everall	Psychiatry
Professor Arthur Shulkes	Associate Dean (Research), Faculty of Medicine, Dentistry & Health Sciences
Professor Richard O'Hair	Associate Dean (Research), Faculty of Science
Professor Steven Prawer	Physics
Professor Mark Cook	Department of Medicine (St Vincent's Hospital)
Professor Terry O'Brien	Department of Medicine (RMH/WH)



Associate Professor Andrew Metha, Deputy Head, Department of Optometry and Vision Sciences

Advisory Board

The Advisory Board aims to ensure the MNI is aligned with important trends and provide avenues for interaction with those who might wish to commission or undertake research through collaborative interaction in the Neurosciences and related disciplines. Board members have strong credentials in the university, private, public and non-government sectors and act as advocates on behalf of the MNI.

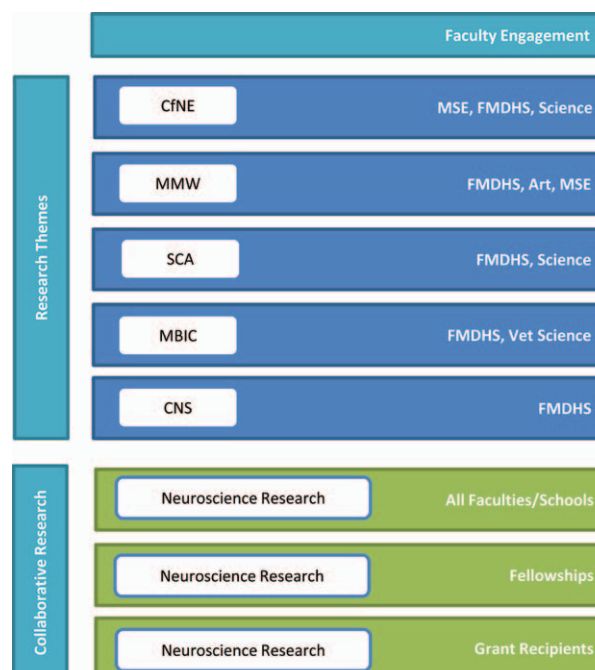
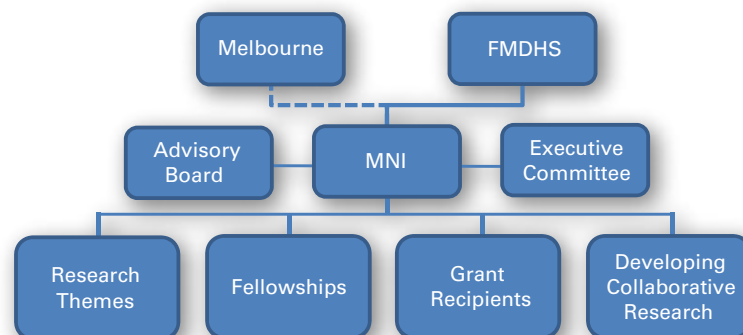
The MNI Advisory Board provides advice on:

- Research directions of themes and projects within MNI;
- Business strategies to ensure MNI operates consistently with industry best practice, for the benefit of MNI staff and researchers;
- Stakeholder linkages and improvements to encourage participation and mutually beneficial outcomes for MNI researchers;

The inaugural Advisory Board meeting was held on Thursday 8 December 2011.

Members:	
Professor Liz Sonenberg	Pro Vice-Chancellor (Research Collaboration) (Chair)
Professor Trevor Kilpatrick	Director, Melbourne Neuroscience Institute
Professor James Angus	Dean, Faculty of Medicine, Dentistry & Health Sciences
Professor Greg Qiao	Assistant Dean (Research), Melbourne School of Engineering
Professor Rob Saint	Dean, Faculty of Science
Dr Andrew Milner	Neurosciences Victoria
Professor Richard Head	CSIRO
Professor Glenn Bowes	Associate Dean (External Relations), Faculty of Medicine, Dentistry & Health Sciences

Structure



CONTACT US

Melbourne Neuroscience Institute
Melbourne Brain Centre
30 Royal Parade
The University of Melbourne
Victoria 3010 Australia
T: +61 3 8344 1804
Info-mni@unimelb.edu.au

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