FNI and the Department of Health (DH) have received $600,000 from the State Government's Victorian Science Agenda Investment Fund as part of a $2.13 million project to provide telemedicine services for acute ischaemic stroke patients in the Bendigo region.

The Victorian Stroke Telemedicine (VST) initiative will expand upon existing telemedicine technologies used at the Loddon Mallee Health Alliance Trauma and Critical Care Unit. The initiative will create new practice models in the treatment of stroke where early intervention is critical.

Neurologists in Melbourne will give treatment advice to their colleagues at Bendigo Health in cases of acute ischaemic stroke (where a blood clot blocks a brain artery). Neurologists will advise on the use of a potentially risky blood clot dissolving drug “tPA” (tissue Plasminogen Activator) which is most effective when administered within the first three hours of attack.

Professor Chris Bladin, Neurologist and Chair of the Victorian Stroke Care Network, said, “The VST initiative is patient focused. Its implementation will save lives, reduce the severity of stroke and will significantly improve the quality of life of stroke patients, and their relatives and carers. The initiative will reduce the burden of care in regional communities by decreasing the incidence of severely disabled stroke sufferers”.

Over 14,000 Victorians suffer strokes each year, with 5,000 of these occurring in rural and regional areas.

The project will begin treating patients in Bendigo by March 2010.

The State Government of Victoria, Department of Innovation Industry and Regional Development is a major funding contributor of the VST through the Victorian Science Agenda Fund. The consortium of contributing partner organisations is led by Florey Neuroscience Institutes and includes the Department of Health (Victorian Stroke Clinical Network), National Stroke Foundation, Bendigo Health, Loddon Mallee Rural Health Alliance and Ambulance Victoria.
DIRECTOR’S MESSAGE

Dear Friends,

Welcome to the first issue of Brain Matter(s) for 2010. FNI ended 2009 on a high with the Kenneth Myer Lecture attracting 1,200 guests including the Governor of Victoria, Prof David de Kretser and Mrs de Kretser to listen to Prof Fred Gage, of the Salk Institute, talk about the amazing work he is doing in the area of brain plasticity and repair.

Prof Gage’s presentation provided insights into research using adult “programmed” cells and turning them in four steps into ‘blank’ stem cells and then programming them to be neurons to assist in brain repair. The value of this technique is that it uses the patient’s own cells, rather than relying on embryonic cells and it negates any perceived ethical issues.

2010 will represent a major turning point for FNI, with major milestones reached in the building of our new research facilities. In the third quarter of 2010 the completion of the Austin campus building project will be cause for celebration with our partners and donors. The external structure of the Parkville facility will also be competed in 2010 and work will commence on the building’s unique interior.

The beginning of each year is a particularly hectic time for researchers as they focus their attention on writing grants to the major scientific funding bodies in Australia. As I have mentioned previously, FNI has an excellent record in attracting grants with our success rate substantially above the national average. I am very confident that with the contributions of senior scientific staff our researchers will again punch above their weight.

Despite the hectic schedule for the first few months of the year, many FNI researchers attended and contributed significantly to the annual Australian Neuroscience Society conference held in Sydney. The conference is an important forum for neuroscientists and their peers to gather and discuss both formally and informally the latest developments in their research. FNI researchers always contribute strongly to this event and even take time out of the conference to participate in media activities.

Only recently Prof Deniz Kirik and Assoc Prof Asa Petersen were visitors to FNI as part of the Allan and Maria Myers International Fellowships. The fellowship was established with a very generous gift of $1million of which the interest allows for overseas senior scientists to spend time at FNI. Whilst here they participated in conducting research, mentoring students and they provide public lectures. Both Prof Kirik and Assoc Prof Petersen are from Lund University, in Sweden, and are respectively experts in imaging and experimental models of Huntington’s disease. Their contribution to FNI during their stay was invaluable.

2010 promises to be an exciting time in the development of FNI and I look forward to keeping you informed of our scientific and other progress.

Prof Geoffrey Donnan, Director, Florey Neuroscience Institutes

STUDY CONFIRMS SEROTONIN LINK TO SIDS FATALITIES

A new study has confirmed the link between serotonin abnormalities and Sudden Infant Death Syndrome (SIDS), bringing researchers a step closer to a cure for the fatal condition.

It is the first study to show that brainstem levels of serotonin and its biosynthetic enzyme (tryptophan hydroxylase or TPH2) are lower in infants who have died of SIDS, further indicating that SIDS is an abnormality of the body’s functioning.

The study, published in the Journal of the American Medical Association, was led by FNI researcher Dr Jhodie Duncan, with colleagues at the Children’s Hospital in Boston.

Dr Duncan said the research could lead to the development of a ‘biomarker’ to identify children with lower than normal serotonin and TPH2 levels, potentially leading to intervention strategies to prevent SIDS.

“Up to this point many researchers have grappled with whether serotonin production in SIDS infants was more, less or the same as in unaffected children,” said Dr Duncan.

“Our study has proved that in infants dying of SIDS there are lower TPH2 levels and reduced serotonin production, and we believe that research models can now be developed that focus on increasing serotonin production and uptake.”

Dr Duncan conducted the study in Professor Hannah Kinney’s laboratory while on the exclusive NHMRC CJ Martin Fellowship to the United States.

“SIDS currently takes the life of 1 in every 2,000 infants. Massive national campaigns decades ago highlighted the risks associated with particular sleeping positions for infants under one year of age.

“Those initial campaigns worked to reduce SIDS related deaths substantially, but over the past decade the numbers have plateaued,” she said.

“We hope this research takes us a step closer to a cure.”
COMBINING NEUROSCIENCE AND ENGINEERING IN A PHD PROJECT

Brain Matter(s) talks to Engineering PhD student Tom Close about how engineering and neuroscience come together in your study?

What outcomes do you hope to achieve out of your study?

“By paving the way for a more robust, accurate and higher resolution white matter reconstruction method, I hope to allow neuroscience researchers to ask more complex questions regarding which parts of the cerebral cortex interact with each other and sub-cortical structures, and how strong these interactions are. There may also be important clinical applications for my work, since improved mapping of white matter pathways would reduce the risk of damaging critical pathways during surgery.”

What has been the most challenging part of your work thus far?

“Since my work is covers a few disciplines, it has meant that there is a lot of background knowledge that I have had to learn.”

How did the collaboration between neuroscience and engineering begin, where do you see it heading into the future?

“As Engineers have designed more and more complex computers and communications technology they have developed fundamental theoretical concepts of what information is and how it is processed. These concepts are relevant to the understanding of the human brain. However, to date the systems that engineers have designed have been quite radically different to what we see in nature, and although there are some applications where ‘artificial intelligence’ performs better, natural systems are generally far superior. Therefore, there is much that both fields can learn from each other, with engineering providing a fundamental framework with which to understand neuronal computations, and neuroscience providing the inspiration to grow and develop this framework, which should lead to improved artificial computation.”

What do you do you see yourself doing five years from now?

“While I am currently working on an improved tool to be used in neuroscience, it was a fascination with how the brain ticks that drove me into a career in research. I understand that there is growth in computational neuroscience (i.e. understanding the computations that the brain performs) at the moment so I hope to become part of that growth when I finish my PhD at the end of this year. Hopefully in five years I will be back here in Australia after a few fruitful years overseas.”

L-R. Prof Fred Gage, Mr Martyn Myer, Prof Geoffrey Donnan

Professor Fred ‘Rusty’ Gage, of The Salk Institute, engaged and enlightened an audience of almost 1,000 with his presentation of the 13th Kenneth B Myer (KBM) Lecture.

Attended by the Governor of Victoria Prof David de Kretser and Mrs de Kretser, the audience listened intently as Prof Gage gave insights into the potential future use of stem cells in the production of neurons to assist in regrowth and repair of the damaged brain.

Prof Gage shared with the audience an explanation of work currently undertaken at The Salk Institute where adult stem cells, which were previously programmed to perform particular functions, have been replicated and turned into blank cells which researchers are attempting to manipulate into neurons. The beauty of this research is that a person’s individual genetic material has the potential of providing a tailored treatment for diseases and conditions affecting the brain.

At the conclusion of the Kenneth Myer Lecture, Mr Martyn Myer AO, son of Ken Myer, presented Prof Gage with the bronze KBM medal. FNI’s ability to present the KBM lecture is due to a Trust left to FNI by the late Ken Myer. FNI would like to thank Martyn for his ongoing commitment to this highly regarded public lecture.

In his short visit to Australia, Prof Gage visited the FNI campuses at Parkville and the Austin. He gave lectures to FNI students, Post Docs, and to a packed gathering of the broader Melbourne neuroscience research community.

Prof Gage was a guest of the Governor and Mrs de Kretser for the duration of his stay.
CHARITYWORKS FOR MS

Lina Marrocco and her committed band of Charityworks for MS workers aim to play a part in finding a cure for Multiple Sclerosis by supporting research at Florey Neuroscience Institutes. During 2009 Florey was a beneficiary of the 2008 Rio Carnivale-themed ball through a significant gift of $137,000. The money was provided to fund two research fellowships for young scientists. Lina (centre) is pictured here with (from L to R) Professor Trevor Kilpatrick, Dr Judith Field, Dr Melissa Gresle, (fellowship recipients) and Mr Jeremy Wright, CEO of MS Research Australia which was a funding partner with Charityworks for MS in the fellowships.

In thanking Lina and her committee for their outstanding support over a number of years, we are pleased to announce that the next Charityworks for MS bi-annual Ball – DIAMONDS DIAMONDS DIAMONDS – is to be held on 21st August 2010 at Crown Palladium.

Tickets are $175 pp which includes a three course dinner and drinks. To book your tickets to this fantastic event contact Lina Marrocco at lina981@optusnet.com.au.

WINDEMERE FOUNDATION SPECIAL GRANTS

Two FNI researchers have been awarded grants for Healthcare Leadership Development through Research in Rural and Regional Victoria, focusing on Team-based Primary Health Care for Chronic Conditions.

Dr Johanne Walker, a neurological clinical occupational therapist based in Geelong and attached to FNI’s Cognitive Neuroscience group, was the recipient of a grant to support her work in “Sensory rehabilitation following stroke”. She will apply this to developing training resources for therapists and carers in rural and remote areas.

Another grant went to recent PhD graduate Dr Ian Mosley for his project “Leading the implementation of telemedicine among acute stroke teams in regional Victoria.” This study will examine the factors that assist or block staff from using new technology in their clinical practice.

We hear a great deal in the media about the big philanthropists out there and the many worthy causes they support. We tend not to hear so much about the people who work away quietly, often behind the scenes, and do so much for their community – not just in financial aid, but with time and effort to help important causes close to their hearts. Mrs Judy Overbeek is one of these people.

JUDY OVERBEEK – QUIET ACHIEVER

Judy and her late husband Han set up a special Foundation to help fund Aged Care in the Dutch community. Han was a research scientist with CSIRO. Sadly, he passed away in 2008, but Judy continues on with her philanthropic works and has made a Bequest to FNI, to help further our research into today’s most problematic brain disorders and we sincerely thank Judy for her encouragement and strong support. If you would like to receive further information on making a bequest, please contact Helen Whyte, Bequest Officer, on 9035 8624 or email helen.whyte@florey.edu.au. She will be very pleased to hear from you.
LOOKING AT THE MECHANISMS OF THE BRAIN THROUGH IN VIVO IMAGING

Brain Matter(s) talks to Professors Gary Egan and Alan Connelly about the brain imaging that is undertaken at FNI.

What is the role of the Imaging Division within FNI? “Neuroimaging is unique in being able to provide direct in vivo measurements of the human brain which is of critical importance in understanding the structural and functional organization of the brain. The Imaging Division scientists at the Parkville and Austin campuses are undertaking research projects in: (i) magnetic susceptibility imaging of iron in the brain, (ii) diffusion imaging of white matter tracts, (iii) ultrahigh resolution structural imaging of the cortex, and (iv) perfusion imaging for cerebrovascular imaging applications and others.”

Can you briefly explain some of these research projects? “Scientists at the Parkville campus have recently developed a susceptibility imaging technique in conjunction with optimised image reconstruction to quantify iron levels in vivo using MR signals. A mathematical combination of the magnitude and phase images, called susceptibility weighted imaging (SWI), is currently being used to measure iron distribution in a number of neurodegenerative and neurological diseases, including Huntington’s disease, Multiple Sclerosis and Friedreich’s ataxia.”

“A major focus of research at the Austin over the next five years will be a collaborative research project between the Imaging and Epilepsy Divisions entitled “Neurobiology of human epilepsy: Genes, cellular mechanisms, networks and whole brain”. This work represents a major step forward in visualising white matter fibre connections and this approach is being applied extensively in the drive to understand the effects on the brain of genetic abnormalities associated with epilepsy.”

What will be the major technological advancements in imaging at FNI over the next three to five years? “FNI is leading a consortium of partners to consolidate Victoria’s national leadership in biomedical imaging research. FNI is the lead organisation on a funding application to the Victorian Science Agenda Strategic Fund for new high field MRI equipment. We are also a partner in an Education Investment Fund application led by the University of Melbourne to establish an ultrahigh field MRI research facility in Melbourne. If successful, these applications will enable the development of an integrated facility for research and development in ultrahigh field human MRI and advanced Positron Emission Tomography in the Parkville Neuroimaging Facilty, with the latter being a joint University of Melbourne/ Mental Health Research Institute installation. The 7 Tesla human MRI will provide a new state-of-the-art brain imaging research platform.”

“These new instruments will complement the proposed upgrade of FNI’s existing MRI capabilities.”

SEASONAL CELEBRATION!

With the season of goodwill upon us, on Wednesday 2 December we were delighted to welcome to lunch at the Florey a group of our long-term supporters, along with members of our Board, Foundation Council and some of our young scientists.

FNI Scientific Director Geoff Donnan shared his vision for the future, and our young scientists – Joanne Britto, Jhodie Duncan, Julian Heng and Leonie Cole – joined our guests at tables around the room to share some of their scientific insights on an informal level.

The Gloriana Singers gave a wonderful a capella recital of seasonal songs, enjoyed by all present, and the occasion provided a special opportunity to thank everyone for their support during 2009.
THANK YOU TO THOSE WHO HAVE GENEROUSLY DONATED TO THE FLOREY NEUROSCIENCE INSTITUTES BETWEEN DECEMBER 2009 AND FEBRUARY 2010. LISTED ARE THOSE WHO KINDLY DONATED $500 OR MORE.

WILLIAM ANGLISS (VIC) CHARITABLE FUND, ANZ BANKING GROUP LIMITED, SIMON BARRETT, ROBERT & DORIS CARTER, PROFESSOR RICHARD COTTON AM, ANDREW & CATHRYN DARBYSHIRE, GEOFFREY DAVEY, DEACONS, PHILIP ROBERT D. SUZANNE DOWNES, CRAIG DRUMMOND, DAVID FELDMAN, FINKEL FOUNDATION, FORESTERS FRIENDLY SOCIETY, KIM GASPERINO, DAVID GRACE, GEOFF HANDBURY AO, RICHARD HARBIG, BARRY & CLAIRE JAMES, NOLA JENNINGS, CONNIE KHOO, M M LIVERMORE, KEVIN LUSCOMBE AM, SUZANNE LYNCH, Pilar MANOVEL, RAYMOND MCLEAN, ROB MICHAEL, MILTENI BIOTEC AUSTRALIA PTY LTD, RICHARD & VIOLET MUNT, ESTATE OF YASUKO H MYER, NANO TECHNOLOGY SYSTEMS, JOHN & JUNE NIXON-SMITH, TOM & RUTH O’DEA, SUE O’NEILL & ENID TELFORD, IAN POTTER FOUNDATION, ANTHONY PYMAN, JOHN T REID CHARITABLE TRUSTS, DAVID SHAW, K & F SHAW, GWENDOLEN SIMS, DOUG SKEWES, VICTOR SMORGON CHARITABLE FUND, STEPHEN SPARGO, ESTATE OF JOHN DUDLEY STANTON, GREGORY & WENDY TAGGART, NICHOLAS TERRY, W D THORN, BRIAN WATSON.

IN MEMORIAM. WE GREATLY APPRECIATE ALL THE GIFTS WE HAVE RECEIVED IN MEMORY OF LOVED ONES. THOSE REMEMBERED HERE ARE: NEVILLE SKIPWORTH, LANCE GREEN, RICHARD C OLDHAM. WEDDING GIFT. ANDREW & AMANDA RETTIG FROM DAVID & DEBBIE GRACE.

CAITLIN’S FUND TRAVEL AWARD

The Caitlin’s Fund Travel Award was established in 2008 by Andrew and Cathryn Darbyshire to honour the memory of their little daughter, Caitlin, who passed away at eight years of age following a lifelong battle with brain tumours. The Award is specifically to support scientists studying epilepsy and other childhood neurological conditions.

We are pleased to announce that Dr Julian Ik-Tsen Heng is the recipient of the 2010 Caitlin’s Fund Travel Award. Julian will use his Award to travel to Rhode Island to attend the Gordon Research Conference – Neural Development. He will present a poster of his work on the identification of genes important to the maturation of fetal nerve cells – with particular reference to the master regulatory gene known as znf238.

Congratulations Julian – travel well.

PHILANTHROPIC TRUSTS AND FOUNDATIONS NEWS

CASS Foundation supports FNI research in 2010.

The CASS Foundation awarded two grants to FNI researchers in December 2009 for work due to begin in early 2010.

Assoc Prof Helmut Butzkueven and Dr Melissa Gresle were supported by the Foundation during 2009, and have now received further funding to assess a new blood test for brain damage in Multiple Sclerosis, work which has great potential to slow deterioration in patients with this condition.

Dr Chrisan Samuel was also successful with a grant for his groundbreaking research into the use of relaxin as an inhalant therapy for asthma. Relaxin has been proved in animal models of allergic airway disease (AAD) to reverse airway fibrosis or scarring, and thus has great potential as a new and improved treatment for airway/lung dysfunction.