Florey Neuroscience Institutes is part of a successful group that has won an Education Investment Fund grant valued at more than $40 million. The fund allocation will be multi-institutional and multi-site, with FNI’s Prof Gary Egan leading the grant process on behalf of FNI, The University of Melbourne and the Mental Health Research Institute.

More than $5 million of the grant has been earmarked for the purchase of a 7 Tesla Magnetic Resonance Imaging (MRI) scanner at the new Parkville site. The 7T machine will be the first in Australia, and one of only two dozen in the world.

The 7T MRI scanner will make significant inroads into medical research of all diseases of the brain. Comparing the current highest strength 3 Tesla scanner to a 7T scanner is like comparing a magnifying glass to a microscope.

Prof Egan said, “The areas of greatest improvement will be the increased resolution of the image, the better contrast, and the ability to identify disease related changes in subjects at a resolution approaching the cellular level.

“To put a 7T scanner in context, the current field strength used in a clinical setting is 1.5 T. This machine will be nearly five times more powerful. The potential for scientific research in all areas of brain disease is phenomenal.”

Broad implications of this technological leap include:

**Resolution:** A 3T scanner can see detail in the brain down to about a millimetre, whereas the 7T will reduce that to about a fifth of a millimetre, allowing scientists to see pathologies in a range of conditions such as stroke, epilepsy, MS and potentially Alzheimer’s. This may be the first time we can see some of the pathologies associated with these diseases in the living brain.

**Contrast:** Viewing the MRI signal for elements such as sodium and for metals particularly iron, will be greatly enhanced with the 7T. In brain trauma from accidents or stroke, chemicals are released that are toxic to brain cells.

The 7T scanner will give us the ability to more clearly see how the brain and the surrounding tissue are directly damaged.

Identification of disease approaching the cellular level in human beings: This is something never previously achieved in Australia, and will be relevant for the full range of neurological and psychiatric diseases.

As part of the new Melbourne Brain Centre, a purpose-built Imaging Centre is being constructed to house the 7T scanner. The building includes a hinged roof to lower the massive piece of equipment inside in late 2011.
DIRECTOR’S MESSAGE

DEAR FRIENDS, WELCOME TO SPRING! WE HAVE ENDURED A COLD AND WET WINTER, THANKFULLY IT HAS INCREASED OUR WATER STOCKS, BUT NOW IT’S LOVELY TO SEE NEW GROWTH.

FIRSTLY, I WOULD LIKE TO THANK ALL OUR DONORS WHO CONTRIBUTED TO THE TAX APPEAL. YOUR GENEROSITY HAS INCREASED OUR FUNDRAISING INCOME AT A TIME WHEN THE EFFECTS OF THE GLOBAL FINANCIAL CRISIS ARE STILL BEING FELT ACROSS THE COMMUNITY.

The Florey has been an integral partner in a successful Education Investment Fund grant application with the University of Queensland and The University of Melbourne led by Prof Gary Egan, to bring the world’s most advanced imaging equipment to Australia. The new Parkville building will receive a 7 Tesla MRI scanner which will be the first in the country. The significance of this facility in terms of research cannot be overstated. Imaging equipment used for diagnosis in hospitals is generally 1.5 Tesla in magnetic field strength; this machine will have more than three times the imaging power, which provides incredible scope for all fields of research into the brain.

The building projects at Parkville and Austin are progressing well. Parkville is substantially ahead of schedule and Austin is running as planned. We are pleased with the speed of progress and will keep you updated with the building completion times as they near.

A number of FNI staff have recently been recognised for their outstanding research and I would like to take this opportunity to congratulate them. Prof Phil Beart recently won the Bethlehem Griffith Research Foundation (BGRF) medal for his 30 year commitment to biochemistry as it relates to neuroscience. Dr Bradley Turner also was recognised by BGRF. Prof John Wade was awarded the Cathay Award, the highest honour of the Chinese Peptide Society, for his ‘seminal contributions to international peptide science’. Finally, but certainly by no means least, Dr Clare Parish was a finalist in the People’s Choice Award for the Australia Museum Eureka Prize. Dr Parish’s work concentrates on stem cell research in Parkinson’s disease.

Finally, I would like to remind you that on the 11th of November we will be hosting Prof Tim Bliss as the speaker for the 14th Kenneth Myer Lecture. Tim’s topic for the lecture is the ‘Machinery of Memory’ which will examine how memories are laid down in the brain. For the first time the lecture will be held at the Melbourne Convention and Exhibition Centre which is an excellent venue reflecting the quality of the speaker.

Prof Geoffrey Donnan, Director, Florey Neuroscience Institutes
As of August 2010, Melbourne is drawing closer to having its own centre dedicated to revealing the mysteries of the brain. The new Melbourne Brain Centre will accommodate staff from:
- The Florey Neuroscience Institutes
- The Mental Health Research Institute
- The University of Melbourne
- Austin Health and
- Melbourne Health.

The centre will be the largest brain research facility in the southern hemisphere, investigating neurodegenerative diseases, stroke, epilepsy, multiple sclerosis, mental illnesses and neurotrauma.

It’s an exciting time for the 700 people anticipating a move into one of the purpose-built facilities at Parkville and Heidelberg.

The two new facilities are well on their way to completion; here’s an update.

THE AUSTIN CAMPUS
At the Austin facility in Heidelberg, work is on schedule for practical completion at the end of 2010 with staff expected to move in February or March 2011.

The tower crane has finished its work and has been dismantled. Windows and walls are being installed and painting has begun on the ground floor.

PARKVILLE CAMPUS
In Parkville, the exterior of the Melbourne Brain Centre is assuming a commanding presence in Royal Parade. The interior is taking shape with walls and partitions going up.

Glazing and lifts are being installed and power has been connected. All is going to plan and we are still on track to occupy this facility in late 2011.

2010 BRAIN BEE CHALLENGE FINALS
In July, around 80 students from 20 schools congregated at the University of Melbourne Medical School for this year’s Victorian final of the Australian Brain Bee challenge.

The individual event was won by Adheeshee Sayakkarae from St John’s Regional College in Dandenong and the team event was won by the John Monash Science School.

Sponsored by FNI, the challenge is a national competition for year 10 students to encourage them to learn about the brain and science. About 7,000 students from around the country entered the event, including 1,800 Victorians.

The competition allowed students to participate either as an individual or as part of a school team.

The first round involved an online quiz that was undertaken by students back in March. The state finals, held in all states on July 20, was for students who had achieved an outstanding performance in their online quiz.

“Both the students and staff of the participating schools were very enthusiastic and excited” said the University of Melbourne’s Associate Professor Heather Young.

In addition to the event, the students and their teachers were delighted to be taken on laboratory tours at FNI and a visit to the Anatomy and Pathology Museum. This was followed by short presentations from PhD students and young neuroscience researchers.

The successful day was organised by Assoc Prof Heather Young, Dr Richard Anderson and Dr Joanne Britto from FNI.
Renowned British Neurophysiologist, Professor Tim Bliss, will be this year’s guest presenter at the 14th Kenneth Myer Lecture. Professor Bliss is the world leader in long-term potentiation (LTP), long-term memory and brain plasticity, and his talk ‘Mechanisms of Memory’ will focus on this exciting area.

Giving an idea of what to expect in his lecture, Professor Bliss said, “Of all the faculties of the mind, memory is perhaps the one that we cherish the most. Until recently we assumed that memory was stored as changes in the strength of connections between nerve cells in the vast neural network of the brain. We are now beginning to understand the cellular mechanisms by which experiences in the external world, transformed into patterns of nerve impulses, lay down a memory trace.

“I will describe some of the experiments that have led to our current understanding of the molecular machinery of memory, and say something about the implications of this work for memory enhancing drugs and for the treatment of memory disorders”.

The lecture and medal are named in the memory of Kenneth Myer, one of the founding benefactors of the Howard Florey Institute. Since 1992, the Florey has invited internationally distinguished neuroscientists to speak to the Melbourne community at this public lecture series.

The 2010 Kenneth Myer lecture will be held at the new Melbourne Convention and Exhibition Centre (MCEC) on Thursday November 11. The move to the new venue reflects the quality and prestige of the lecture.

The lecture will begin at 6pm in Plenary 2 at the MCEC. Guests wishing to attend will need to register their details at www.fni.edu.au/KBM2010 or can complete and return the invitation slip inserted with this newsletter.

HUMAN VARIOME PROJECT

Professor David de Kretser AC, Governor of Victoria, and Mrs Jan de Kretser recently hosted a reception in support of the Human Variome Project. This project is a FNI-based and led global consortium of researchers committed to reducing the burden of genetic disease.

Among those who attended this prestigious event were Sir Gustav Nossal AC, Jane Halton the Secretary of the Department of Health and Aging, state parliamentarian David Davis, and the Hon Alex Chernov, Chancellor of The University of Melbourne.

The Human Variome Project is part of the Genomic Disorders Research Centre led by Professor Richard Cotton. It is unique in that it aims to collect information on every instance of genetic variation and mutation and its effect on human health. This data will enable clinicians to more speedily diagnose, counsel and, where possible, treat inherited diseases. It will also create a global resource for researchers to examine and unravel mutations in human disease which may lead to cures or biomarkers of disease.

In his speech, the Governor outlined the need for the collection of genetic variation information because it is the infrastructure on which critical research and treatment is based.

Sir Gustav remarked: “We are all interested in what makes up a person, but we are even more interested in what makes people different. That’s why we need to study mutations. To avoid people all over the world wastefully re-inventing the wheel, we need a central registry of all this information standing shoulder to shoulder with the Human Variome Project as an equal partner, and equally and freely accessible.”

David Abraham from the CASS Foundation described why he has been a long time supporter of the work and called on the attendees to do all they could to support. He said “We need money to coordinate world wide information and to make that information available.”

Many millions of people suffer from inherited disease globally; twenty million people in the USA alone are affected each year. The data collected by the Human Variome Project is critical for research and proper genetic health care, and therapy which will lead to cost reduction.

The Human Variome Project is seeking $18 million over the next 5 years. This will fund the Australian collection activities and global coordination of the Project.
FRIENDS FOR LIFE

Meeting with Mr Geoffrey Ripper and Professor Richard Cotton recently, I was struck by their close and comfortable friendship, a friendship that began in the 1960’s when Richard and Geoffrey were both university students. Geoffrey was Richard’s best man at his wedding and for the past forty years, their families and professional lives have continued to be closely intertwined.

Prof Cotton and his team’s research at the Genomic Disorders Research Centre (GDRC) focuses on gene mutation, and the establishment of a worldwide database of human genomic faults.

The World Health Organisation and UNESCO have shown great interest in the GDRC’s research, but there have been difficulties in attracting sustained funding.

Expressing his belief in his friend’s lifelong work, Geoffrey has now taken the step of making a bequest to the Florey Neuroscience Institutes. When I asked him why he had chosen to become such a generous supporter to Richard’s research, Geoffrey said “After making sure that I have taken good care of my family, I feel that I will have the surplus funds which will give me the opportunity to perform a moral obligation to help. This research is of such huge importance to families, now and into the future”.

Helen Whyte
Bequest Officer

JOIN OUR FUNDRAISING TEAM!

Everyone can help find the answer to brain disorders but not everyone needs a science degree to do it. People from all walks of life can be part of FNI’s winning team by doing a little fundraising to help us to buy new equipment, provide PhD scholarships, and support our scientists in their laboratories.

The first rule of fundraising is simple – someone asks someone else to give, to buy, to help or to join in. It is amazing how generous and helpful people are if asked to help a good cause, especially when it is a trusted and respected organisation such as FNI.

There are so many ways to ask. Enid and Sue from Traralgon, whose lives have been changed forever by Alzheimer’s disease, regularly ask people at Sunday markets to buy their gift cards. Lina from Kew struggles with her own illness, yet still organises a gala ball every two years to raise very substantial funds for our MS research team. Many people ask guests at their special celebrations to give to our research in lieu of gifts.

You might like to organise a coffee morning at home, or something bigger like a giant garage sale with all your neighbours. Or you might simply introduce a friend to FNI. A good way to do this is to send them their own copy of this newsletter. If you would like extra copies for friends, call us on 03 8344 1629 or email info@florey.edu.au

TOP HONOUR BESTOWED ON FNI RESEARCHER

Professor John Wade was recently awarded the Cathay Award, the highest honour of the Chinese Peptide Society for his ‘seminal contributions to international peptide science’.

Professor Wade has been with FNI for 27 years and is internationally recognised for his dedication to peptide research. He received his award at the recent 11th Chinese Peptide Symposium that was held in Lanzhou, China.

FNI RESEARCHERS WIN TWO BETHLEHEM GRIFFITHS RESEARCH FOUNDATION AWARDS

At a well-attended ceremony in late July, the 2010 Bethlehem Griffiths Research Foundation (BGRF) Medal was awarded to FNI’s Professor Philip Beart. Professor Beart was recognised for his research into understanding degenerative and reparative processes within the brain. The inaugural Young Researcher of the Year Award was presented to FNI’s Dr Bradley Turner for his contribution to research into Motor Neuron Disease (MND).

After more than three decades of research, Professor Beart, a Senior Principal Research Fellow at FNI, is still motivated and dedicated to his work and excited by the new opportunities opening up in the treatment of Parkinson’s, MND and stroke.

“Brains are not just neurons,” explains Professor Beart. “The way forward is to look at cells such as astrocytes that support the neurons. I believe they have the potential to save neurons”.

Similarly, Dr Brad Turner’s devotion to unravelling the cause of nerve cell death in MND is well on the way to unlocking the mystery.

Dr Turner has been involved in pioneering studies revealing that affected nerve cells become overloaded and stressed.

“What’s striking in our animal model systems is that these motor neurons are under stress months before they die. We now have a number of drugs that can relieve this stress, and they are producing very encouraging results in animals.”, said Dr Turner.

The BGRF awards its medal and a $5,000 gift for outstanding contribution to clinical research in progressive neurological disorders or palliative care.

The Foundation presented plaques for service to medical science to current grant recipients – these lucky researchers have received a total of $350,000 in research assistance from BGRF.
THANK YOU TO THOSE WHO HAVE GENEROUSLY DONATED TO THE FLOREY NEUROSCIENCE INSTITUTES BETWEEN JUNE AND JULY 2010. LISTED ARE THOSE WHO KINDLY DONATED $250 OR MORE.

CHARLES ALLEN AO, ANAESTHESIA & INTENSIVE CARE TRUST FUND, AON CHARITABLE FOUNDATION, BARAKAT FAMILY, GRAEME BOWKER, DIANA CHERRY, RICHARD COTTON AM, ANDREW CUTHBERTSON, CARL & WENDY DOWD, DRUMMOND FOUNDATION, JANINE FERGUSON & GRAEME ELLEN, THE FINKEL FOUNDATION, JILL FYNMORE, NEILMA GANTNER, PETER GILBERTSON, VALMAI GOLLER, GARY GRAY, HELEN K GROVES AO, RICHARD HARBIG, INTERIORS AEROSERVICES PTY LTD, MARGARET JACKSON AC, H & K JOHNSTON FAMILY FOUNDATION, MARK JONES, PETER JOPLING QC, BRIAN LITTLE, SUZANNE LYNCH, FREDERICK MENDELSOHN AO, JOHN MILNE, MOIR'S INVESTMENT SERVICE, DAME ELISABETH MURDOCH AC, MARK NELSON, JOHN NEVIN, LADY PRIMROSE POTTER AC, IAN RENARD, GEOFFREY RIPPER, JUDY ROACH, MARTIN SACHS, NELL & HERMON SLADE TRUST, YVONNE SPENCER, GARY STILIANO, JEAN THOMAS, KATRINA TULL, VICTORIAN PRIVATE GERIATRIC HOSPITALS LTD, RICHARD WALL, RAY & MARGARET WILSON FOUNDATION, WINDERMERE FOUNDATION LIMITED, HARRISON YOUNG.

IN MEMORIAM. WE GREATLY APPRECIATE ALL THE GIFTS WE HAVE RECEIVED IN MEMORY OF LOVED ONES. THOSE REMEMBERED HERE ARE: ROBERT SCHWEDES, DR JOHN BEDLINGTON JOLLEY, JANETTE COUGHLAN, MRS MORRIS, MARGARET O'BRIEN.

WEDDING GIFT. WEDDING OF JUSTINE BROWNE & MICHAEL PARAGREEN.

CLARE PARISH A FINALIST FOR THE EUREKA PRIZE PEOPLE’S CHOICE AWARD

FNI researcher Dr Clare Parish was selected out of hundreds of entries as one of only six finalists for the Eureka Prize People’s Choice Award. Clare entered her research in the Early Career Research category which is limited to scientists under 35 years of age.

Presented annually by the Australian Museum, the Australian Museum Eureka Prizes recognise excellence in the fields of scientific research & innovation, science leadership, school science and science journalism & communication.

Clare’s research drew attention because her team is looking at improving cell transplants and addressing new ways to re-wire the injured brain in Parkinson’s disease, an area of health of significant importance to an aging population.

“Transplanted cells often show poor survival and limited ability to integrate into the rest of the brain circuitry. Our work is helping to improve this”, Clare said.

“We found that if we take younger, more immature dopamine cells, they make the transition to a mature state in the brain and are less traumatised and more likely to yield dopamine cells. This way, we can reduce the amount of material needed for transplant by half. This is great news because these cells are not easy to come by.”

“We have also found ways to manipulate stem cells, which are in unlimited supply, to create more dopamine neurons for transplantation.”

Clare and the team have also created biomaterials to help the transplanted cells mature and grow into the brain. These materials are engineered into three-dimensional scaffolding that can help support the cells. All of this could mean better results for the patient - although currently, it is only being tested on rodents.

“We get the right cell, transplant it to the right place in the brain and we engineer materials to help join these new cells into the circuitry of the host brain.”

While Clare is aware of the ethical challenges posed by embryonic stem cell research, she believes that without studying and understanding how cells mature, scientists cannot have a chance of repairing the injured brain.

“Exciting recent studies have shown that in the future we may be able to use our own cells, turn them back into stem cells and then into dopamine cells to treat Parkinson’s disease.

As part of the media surrounding the Eureka Prize Clare was interviewed for the ABC’s Catalyst program, who produced a short documentary on her work.