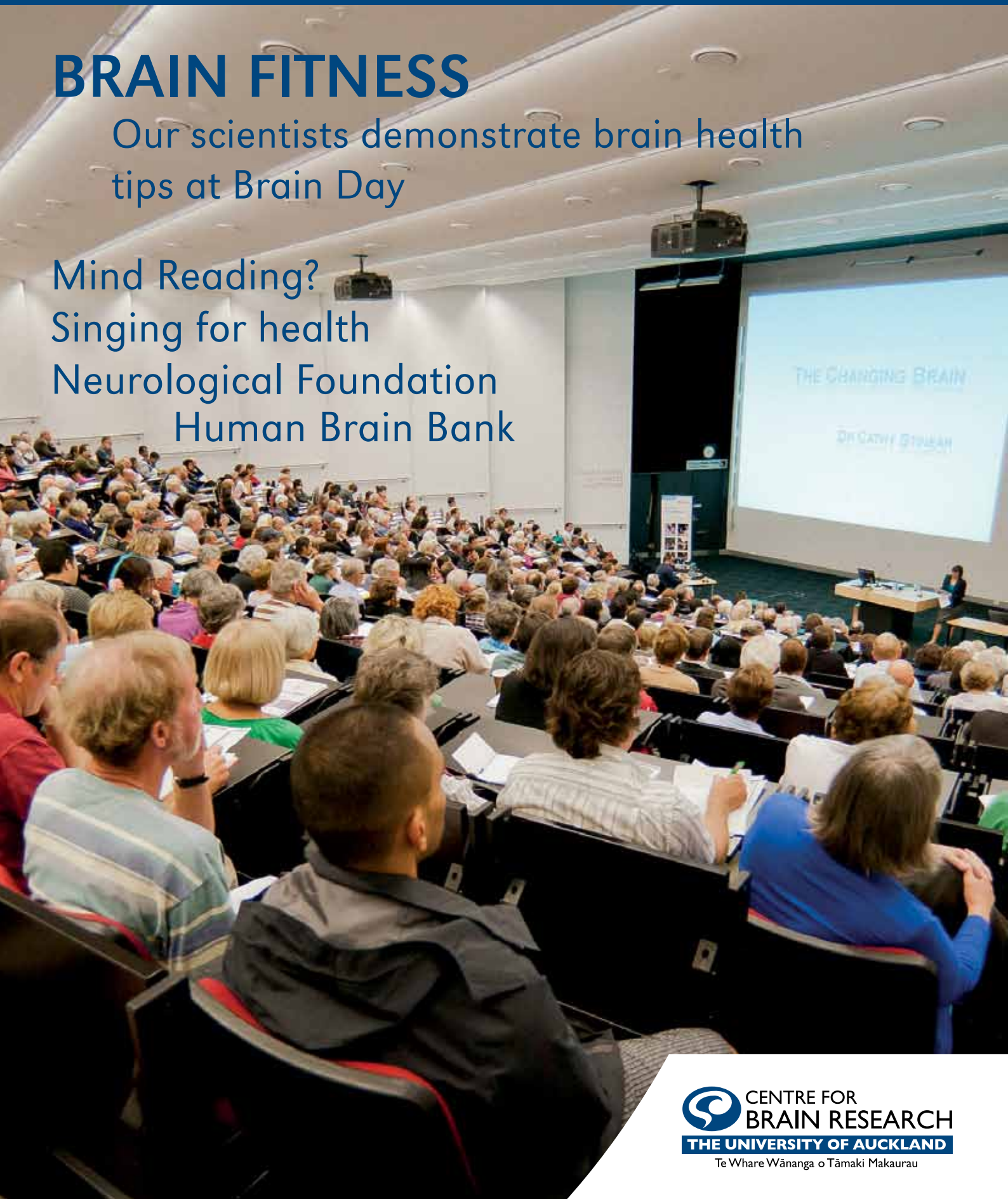
Connections

2012 - Issue Five



BRAIN FITNESS

Our scientists demonstrate brain health tips at Brain Day

Mind Reading?

Singing for health

Neurological Foundation Human Brain Bank

CENTRE FOR BRAIN RESEARCH
THE UNIVERSITY OF AUCKLAND
Te Whare Wānanga o Tāmaki Makaurau

On our cover: The theme for Brain Day 2012 was brain fitness, with lectures, workshops and science experiments geared around optimum brain health. Here children make brain hats to learn about brain anatomy. You can read more on page 10.

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Connections - The Centre for Brain Research magazine

Autumn 2012 Issue Five

The Centre for Brain Research is a unique partnership between scientists, doctors and the community. Established in 2009, cross-faculty research teams carry out world-class neuroscience research, alongside clinical collaborations with leading neurologists, neurosurgeons and physicians in the Auckland region.

Editorial contact details

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www.cbr.auckland.ac.nz

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Letter from the Director

Looking back over our two years of operation, we can reflect with pride on what we have achieved in the Centre for Brain Research to date and look forward with enthusiasm and excitement to the continuing challenges and opportunities that lie ahead.

The CBR is all about developing partnerships and collaborations across our 3 pillars – scientists, clinicians and the community. Our mission and goals are ambitious and lofty – the Centre aims to harness the combined expertise and strengths across the 3 pillars to ensure that brain research in the University, from basic right through to applied, is of the highest international quality and extends to collaborative research interactions with our leading doctors, to help serve the community and families affected by brain disease. That is the vision, the excitement and the challenge for the Centre. Since our last newsletter in October 2011, there have been major developments in the further funding, development and review of our strategic research initiatives and new CBR appointments which represent major milestones towards achieving this vision.

On the philanthropic funding front, the Freemasons of New Zealand have provided further generous support of $248,000 to establish a new drug discovery platform for neurodegenerative diseases. This funding will stimulate translational collaborative links between key researchers right across the Centre – the world class medicinal chemistry group led by Professor Margaret Brimble in the School of Chemical Sciences and our leading expert neuropharmacologists in the CBR Biobank and Integrative Neuroscience Facilities – Professor Mike Dragunow and Associate Professors Bronwen Connor and Michelle Glass. This research grant provides funds for a Freemasons Postdoctoral Fellow, Dr Amanda Heapy, who will be testing a wide range of lead drug compounds using state of the art cellular and high throughput technology in the Biobank and Integrative Neuroscience Facilities. This cutting edge research will fast track the identification of potential new drugs to fight brain diseases.

This is what the CBR is all about – taking discoveries from the lab to the clinic. Also, Sir Graeme Douglas through the Neurological Foundation has provided critical support of $325,000 for the appointment of a Senior Research Fellow – Dr Henry Waldvogel – to enable the ongoing development and expansion of the Neurological Foundation Human Brain Bank. This will further enhance research across the centre on human neurodegenerative diseases. These grants bring the total of philanthropic funding for the CBR to $1.34M over the last year and to a grand total of $3.25M since the establishment of the CBR.


Director ProfessorsRichard Faull

Philanthropic funding is critical to our research success at the centre. It is the life blood of innovative strategic research developments. It gives us the flexibility to develop new, exciting research initiatives to help people with brain disease and to stimulate blue sky thinking and creative research. We are so grateful to have top philanthropic experts working alongside us in the community to raise support for our research. We give them a special title, for special people – they are our "CBR Ambassadors". I am pleased to announce our new CBR Ambassadors: David Mace, chair of the Freemasons Roskill Foundation; Dame Rosie Horton, well known for her philanthropy for the Starship Foundation; Dame Jenny Gibbs, prominent University supporter and arts patron; and Jenny Gill, Chair of the ASB Community Trust. We are so grateful for their guidance, wisdom and support for our ongoing philanthropic efforts.

At our recent CBR Strategic Planning Day in February, there was unanimous support to focus and capitalise on our three major strategic research developments - the Brain Recovery Clinic, Biobank and Integrative Neuroscience Facilities. Alongside this we need to develop imaging capabilities for the future, and grow our mid-career workforce. Communication and collaboration across the Centre is critical to enable growth of our neuroscience research. Also, our directorate and management structure must be continually reviewed to meet the growth and challenges of the CBR.

I am delighted to announce that with the agreement of the Research Advisory Group I have appointed Professor Peter Thorne as the Deputy Director for Science and Strategic Developments. Peter brings an invaluable background of strategic planning expertise and an outstanding neuroscience research experience to help guide and direct the ongoing strategic research developments in the centre. With this reshaping of the Directorate, the Research Advisory Group will be reconfigured and take on a more active strategic planning role, working closely with the Directorate to advise on the direction of the centre and to provide feedback to the constituent groups across the CBR.

With the growth of the Centre to over 50 research groups across the University and the critical importance of the ongoing development of collaborative research between researchers and clinicians, I am very pleased that we have made an exciting new appointment of Dr Dean Robinson as the new CBR Research Manager. As detailed elsewhere in the newsletter, Dean will play a critical role in facilitating collaborative research across the CBR and work closely with the Directorate in implementing our strategic research initiatives.

The Centre is entering a new and exciting phase in the ongoing development to achieve our mission and goals. Thank you all for your commitment and contributions to the CBR. With your help we can realise our dreams by working together to push back the frontiers of research to fight brain disease.

Professor Richard Faull

CBR blog

To keep up to date with CBR news throughout the year, please sign up to our blog: http://centreforbrainresearch.wordpress.com/

CBR Directorate

Professor Peter Thorne will join Professors Richard Faull and Alan Barber as a new Deputy Director of the Centre for Brain Research.

Professor Peter Thorne will be responsible for overseeing science and strategic developments in the centre, including the Brain Recovery Clinic, Integrative Neuroscience Facilities and Biobank. Professor Ian Kirk is also a member of the Directorate as an Associate Director, looking after Psychology and Imaging research directions.

Professor Richard Faull ONZM

Professor Faull is the Director of the Centre for Brain Research, and the Director of the Neurological Foundation Human Brain Bank. He runs the Neurodegenerative Diseases research group of the Human Brain laboratory within the Department of Anatomy with Radiology.

Professor Alan Barber

Professor Barber is the Deputy Director (Clinical) of the Centre for Brain Research and Neurological Foundation Professor of Clinical Neurology at The University of Auckland. He is the Head of Stroke Services at Auckland District Health Board. His research focuses on improving diagnosis and imaging in stroke and brain injury.

Professor Ian Kirk

Professor Ian Kirk is an Associate Director of the Centre for Brain Research. He is the co-director of the Research Centre for Cognitive Neuroscience, and leads the Human Neuroscience team in the Department of Psychology.

Professor Peter Thorne CNZM

Professor Thorne is the Deputy Director (Science and Strategic Developments) of the Centre for Brain Research. His research focuses on mechanisms, diagnosis and treatments for hearing loss incorporating biomedical and population health approaches. He holds appointments in both the Physiology and Audiology departments.

Hearing Hero

Professor Peter Thorne has also been named as the inaugural Hearing Hero by the National Foundation for the Deaf.

The award has been instigated by the Foundation to recognise individuals who have made an outstanding contribution to the deaf and hearing impaired sector, and in the words of the organisation's CEO Louise Carroll, "we cannot think of a more deserving recipient for this award".

Peter has published widely in the area of inner ear homeostasis and the effects of noise on hearing, which includes studies on the mechanisms of noise injury in animals and the epidemiology and prevention of noise-induced hearing loss in humans. He was the prime mover in the establishment of the Section of Audiology at the University in 1990 and the development of Audiology professional training through the establishment of the Master of Audiology degree.

Peter has contributed substantially to the hearing impaired community, serving as the President of the National Foundation for the Deaf. He was one of the lead advocates for the establishment of Newborn Hearing Screening and chaired the Newborn Hearing Screening Implementation Advisory Group for the National Screening Unit.

He serves on the Board of the Auckland Medical Research Foundation and three years ago was made a Companion of the New Zealand Order of Merit for his services to audiology.

Distinguished Professorships

Professors Richard Faull and Margaret Brimble have been honoured as 'Distinguished Professors' in The University of Auckland. With only 18 professors of this order in the University, it is a fantastic honour.

Professor Richard Faull was awarded for his distinguished research career and community contributions. He leads a large research programme investigating neurodegenerative diseases of the human brain and is the Director of the Neurological Foundation of New Zealand Human Brain Bank. Richard is a Member of the New Zealand Order of Merit (Queen's Honour) and was the 2010 Supreme winner of the World Class New Zealand award. He is a Fellow of the Royal Society of New Zealand, and has been awarded New Zealand's highest scientific award, the Rutherford Medal. He is the Patron of the Alzheimer's Foundation (Auckland), Alzheimers New Zealand Charitable Trust and the Huntington's Disease Association (Auckland and Northland), and the Medical Patron of the Motor Neurone Disease Association of New Zealand.

Professor Margaret Brimble leads an innovative drug discovery programme in the Department of Chemical Sciences. Her neurological research focuses on the synthesis of alkaloids and peptidomimetics for the treatment of neurodegenerative disorders. Thanks to a generous donation from the Freemasons of New Zealand, her team will now test these drugs on human tissue in the Centre for Brain Research Biobank.

Margaret has also been awarded a Companion of the New Zealand Order of Merit in the New Year Honours. She developed the drug candidate NNZ2566 for Neuren Pharmaceuticals that is in phase 2b clinical trials for traumatic brain injury in partnership with the US Army. She is Chair of the Rutherford Foundation, a member of the Marsden Fund Council (Convenor of the Physical Sciences Panel), and a Fellow of the Royal Society of New Zealand. She has been awarded the 2007 L'Oréal-UNESCO Women in Science Laureate for Asia-Pacific in Materials Science and the 2008 World Class New Zealand Award (Research, Science, Technology and Academia). Margaret was also awarded the Adrien Albert Award for 2011 from the Royal Australian Institute of Chemistry for her exceptional and sustained achievements in medicinal chemistry.

CBR news

Here we round up all the latest news from the Centre for Brain Research.

Honours

Several supporters of the CBR were recognised in the New Year Honours list.

CBR Advisory Board Deputy-Chairman **David Mace** was made an Officer of the New Zealand Order of Merit for services to the community. David is also the Chairman of the Freemasons Roskill Foundation, which is a proud supporter of research at the centre. Meanwhile CBR Maori Advisory Board member **Naida Glavish** was also made an Officer of the New Zealand Order of Merit for services to Maori and the community.

Businessman **Hugh Green** was awarded a Queen's Service Medal for services to philanthropy. His Foundation was the founding donor of the CBR Biobank, which researches human brain disease and aims to develop new drugs for neurological disorders.

Professor Louise Nicholson has been awarded a Paul Harris Fellowship, the highest award that a Rotarian can achieve. The award is made in recognition of long and meritorious service to the community that fulfils the ideals of Rotary for the betterment of humanity, and is not limited to Rotarians but may be awarded by a club to any person who fulfils the requirements. Louise undertakes numerous community engagements and is a tireless supporter of fundraising for spinal cord injury.

Promotions

Several CBR researchers have been promoted within the University recently. Biologist **Tom Brittain** has been promoted to Professor – his research into the protein neuroglobin is showing promise for understanding Alzheimer's disease. Neuropsychologists **Lynette Tippett** and **Suzanne Barker-Collo** have also been promoted to Associate Professor. Their research into how the brain functions in neurodegenerative disorders and brain injury is critical for work in the Brain Recovery Clinic.

Freemasons fund new drug discovery programme

From L-R: Professor Iain Martin, Professor Richard Faull, Dr Amanda Heapy, Mr David Mace, Professor Margaret Brimble, Professor Ian Reid and Professor Alan Barber.

A world-leading drug discovery programme is being developed at the Centre for Brain Research, thanks to a donation from the Freemasons of New Zealand. The generous gift of $248,000 will enable the development of new drugs for neurodegenerative disorders. The funding brings together an expert scientific team, including medicinal chemists led by Professor Margaret Brimble from the School of Chemical Sciences and neuropharmacologists working in the CBR Biobank.

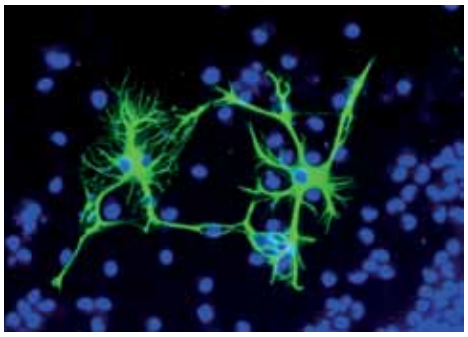
New drug compounds will be developed by synthetic chemist Dr Amanda Heapy, who has been awarded the Freemasons fellowship for this work. The team has a unique library of 2000 bioactive natural products. These novel compounds will be tested directly on human tissues in the Biobank, to speed up the drug development process.

Dr Heapy says: "Collaboration is key. With medicinal chemistry we need constant feedback from biologists about what direction to go and we hope to provide a more tailored service to the pharmacologists which will fast track the search for novel compounds. The Centre for Brain Research has the Biobank, facilities and all the procedures set up for us to do this, whilst the chemists have the compound library. Thus, working closely is a huge competitive advantage — having discussions in person and bouncing ideas off one another."

David Mace is the Chairman of the Freemasons Roskill Foundation, and says: "The Freemasons are delighted to announce the funding of this fellowship to continue the valuable work by New Zealand researchers at the forefront of global investigation."

A Memorandum of Understanding was also signed by Vice Chancellor Professor Stuart McCutcheon and the Grand Master of the Freemasons on 25th November, to celebrate the ongoing collaboration and support between the Freemasons and University research.

CBR Calendar 2012 winner



Capturing the moment we make a new memory was the star of our CBR Calendar. The winning image was taken by Dr Renee Gordon, and showed two neurons forming a synapse – the vital connection between nerve cells.

Renee's lab group is led by Associate Professor Bronwen Connor, and the team received $500 towards communicating their exciting stem cell research at a scientific conference. The calendar images can be viewed online:

http://www.fmhs.auckland.ac.nz/faculty/cbr/contact/calendar2012.aspx

Funding success

Research across the CBR has been boosted with generous funding support

Picking the ideal treatment for people with schizophrenia

People with schizophrenia could soon be more reliably prescribed medications best tailored to their biology, with a project underway in the Centre for Brain Research.

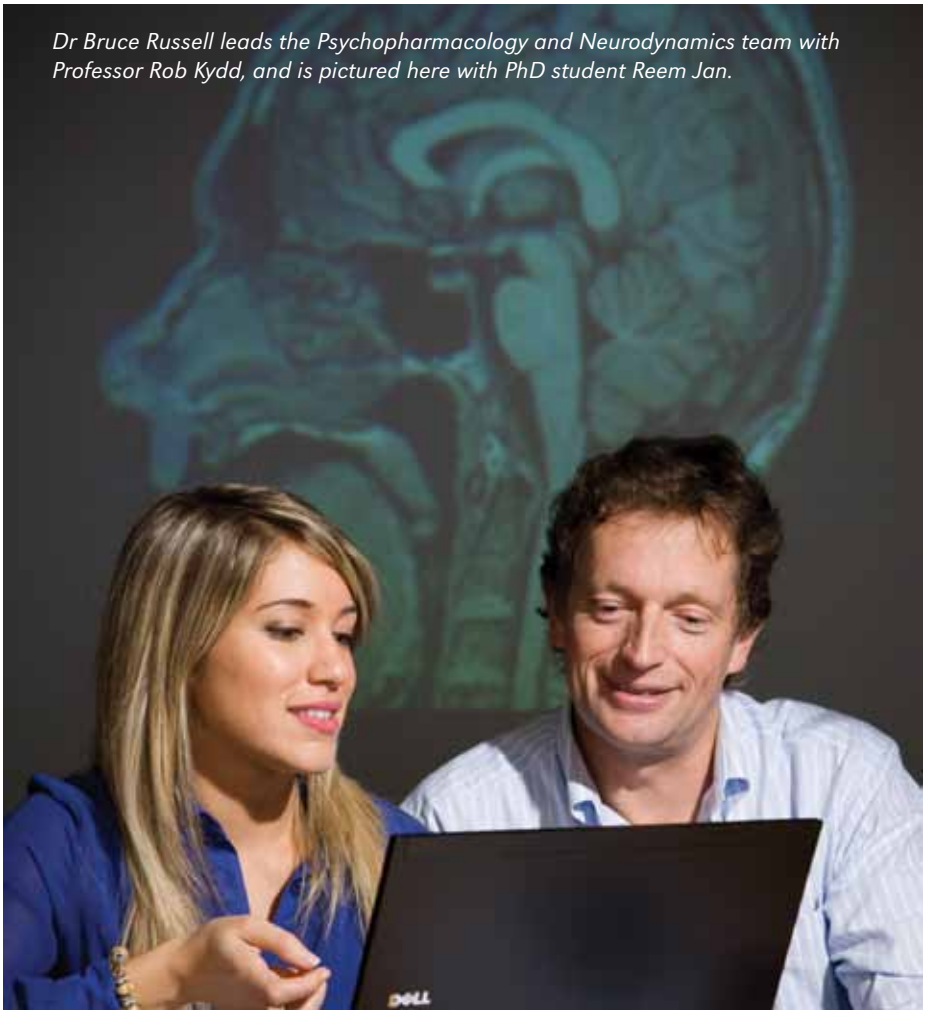
Funding from the Auckland Medical Research Foundation has enabled promising Research Fellow Dr Valerie Anderson to continue the research.

Standard medications are not effective in approximately a third of people with schizophrenia, and these patients are considered 'treatment-resistant'. Alternative medication and combinations of antipsychotics must be used, but these medications have a greater risk of inducing serious side effects and therefore are avoided where possible. Consequently, people with treatment-resistant schizophrenia often experience many years of unsuccessful therapy with standard medications before alternatives are prescribed, during which time their symptoms severely affect daily living and have a significant impact on long-term outcomes.

The Psychopharmacology and Neurodynamics team will now investigate whether they can identify measurable biological characteristics (biomarkers) that could be used to predict whether people with schizophrenia will be treatment-resistant. Brain magnetic resonance imaging, electroencephalography, and neuropsychological data will be collected and analysed to investigate the structure and function of the brain in people with schizophrenia who are treatment-resistant, and the findings compared to people with schizophrenia who respond well to standard medications and control subjects.

Identification of reliable biomarkers to predict treatment-resistant schizophrenia would enable alternative medications to be prescribed earlier in the disease course. This will ultimately minimise the time that these patients experience debilitating symptoms, leading to improved outcomes for them, and reducing the impact on their families and health care providers.

- *Biomarkers for treatment resistant schizophrenia ($179,267 – two years)*



Dr Bruce Russell leads the Psychopharmacology and Neurodynamics team with Professor Rob Kydd, and is pictured here with PhD student Reem Jan.

Head start for young researchers

The Auckland Medical Research Foundation has also funded two new PhD scholarships at the Centre for Brain Research. Foundation Executive Director Kim McWilliams says: "Many of these researchers already have and will go on to become leaders and internationally recognised in their particular discipline or field of medicine."

Projects:

- *Preterm stem cell therapy (Doctoral Scholarship $122,000 – three years) Miss Lotte van den Heuij, Fetal Physiology*
- *Visual brain plasticity in adult humans (Doctoral Scholarship $122,000 – three years) Mr Victor Borges, Visual Neuroscience Group*

Promising brain researcher returns to NZ

Hawkes Bay-born Dr Erin Cawston has been brought back to New Zealand thanks to a Neurological Foundation Repatriation Fellowship. Erin worked as a Research Fellow at the Mayo Clinic Arizona and has now joined Associate Professor Michelle Glass' team in the Centre for Brain Research in order to further her research into Huntington's disease at.

The 2011 Repatriation Fellowship ensures outstanding young researchers who have completed postdoctoral studies overseas can return home and continue to develop their research careers in their specialist area.

Dr Cawston says "I am incredibly grateful to the Neurological Foundation for this Repatriation Fellowship allowing me to come home to New Zealand. I am really enjoying working with Associate Professor Michelle Glass and Professor Mike Dragunow on such an exciting project as well as being back amongst the New Zealand scientific community."

Research kick started with new grants

The Neurological Foundation has funded a number of exciting new research projects at the CBR.

Optimising a novel induced neural precursor-like cell line

Associate Professor Bronwen Connor, Department of Pharmacology and Clinical Pharmacology, Centre for Brain Research University of Auckland, $136,862

The generation of 'embryonic-like' stem cells from adult human skin was first demonstrated in 2007. This project will advance this capability by directly generating immature brain cells (neural precursor cells) from adult human skin. Of major significance is that this will avoid the need to generate an intermediate embryonic-like stem cell phase, providing neural precursor cells for therapeutic applications without risk of tumour formation from stem cells. This project provides a unique opportunity to establish a novel technology which is likely to have wide-reaching applications for future research in the areas of neurological disease modeling, drug development, and potentially cell replacement therapy.

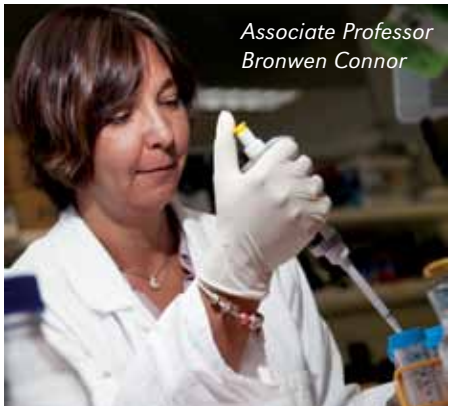
A genetic mechanism underlying late-onset Alzheimer's disease

Professor Russell Snell, School of Biological Sciences University of Auckland, $86,875

Alzheimer's disease is a debilitating disorder affecting up to 50 per cent of those aged over 80 years old. Despite decades of research and innumerable clinical trials, there are no treatments that prevent or reverse the progression of the disease. There is currently some evidence that Alzheimers patients have a small proportion of brain cells with three copies of chromosome 21 instead of the normal two, leading to an increased production of the toxic protein amyloid-beta peptide. This study aims to confirm this observation, determine the pathological consequences of these cells and look for markers that make these cells different, which may lead to new therapies.

Immodulation of stroke with risperidone

Associate Professor Bronwen Connor, Department of Pharmacology and Clinical Pharmacology, Centre for Brain Research, University of Auckland, $11,999



Associate Professor Bronwen Connor

Stroke is a leading cause of disability in New Zealand and the burden associated with this neurological disorder is increasing. Treatment of stroke represents a large, unmet medical need. Neuroinflammation is an important pathophysiological mechanism involved in stroke and impacts profoundly on the extent of cell loss, as well as injury progression. Neuroinflammation therefore offers an exciting therapeutic target for the treatment of stroke. It has been recently demonstrated that the anti-psychotic drug, risperidone, is effective at reducing neuroinflammation and disease progression in a model of multiple sclerosis. This project will now explore whether the anti-inflammatory properties of risperidone can reduce the progression and severity of stroke.

Do BMP antagonists play a role in directing the fate of adult neural progenitor cells following neural cell loss?

Shwetha George, Department of Pharmacology and Clinical Pharmacology, Centre for Brain Research, University of Auckland, $4,000

The ability for adult neural stem cells to migrate to areas of brain damage and generate replacement brain cells may provide a unique mechanism by which to develop novel therapeutic strategies for the treatment of brain injury or neurological disease. However, the local environment appears to be critical for directing the final fate of adult stem cells in the damaged brain. This study will investigate whether brain injury alters the expression of a group of compounds known as bone morphogenic protein antagonists to promote adult neural stem cells to form glial rather than neuronal cells. The results of this study will enhance our knowledge as to how stem cells respond to brain cell loss and may assist in the development of novel therapeutic strategies for the treatment of brain injury or disease.

Funding for innovation

Four CBR researchers have been awarded prestigious Marsden grants for innovative New Zealand research.

Associate Professor Michelle Glass was awarded $900,000 for her work on G-protein coupled receptors. This class of receptors represents the target for 50% of all drugs on the market, and Michelle aims to find a new way of altering G protein signalling.

Protein biologist Associate Professor Nigel Birch was awarded $895,000 for research on neuroserpin and its potential role in the human immune system.

Highly regarded chemist, Professor Margaret Brimble, was awarded $825,000 to determine the structure of proteins through racemic protein crystallography.

Meanwhile evolutionary psychology researcher Professor Russell Gray was awarded $775,000 to use his methods of studying evolution to look at how religion has developed.

The Marsden Fund is regarded as a hallmark of excellence, allowing New Zealand's best researchers to explore their ideas. It supports projects in the sciences, technology, engineering and maths, social sciences and the humanities. The fund is administered by the Royal Society of New Zealand on behalf of the government.

Marsden Fund Council chairman Professor Peter Hunter said he is proud to be part of the Marsden Fund system and is continually impressed at the quality of the applicants and the proposals. "The Marsden Fund supports leading-edge research, which creates economic growth and increases our understanding of issues, from medical advancements to social change and development," he says. "Most breakthroughs around the world come from this basic science end of the research spectrum, which is what makes the Marsden Fund both exciting to be part of and vital for New Zealand to invest in."

Applications to the Marsden Fund are extremely competitive. Of the 1078 preliminary proposals received, 250 were asked to submit a full proposal with 88 ultimately funded, giving a success rate of 8.2%. All of the funded proposals are for three years.

Singing for health

The CeleBRation Choir received an exciting Christmas treat when Auckland City Mayor Len Brown visited in December.

The CeleBRation Choir is led by Registered Music Therapist Alison Talmage.

Mayor Brown's love of singing is well known, so he was very keen to visit the 30-strong CeleBRation Choir, run by the Centre for Brain Research at The University of Auckland.

The community music therapy group offers singing therapy to people with communication problems through brain disease. Members include people who live with the effects of stroke, Parkinson's or Alzheimer's disease, along with other neurological conditions. People with these conditions may have problems speaking but find they can still sing.

Mayor Brown was treated to a list of well-known songs, solos and rounds before he discussed his love of singing and its role in his own recovery from a heart attack. He then led a rendition of the Christmas carol "Oh Come All Ye Faithful" and gave a solo performance of a new waiata "Ko Tamaki Matou" celebrating the history and future of Auckland.

His visit also took in a snapshot of the latest research around brain disease and recovery, led by scientists in the Brain Recovery Clinic. He took part in a demonstration of Transcranial Magnetic Stimulation by Dr Jim Stinear, an exercise rehabilitation expert. This electromagnetic stimulation technology is described by Jim as "a simple but effective concept" providing new rehabilitation hope for people with movement problems through stroke.

Singing research

The CeleBRation Choir choral group began as a social gathering for people affected by brain disease in September 2009. Now, two years on, it is not only a successful meeting of good cheer and melodies but also the subject of a number of academic studies into the unique benefits of singing therapy for the brain.

A team at the Centre for Brain Research is studying the CeleBRation Choir as a potential therapy for people with communication disorders through brain disease. Called SPICCATO (Stroke and Parkinson's: Investigating Community Choir Engagement and Therapeutic Outcomes), the research is funded by the Health Research Council.

The team is led by Speech Science Head Professor Suzanne Purdy, and is looking at therapeutic benefits from taking part in group singing – including people who have aphasia through stroke, and people with Parkinson's disease who can develop voice or speech problems.

For people with aphasia, singing therapy focuses on engagement, voice use, and language improvements. For people with Parkinson's, therapies focus on vocal exercise and warm-ups to maintain function. Results from the study are now being analysed and will be published in the near future.

Mayor Len Brown talked to choir members about his own health recovery.

Join the choir

The CeleBRation Choir meets weekly on Mondays at the University's Tāmaki Innovation Campus. New members are always welcome.

For further information:

- **www.cbr.auckland.ac.nz/choir**
- **Email: cbrchoir@auckland.ac.nz**
- **Phone: 021 574 274**

The virtues of feel-good music

Leaving her job after being diagnosed with Parkinson's disease was a decision Anna Gabb made in just one day.

The Ponsonby resident decided she would live every day to the fullest after her diagnoses in 2009 and did so by joining the CeleBRation Choir.

The choir was created in 2009 by the Auckland University Centre for Brain Research and started as a social gathering for sufferers of neurological conditions including stroke and Parkinson's disease.

It is at the centrepoint of a study led by Auckland University head of speech science Professor Suzanne Purdy who is investigating how singing influences the brain of those with neurological conditions.

Ms Gabb first heard about the choir through the university and thought it might be a fun group for her to join.

"A couple of months after I was diagnosed I went to a seminar about brain research and heard about the choir," she says. "I like music and thought it would be a good opportunity to sing."

Ms Gabb has been able to meet new people, regularly exercise her vocal chords and take part in Dr Purdy's research project through the choir.

"I thought it would keep me buoyant and cheerful," she says. "I didn't want to dwell on anything unpleasant."

After her diagnoses, Ms Gabb made the decision to leave her job as a librarian which she had held for 30 years.

"I decided to enjoy every day to the fullest and the choir is one of the things I do," she says. "The decision only took me a day. I didn't feel there was much point carrying on working."

Now she attends t'ai chi, regular gym sessions and the weekly choir.

Ms Gabb's positive beliefs are a major part of what keeps her coming back to the classes.

"I'm a strong believer in the restorative power of music – in other words, it's good for you," she says. "Music is good for the brain and singing is good for the memory."

Ms Gabb says singing has been shown to be beneficial to people with Parkinson's disease.

"Music helps me to do two things at once and listening helps me do crosswords and sudoku. It's good for concentration," she says.

Through the weekly choir meetings Ms Gabb has kept vocally and socially active.

"I've learnt to sing better and my voice has probably improved a bit," she says. "The choir is good fun and quite relaxing."

Professsor Purdy says she was approached last year to initiate the research from positive findings within the choir.

"A group of us got together and brainstormed how the choir was making a difference. And it seemed from early research that there were the physical benefits like breathing and the recognition of the social interaction."

Professor Purdy says the early research led her team to apply for a Health Research Council grant and undertake a feasibility study.

"The feasibility study had over 14 members of the choir agree to be in it, testing them using pitch, prosody and voice projection," she says.

"The feasibility study looks promising and we have got good results and enthusiastic support – it shows some change over time."

The next stage for the research project is for staff to apply for funding and do a randomised control trial.

Professor Purdy says the results are very exciting and staff have been heartened by the support of those in the choir.

"To demonstrate we can make a difference, that there is a change after being in the choir for 17 weeks and a change in the people's quality of life is very exciting," she says.

These articles were first published in the Central Leader on 9th March 2012, by Kelsey Fletcher.

Anna Gabb is pictured on the left with choir member Iris Matheson on the right.

Singing helps Tony after stroke

A stroke caused by prescribed medication left Tony Wiseman semi-paralysed and unable to speak with his wife.

But the 72-year-old found solace in the CeleBRation Choir. He found out singing uses a different part of the brain.

He lives in the Elizabeth Knox Home and Hospital in Epsom where he copes with mild aphasia, or difficulty with speech, and paralysis.

Mr Wiseman's wife Jennifer says her husband had been looking for a therapy to help with motivation and general wellbeing.

"In 2010 we went to brain day and discovered there was a choir and they sang at the stroke club we were members of," she says. "And we said please, we want to come."

Mr Wiseman had been a keen choral singer in his school days and at church when he was younger.

"It was an obvious thing to go back to when we found out about it and how it could help," Mrs Wiseman says.

"I think it's great to be getting out because a stroke causes people to sit around and do nothing – people don't have the motivation to do anything."

And taking the step to join the choir is something Mr Wiseman is pleased he did.

"I will sing every chance I get," he says. "I always come away feeling good."

Mrs Wiseman says her husband enjoys every part of the choir and singing isn't difficult for him, despite his aphasia.

"Singing is such a mental thing and here we help each other," she says.

"It's a social thing and we know each other and enjoy each other – people accept you, singing here is acceptance."

Mayor Len Brown talks to Tony and Jennifer Wiseman.

Public given a brain workout at Brain Day 2012

Community enthusiasm was out in force at this year's Brain Day. The latest brain research and brain fitness activities attracted more than 3000 people to the event, organised by the University's Centre for Brain Research in association with the Neurological Foundation of New Zealand.

The public open day on Saturday 17th March was held at The University of Auckland Business School in the Owen G Glenn Building, and the day was packed out from start to finish. Capacity crowds of up to 1000 filled the lecture theatres for topics ranging from drug use in pregnancy to internet use and our brains.

Centre for Brain Research Communications Manager Laura Fogg says she was astounded by the public interest on the day. "We had children aged 2 years old right up to grandparents in their 80s attending the day – it was fantastic to see. It just shows how much interest there is in the brain, and how keen the public is to learn more about keeping our greatest asset in top condition."

Over forty different community groups also attended the day, ranging from support groups like the Stroke Foundation to fitness clubs like Laughter Yoga. This Community Expo provided an excellent opportunity for members of the public to find information on many neurological disorders, as well as to learn exciting new ways to exercise their brains.

Executive Director of Auckland Medical Research Foundation (AMRF) Kim McWilliams, one of the many who attended the day, says: "As a large funder of medical research, we love initiatives like Brain Day, as it brings researchers and the community together in a fun, informative and practical way".

Children were encouraged to make 'brain hats', which they could use to explore brain anatomy. Alongside this, many also took part in the anatomy laboratory demonstrations, where human brain tissue was displayed in a sensitive manner. The anatomy lab was provided by the Faculty of Medical and Health Science Medical Learning Centre, in conjunction with the Neurological Foundation Human Brain Bank.

"One of the best things you can do for your brain is to take it for a walk – so get out and pound the streets for just 30 minutes a day!"
Dr Cathy Stinear

Pharmacology PhD candidate Jerusha Naidoo organised some of the children's events. She says she was surprised by the knowledge that even very young children showed. "They were a lot smarter than I expected and knew much more about the brain and how it works than I did at the same age.

"One of the big hits for them was the 'brain hats' activity. The children made and wore hats using cut-out pictures of the different areas of the brain while learning about

anatomy and function."

New to Brain Day this year were workshops designed to offer interactive demonstrations of brain fitness activities. As well as fascinating science experiments, people also took part in a singing workshop, physical exercise information sessions, and a Mobility Dogs demonstration. School children from across Auckland also showed off their science fair experiments to collect data from the public, as part of a LENScience collaboration with the Liggins Institute.

Science lab coordinator Dr Cathy Stinear is pleased that brain fitness is being highlighted. "People used to think that your brain couldn't be changed, but now we know that you can do so much to keep it healthy. One of the best things you can do for your brain is to take it for a walk – so get out and pound the streets for just 30 minutes a day! I think that's what's so great about Brain Day, as we can really get these critical messages across to the public."

Brain Awareness Week – view it again!

Brain Day was an amazing opportunity to meet the experts and hear all about the latest brain science. Videos from the lectures are on the web: www.cbr.auckland.ac.nz/brainweek

You can also view these media articles:

Drug researcher Dr Trecia Wouldes appeared on BfM in Brain Awareness Week, talking about her research on women using drugs in pregnancy. http://www.95bfm.co.nz/default,204590,dr-trecia-wouldes-p-and-pregnancy.sm

Communications Manager Laura Fogg talked about brain fitness on Bfm, discussing how people can keep fit and give their brain a workout throughout life. http://95bfm.com/default,204571.sm

Stroke rehabilitation and exercise researchers Dr Cathy Stinear and Professor Winston Byblow appeared on Good Morning talking about brain fitness and plasticity. http://tvnz.co.nz/good-morning/friday-16-march-4777959

Dr Cathy Stinear's research on brain plasticity also appeared on 3news online. Our brain is constantly changing, and so technology may influence our ability to concentrate. http://www.3news.co.nz/Technology-devices-may-affect-concentration—expert/tabid/420/articleID/247622/Default.aspx

Winners announced for Brain Day competitions

Postgraduate students (L-R) Delius Tsang, Jane Evans, Angela Wu and Jerusha Naidoo organised the children's activities at Brain Day.

Children from across Auckland were the lucky winners of fantastic prizes at Brain Day.

12 year old Laura Donovan was drawn as the winner of an iPad – her prize for taking part in the science labs passport tour and the Brain Day research questionnaire. The research questionnaire aimed to find out what information people want from Brain Day, as well as public knowledge about stroke. Meanwhile the passport tour weaved around the varied science labs on offer on the day, ranging from anatomy demonstrations to hearing decibel checks for ipods.

Laura says that she found Brain Day fascinating; "The hands on experiments were fun and touching a real brain and listening to the people talk about the brain was very interesting. I would like to come back again next year and take part in some of the workshops."

Laura lives in the countryside and says she made a special trip to Brain Day. "I hope to be a vet one day and have an interest in how the human body works," she says. "I attended Brain day mainly because my younger sister is doing a school project on the brain at the moment and also my mum was interested to find out some information about ADHD."

Meanwhile 11 year old Amanda Ford was crowned the winner of the children's drawing competition. Judges PhD students Jerusha Naidoo and Jane Evans thought her diagram of the brain, was the most artistic. Amanda is from Parnell, and was very excited to win a $50 book voucher.

Honourable mentions for the drawing competition went to 12 year old Jes Godward, 7 year old Jackie Cao and 5 year old Te Mahara Tipuna.

Truth or Lie?

This was the cryptic question posed at Mind Reading, an exciting live brain scan event in Brain Awareness Week.

Using functional Magnetic Resonance Imaging (fMRI) brain scans, Dr Donna Rose Addis and Associate Professor Brett Cowan were asked to spot which pattern of brain activity looked most like a true memory.

SIEMENS

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AUCKLAND MUSEUM INSTITUTE

The event was organised by the Centre for Brain Research and the Centre for Advanced Magnetic Resonance Imaging (CAMRI) at The University of Auckland. Promising to reveal the science of brain imaging, 'Mind Reading' offered an entertaining look at the capabilities of brain imaging thanks to MRI technology.

So could they do it? Well the answer was a hesitant yes! At the live event held at the Auckland Museum Events Centre, MC journalist Russell Brown pushed cognitive neuroscientist Dr Addis to make a choice, and it turned out her pick was indeed the scan taken while participant Reece Roberts was remembering a true experience.

The central premise of the event revolved around psychology student Reece being put through an exciting experience – in this case a whiz around a race track – which he then had to remember. In the alternate scenario, he then had to 'remember' an event which never happened. In other words he had to lie and try to fool the scanner.

Memory and imagination actually use overlapping brain regions and so the scans from each scenario looked remarkably similar. The packed out public audience of 400 held their breaths while the choice was made, and finally the correct answer was revealed. It turned out that increased activity in the hippocampus, which organises memory, and the retrosplenial cortex, were the clues which gave the game away for Dr Addis.

"It was difficult to tell as both the real event and the fake event could have given the pattern of activity that ended up being the real memory," says Donna Rose. "But for me, it came down to knowing that Reece's real experience was more intense and so had more dynamic and vivid detail associated with it."

So does this mean that MRI scanners could be used for lie detection? Well the answer was still a resounding no. The technology shows increasing promise for understanding human behaviour and thought, but is not reliable when scanning just one individual. This is because scientific experiments are usually conducted with a large group of people and repeated many times so that the responses are averaged out.

The Director of CAMRI, Associate Professor Brett Cowan says, "Functional MRI (fMRI) is the only technology with the magical ability to see inside the thinking human mind and reveal which parts of the brain are working. With the ongoing development of fMRI it will continue to provide profound insights into the normal brain, and essential information for those with neurological disease."

So MRI technology, like the 3T Siemens Skyra scanner at CAMRI, is still hugely exciting for the future. With international research revealing that thoughts can be turned into words, and that people in comas still imagine moving, the sci-fi scenario of mind reading may not be too far away.

What is MRI?

By Associate Professor Brett Cowan, Director of the Centre for Advanced Magnetic Resonance Imaging.

MRI is now used all over the world to peer inside patients to create pictures of incredible quality, and to diagnose the problems that are causing their symptoms. It all started about 60 years ago and the journey has included Nobel prizes, dramatic technical developments and the creation of something that was once only a dream.

MRI uses an extremely strong magnetic field to take its pictures, and while we usually use it to see the anatomy of the brain, the spinal cord and joints like the knee, at our Mind Reading event we used MRI to journey into the functioning mind.

Despite the obvious need to be careful with the magnetic field, MRI scanning is considered to be entirely safe. It doesn't require the use of X-rays like CT scanning, and has been used to perform millions of scans safely all over the world.

MRI is like a TV in that the machine sends a little signal into the patient, then pauses and listens for the signal that comes out. Scientists use a coil to detect that, which means with brain imaging you need a head coil. In order to get that signal we need a very strong magnetic field. The field is so strong that it can suck metal objects into its grasp, and has surprised many unsuspecting people!

Another way to describe the process is that your body is made up of water. Inside water is protons and it's the hydrogen protons that we use to make our images. Protons are like little spinning tops, and when a body goes into the scanner, instead of being randomly aligned they all line up like soldiers in rank. Then we get all the tops to start processing in line then turn off our signal so as they come back to their natural position they emit the signal we read and then make into pictures.

The reason we get so excited by MRI is its future capabilities. It can peer inside people without touching them and with no known side effects. Not only that, but it can actually image blood moving real time, so giving us a clue to brain activity. So this is the only technology capable of doing what we attempted with our Mind Reading event.

So could MRI really help scientists read our minds?

By Dr Donna Rose Addis, Cognitive Neuroscientist, Centre for Brain Research

Mind Reading has always been thought of as a superhuman skill, but fMRI technology is bringing us ever closer to this goal. So-called 'functional Magnetic Resonance Imaging' tracks blood oxygen levels across the brain, allowing scientists to visualise what brain regions 'light up' during different types of cognition. Of course this is an indirect measure, as we assume that the more oxygen a brain area consumes, the more it is doing – as thinking is hungry work!

Nevertheless the advances in functional MRI (fMRI) since the 1990s have been met with great enthusiasm from the scientific community – in the 16 years between 1991 and 2007, over 19,000 peer-reviewed articles reporting on fMRI research were published (Logothetis, 2008). Coupled with the increasing availability of and access to fMRI technology, this method has come to dominate brain research and led to the emergence of a new field: cognitive neuroscience. fMRI studies have investigated the neural underpinnings of every aspect of thought and emotion, from executing physical movements, language and mathematics, to the more complex and (some would argue) uniquely human abilities of remembering, imagining, and understanding the self.

Despite the exciting technological innovations – and the seductive images of brain regions 'lighting up' with activity – there are limits to what we can understand about the brain and cognition from brain imaging. The sin of over-interpreting MRI data usually comes about from a logical fallacy called 'reverse inference'. Essentially, a reverse inference is when one looks at a pattern of brain activity and from that, makes conclusions about what that brain (or its owner) is thinking or feeling. That is, engaging in a form of mind reading.

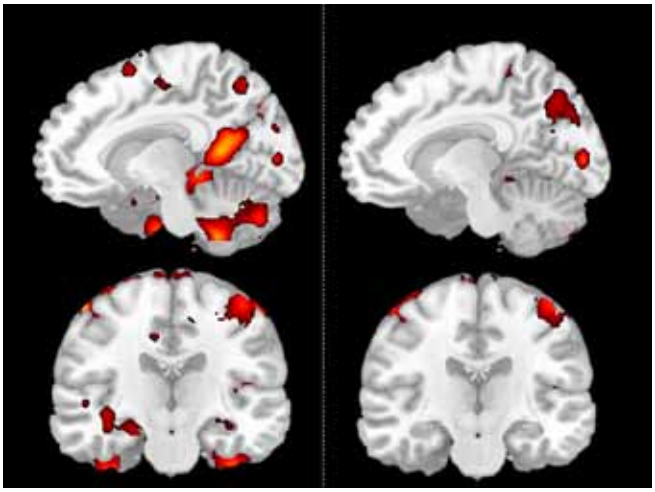
The reality is though that in a typical fMRI study, we scan 15–30 different participants and then we put together all their brain scans to get an average picture of brain activity during a particular cognitive task. This averaging is important because everyone's brain is slightly different in its anatomy and its functioning, and we have to cancel out any idiosyncratic fluctuations (or "noise"). So could MRI ever be used to tell what a single person is actually thinking?

Liars Inc.

The most popular use of this skill would be lie detection tests, and that's not as futuristic as it sounds. In the US, a company called 'No Lie MRI Inc.' is already claiming to "provide unbiased methods for the detection of deception and other information stored in the brain". However these scans inherently focus on one person – the defendant – making it impossible to know if the defendant's brain activity shows signs of deception or if it just happens that their brain activates differently from the average. Another issue is that fMRI data can be easily corrupted. In order for lie detection scans to work, the experimenter would have to ensure the defendant is compliant and thinking about the episode in question. It would be easy, however, for a defendant to thwart the lie detection process by just thinking about random things and so 'scrambling' their brain activity.

So although fMRI is not a mind reading device, I don't mean to imply that at its current stage of development, brain imaging cannot provide us with any useful information about the brain. MRI has revolutionised our science and significantly expanded our knowledge about the inner workings of the brain. It has sparked new hypotheses and theories that in turn have changed how we think about the mind and brain.

Furthermore, our methods for human brain mapping are advancing all the time. Not to definitively say what someone is thinking, but to infer statistically what they might be thinking. So if the innovation in the last 20 years of brain imaging is anything to go by, before we know it we may well have mind reading apps on our phones, and scanning tests on daytime TV!



These images show the final results of Reece's brain scans. On the left, the two images show brain activity while remembering a real event. The images on the right show Reece imagining the fake event.

Meet our Mind Reading team

Associate Professor Brett Cowan

Associate Professor Cowan is an Auckland Mechanical Engineering graduate who specialised in aeronautics. After running the wind tunnel at the engineering school he studied philosophical theology and ancient history before completing his medical training. He was placed first in his class in both Mechanical Engineering and Medicine winning over 30 academic prizes. He then worked as a physician in emergency medicine at North Shore Hospital for ten years.

Brett is now the director of the Centre for Advanced MRI at the Faculty of Medical and Health Sciences, where he performs research with MRI to image hearts along with clinical trials of new treatments for old diseases. The Centre for Advanced MRI has two MRI scanners including the Siemens Skyra our Team MRI will be using for 'Mind Reading'. They provide not only research facilities to the University of Auckland, but also scans for children born with heart defects and many other patients with complex medical problems from Auckland and throughout New Zealand.

Dr Donna Rose Addis

Dr Donna Rose Addis is a cognitive neuroscientist in the Centre for Brain Research, where she is a Senior Lecturer in the Department of Psychology.

Her work on memory and imagination is exciting much interest, and she was recently awarded both the prestigious Rutherford Discovery Fellowship and the 2010 Prime Minister's MacDiarmid Emerging Scientist Prize.

She leads the Memory Lab team, and uses neuropsychological and neuroimaging techniques to understand how we remember our pasts and imagine our futures, and how these abilities change with age, Alzheimer's disease and depression.

Dr Addis grew up in Mangere East, Auckland. She was the dux of Aorere College and New Zealand's Top All-Round Scholar of Pacific Island Descent in 1995. She completed her BA and MA in Psychology at The University of Auckland. She then undertook a PhD as a Commonwealth Scholar at the University of Toronto, followed by a post-doctoral fellowship at Harvard University. She returned to New Zealand in 2008.

Donna Rose led the MRI analysis for the Mind Reading event, trying to use this exciting technology to work out if she can tell the difference between imagination and memory. Of course imagination is a nice word for lying... and so we'll also be testing the lie detection powers of MRI!

Reece Roberts

Reece Roberts was the willing guinea pig for our Mind Reading experiment! Reece is a psychology PhD student in the Centre for Brain Research. He is studying visual cognition, or how we process what we see. In particular, his research interests centre on visual attention, visual short-term memory and the "binding problem", which is the problem of explaining how the brain binds information about different visual features (colour, shape, orientation etc) into an integrated representation of the world.

He grew up in South Africa and has lived in Auckland for the last 15 years. He completed his high school education at Marcellin College in Royal Oak and then did a BSc in psychology and pharmacology at the University of Auckland.

Reece's interest in brain imaging stems from an ongoing debate about the relationship between psychological and neural explanations for how humans behave. That is, should we explain intelligent human behaviour in terms of memory, attention, beliefs and desires, or in terms of action potentials, neurons and hippocampi? Or is there some way to bridge these two forms of explanation? He thinks that whatever the answer is to these fascinating questions, neuroimaging is going to play an important role in helping us understand these issues.

Russell Brown

Media commentator Russell Brown was the host for Mind Reading. Russell is the host of Media 7 on TVNZ7 and the owner of the Public Address community of blogs.

Russell has a keen interest in brain research and brought a journalist's questioning eye to the proceedings on the night. Russell is one of New Zealand's most prolific independent journalists. He has been writing about technology and media for The Listener since 1993 and has picked up a variety of awards there and at Unlimited magazine and Computerworld, where he was the country's first online news editor.

In 2007 he received the inaugural Qantas Media Award for blogging, for his long-running blog Hard News. He is also on the boards of the New Zealand Sound Archives and NZOnscreen, and is the co-founder of Kiwi Foo Camp.

Russell currently writes the blog Hard News and is a keen Twitter user. You can catch him at the handle @publicaddress along with our scientists at @communicatawe.

You can view the Mind Reading event online at: www.cbr.auckland.ac.nz/mindreading
Mind Reading was also featured on Our Changing World on Radio NZ National. http://www.radionz.co.nz/national/programmes/ourchangingworld/20120412c

CBR book reviews

Do you want to learn more about neuroscience? As part of Brain Awareness Week our neuroscientists reviewed their favourite books which give an insight into the amazing powers of the brain.

The Most Human Human

By Brian Christian
Reviewed by: Angela Lim

'The Most Human Human' is an interesting and insightful take on human nature and its indefinable spirit. It is a story of one man's journey to prove his humanity to an expert panel over a chat screen, none other than cleverly designed chatbot systems.

The witty narrative brings forth thought-provoking gems that will inspire you to redefine the essence of life, love and work. Though to be fair, it does take a bit of windy reading at times to extract them, but trust me it is well worth it.

Whether you are someone who enjoys a good non-fiction book, a technophile/phobe or have a passion for the 'us against machine' debate, this book will tick all those boxes.

As my own interest is in neuroscience research, this book also gives hints and flavours of recent research that holds the explosive and controversial combination of the human brain and the cutting edge technologies that support it.

So whatever you are searching for, this book will deliver. It is an engaging and just-that-little-bit-challenging read and I hope you will enjoy it as much as I did.

A Life in Physics

By Ruth Sime
Reviewed by: Dr Cathy Stinear, Neuroscientist

This biography tells the fascinating story of one of the most important physicists of modern times – Lise Meitner. Never heard of her? That's not surprising, given that she was female and Jewish, working in Europe in the early 20th century.

Yet her discoveries rivaled those of her more-familiar contemporaries – Rutherford, Einstein, Planck, Bohr, Geiger and Heisenberg. The biographer has meticulously researched the life and times of Lise Meitner, to provide an informative and compelling account of the birth of nuclear physics.

This is the story of a brilliant scientist who remained devoted to her field, despite the enormous social and political obstacles she faced. It reminds us that science and scientists are embedded in a cultural context, which shapes their direction and discoveries.

Neuroscientist Dr Cathy Stinear gave a lecture on how technology is changing our brain at Brain Day.

"This is the story of a brilliant scientist who remained devoted to her field, despite the enormous social and political obstacles she faced. It reminds us that science and scientists are embedded in a cultural context, which shapes their direction and discoveries."

Dr Cathy Stinear

Language as a Window into Human Nature: The Stuff of Thought

By Steven Pinker
Reviewed by: Dr Cathy Stinear, Neuroscientist

Most of us use words to communicate with others, and to think our own thoughts, pretty much all day every day. In this book, Steven Pinker shows us how our words and the way we use them reveal so much about the way we humans understand the world.

For example, Kiwis say "get off the couch", and Americans say "get off of the couch"; you can say "Vince chipped at the stone" but "Clara kissed at the baby" sounds weird. What do these types of innate language rules tell us about our conceptions of time, space, number and causation?

With chapters on wide-ranging topics, including metaphor, names, and the seven words you can't say on television, this is a broad and thought-provoking account of how our concept of reality is embedded in language.

It can get technical at times, but Pinker moves through the material with humour and good examples from a wide range of languages and cultures. After 500 pages, you'll have a fresh perspective on language and consciousness. And you'll probably choose your words more wisely with a better understanding of what you're really saying!

The Immortal Life of Henrietta Lacks

By Rebecca Skloot
Reviewed by: Amelia Van Slooten, PhD Student

This is a captivating true tale about the family of a poor African-American woman called Henrietta Lacks, who unknowingly contributed to many fundamental scientific discoveries of the twentieth century. This is the story of how cancerous cells were taken from Henrietta before her death and how they became the world's first immortal human cell line: HeLa. But more than that, it is the story of how Henrietta's family coped with finding out that her cells had been taken without permission, their struggle to understand what cells were and what it meant for her cells to be "immortal", and their treatment at the hands of scam artists, journalists, doctors, scientists and lawyers after the woman behind the cells was revealed.

We are taken on Rebecca's turbulent journey over more than a decade as she tries to

Continued from page 15

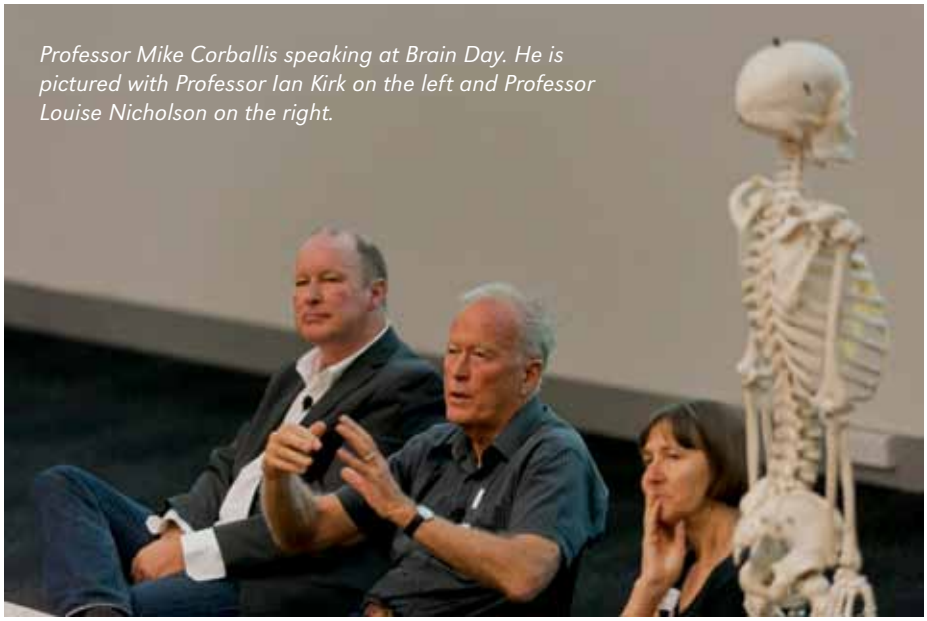
CBR book reviews

As part of Brain Awareness Week our neuroscientists reviewed their favourite books which give an insight into the amazing powers of the brain.

contact Henrietta's relatives and discover the truth of what happened at Johns Hopkins Hospital in the 1950s. Whilst Henrietta is the reason for writing this book, her daughter, Deborah, is the heart of this tale. The author formed a close relationship with Deborah and this is evident in the way Deborah is portrayed – her lively spirit, her reluctance to consult with yet another reporter and eventually her determination to find out everything she can about her mother and guard the knowledge ferociously. Despite her poverty, poor education and declining health, Deborah's battle to understand how her mother's cells were taken and used is inspiring.

"The Immortal Life of Henrietta Lacks" tells us startling facts about the state of research on human participants in the 1950s, how informed consent did not exist at the time and how there is still controversy today about who owns our tissues once they leave our bodies. We learn how HeLa cells have been to the moon, have helped developed the polio vaccine and have accelerated cancer research. But the triumph of this book is Rebecca's vividly portrayed characters; the real people behind the science.

I cannot recommend this book enough to anyone who has ever worked with human cells and anyone who has ever heard about the use of humans cells in research. Without Henrietta Lacks we would never have got this far.



Professor Mike Corballis speaking at Brain Day. He is pictured with Professor Ian Kirk on the left and Professor Louise Nicholson on the right.

I'm not stupid, just disabled: some serious chitchat about life after a stroke

By Wolfgang Haufe
Reviewed by: Jane Evans, PhD Student

A personal recollection of the journey following a stroke, this book provides the unique perspective of a stroke survivor. One man's story is interspersed with observations about life following stroke.

I personally came away with a greater sense of awareness. I think anyone who has had, or knows someone who has suffered a stroke is likely to take home something from this book. Even if it is simply the ability to better relate to people with a disability.

The Community Expo at Brain Day featured a book review stand this year.

Fixing My Gaze

By Professor Susan Barry
Reviewed by: Alice Lagas, PhD Student

Warning: do not read Susan Barry's book "Fixing My Gaze" if you are not prepared to become fascinated by vision research. Not only does she take you with her on her journey, she also makes you aware of the most complicated vision processes.

As a toddler she had multiple operations on her eye muscles for having strabismus (eye turn). The operations were successful but as for many children who had this surgery because of a tiny difference in eye alignment, her brain still refused to fuse the two images from each eye together. In her case her brain dealt with this confusing difference by alternating vision from each eye separately. Because vision tests at school measure vision for each eye separately, they assumed she had perfect vision and as a result her reading difficulties made her become categorised as a hard learner.

It was not until her 40s, after lecturing vision science for 20 years, that she was able to pinpoint the difficulties she had in daily life, when she was sent to a specialised (developmental or behavioural) optometrist for visual training. After one year of this training on how to fuse the two images together (and

hours of homework), on one morning for the first time in her life she woke up feeling calm. She realised that for the first time in her life she no longer sees jittery images. Not only does her brain now fuse the two images properly, but on top of this she also gained proper depth perception (even though stereovision is supposed to be fully developed at around one year of age).

When basic sensory processes are healthy, you barely realise how amazing and significant these processes are. So I warn you again that by reading Barry's book, you'll start to enjoy and appreciate the 3D-ness around you after reading it.

The Human Brain: A Guided Tour

By Professor Susan Greenfield
Reviewed by: Jane Evans, PhD Student

A great introductory book comprised of five chapters loosely based on her public lectures. As a reader, you get a real sense of the author's genuine interest in telling you about the brain.

A competent guide, Susan moves from looking at regions of the brain, to look at brain functions. The tour then heads to the building blocks of the brain, finally exploring the mind and memory. A relatively short read, no topic is covered in great depth, but it is a nice overview.

"If you've ever blamed your less-than-perfect mental capabilities on the brain you were born with, this book reminds you to think again." Lucy Goodman

The Astonishing Hypothesis: The Scientific Search for the Soul

By Dr Francis Crick
Reviewed by: Jane Evans, PhD Student

In this book, Nobel laureate Francis Crick explores the hypothesis that human consciousness is basically a complex pattern of neurons in your brain.

"The Astonishing Hypothesis is that "You," your joys and your sorrows, your memories and your ambitions, your sense of personal identity and free will, are in fact no more than the behavior of a vast assembly of nerve cells and their associated molecules".

Do not expect to be provided with ultimate proof, or answers. A large body of anecdotal and promising evidence is presented, however, as tools to further investigate the hypothesis. Largely based around visual neuroscience, the human visual cortex and neural network computation theory are both the focus of the book.

Not a light read by any stretch of the imagination, but thoroughly interesting both for insight into progress, as well as limitations and frustrations encountered linking reductionist and philosophical theories.

The Brain That Changes Itself

By Dr Norman Doidge
Reviewed by: Lucy Goodman, PhD Student

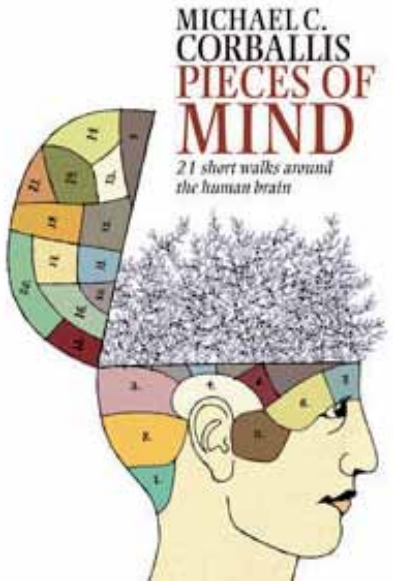
Inside every human skull lies a plastic brain ready to be moulded by its greatest dreams. 'The Brain That Changes Itself' is a collection of mental success stories that fight our ageing beliefs and instead teach us old dogs a whole bunch of new tricks.

Neuroscientists are now learning that the adult brain is not as fixed and unchangeable as we once thought, but is capable of remodelling itself, if we just put our minds to it. So if you've ever blamed your less-than-perfect mental capabilities on the brain you were born with, this book reminds you to think again.

Norman Doidge, a psychiatrist and researcher, appreciates the story from both sides of the cerebral cortex. The book begins with a story of a scientist who found a way to restore balance to a woman with a damaged vestibular system. As much about the scientist as his achievements, we learn the importance of passion and belief for initiating change.

Later on, we meet people with the mental dedication to 'redesign' their brains, relieving their own mental retardation, obsessive compulsive disorder, and stroke. With science subtly hardwired beneath the success stories, the reader feels the sense of mental accomplishment that Doidge promotes.

'The Brain That Changes Itself' inspires anyone with half a brain to achieve the unimaginable. If a girl born with only one cerebral cortex can grow into a functioning adult, where does your true potential lie? Whether as a world memory champion, or simply a more positive thinker, pick up your brain and mould it into whatever you want it to be.



Pieces of Mind: 21 Short Walks Around the Human Brain

By Michael C. Corballis
Reviewed by: Professor Michael C. Corballis, Cognitive Neuroscientist

It's not often authors get the chance to review their own books, and I hardly know where to start. It's my favourite book because it's still available, and more sales can help a semi-retired academic continue to drink good wine.

I haven't read the book myself, but those who have tell me it's a great book to have by the bedside, probably because it can send you quickly to sleep. It's also quite short, and doesn't take up much room in either your luggage or your brain.

The beginning of the book also introduces a book published in 1891 by my great grandfather, James Henry Corballis, entitled Forty-five Years of Sport, which offers some great advice on golf, among other idle pursuits. You can still find this on Google, of which my great grandfather was a great fan. The family would be grateful if you would consider this one as well when making your purchases.

Michael C. Corballis is Professor Emeritus of Psychology at The University of Auckland. An outstanding science communicator, he is the author of From Hand to Mouth: The Origins of Language (2003) and most recently The Recursive Mind: The Origins of Human Language, Thought, and Civilization (2011). His book is available from Auckland University Press.

Introducing

In this issue we meet our CBR Management Team.

Introducing Dr Dean Robinson

Dr Dean Robinson has been appointed as the new Research Manager for the Centre for Brain Research. Dean brings an invaluable background in neuroscience research, medical writing, drug evaluation and team management to this exciting and challenging role for the CBR. This is great news for the centre and is an exciting further appointment to our superb professional team.

It's the one minute lift question. Who are you and what do you do?!

I'm the Research Manager for the CBR and my role is to coordinate and facilitate research by encouraging collaborations and providing support to researchers across all the sectors of the CBR. As a first step this entails going out and talking to all of the research groups affiliated with the CBR and finding out what they are doing and how we might be able to assist them.

What's been your career to date to bring you to this point?

My background is in the Physiology Department of The University of Auckalnd with a BSc and then an MSc in exercise physiology, followed by PhD in muscle physiology with Denis Loiselle. I then joined Greg Funk's respiratory neurophysiology group first as a research technician and then as a post-doctoral fellow. In 2004 I left research and moved into scientific publishing with Adis Press on the North Shore, where I initially wrote drug evaluations for publication in Adis journals before becoming a team leader for the last 5 years.

What interests you about being part of the Centre for Brain Research?

For me it's the chance to make a real contribution to the development of collaborations across the centre and with the international brain research community. Going out to talk to the research groups is almost a dream job, finding out what people are doing and looking for ways the CBR can help them achieve their goals.

What would you say is the most exciting area in brain research right now?

The most exciting area to me is the interface between biomedical research and clinical research, the point at which the rubber meets the road, and the point at which we can start to make a difference in the lives of real patients.

Now about you. Where are you from and what brought you to Auckland?

I was basically born and bred in the Physiology Department of the Medical School where my Dad Stewart was a Senior Lecturer. So from the age of about 8, I was able to see the work he was doing and came to know the staff in the Department. I can recall as a teenager playing soccer at the staff Christmas party and kicking Will Hopkins in the shins, an event he had thankfully forgotten by the time I did an MSc with him.

Introducing Laura Fogg

Over the next few months we will also be seeing some changes as Communications and Liaison Manager Laura Fogg heads off on maternity leave. Laura plans to be away for six months and will be replaced by Communications Coordinator Sara Reid.

Who are you and what do you do?!

I'm the Communications and Liaison Manager for the Centre for Brain Research. It's been a fascinating few years as we've developed the concept of the centre, bringing together scientists, clinicians and the community. My skills are in communications, so I organise and run all our publicity and public events. It's also been a great learning experience developing research collaborations and connections across the centre.

What's been your career to date to bring you to this point?

I have always been fascinated by science, and so I did a BSc Honours in Biomedical Sciences at The University of Manchester. I soon realised though that all I liked doing was talking about the science, and so I moved into communications! I trained as a journalist at City University in London and did a BBC Training Fellowship. I then worked in a variety of journalist roles in the BBC, the last being a producer for a rural television show called Countryfile, which took me all over the UK.

What interests you about being part of the Centre for Brain Research?

I have loved bringing together my scientific and communication skills to undertake science communication. The brain is such a fascinating topic, and there really are so many mysteries still to be explored. The scientists have won me over so much that I'm actually undertaking a Masters in Speech Science!

What would you say is the most exciting area in brain research right now?

I'd have to say my research area, which is helping people to speak again after brain disease. My Grandma had a stroke and developed aphasia, which meant that she couldn't express her words properly - so to be able to run a choir which helps people who can't speak, but can still sing, is an incredible opportunity. In collaboration with the Speech Science department we hope we can turn the CeleBRation Choir into a future therapy.

Now about you. Where are you from and what brought you to Auckland?

I'm originally from Manchester in the UK, but lived all over the country. My partner Greg and I wanted to do an OE, and as a Quantity Surveyor in construction, Greg was able to get work in New Zealand. While on our way here we travelled around Asia, and it was there that I applied for the role in the CBR (in a Vietnamese internet cafe!). I'm now starting another exciting journey with the birth of our first child, but I hope to be back in the CBR eventually!

Introducing Sara Reid

Who are you and what do you do?!

I'm an irretrievably nerdy, bookish, factoid-collecting, adjective-laden sort, who was probably fated to wind up working in a university (not that I mind!). I have filled all manner of roles in the six years I have been here so far, and met scores of fascinating people. All of my roles so far have involved an aspect of supporting or facilitating the activities of researchers, particularly in interactions with independent funding organisations. It's been fantastic to be involved with people who are working towards meaningful real-world goals, many of whom are now part of the CBR team.

What interests you about being part of the Centre for Brain Research?

The way in which the centre has been set up to have a collegial structure which is not hemmed in by traditional departmental or disciplinary strictures is exciting to me. It seems likely to foster a different way of thinking in which new ideas flourish, and possibly allow for the exploration of ideas or concepts which may be contrary to the current dogma of their fields, which is where the 'big breaks' in science can be made. I also like the deliberate connection and dialogue with clinicians and the community.

What would you say is the most exciting area in brain research right now?

I am really excited to see the results of research being played out in clinical practice, and thereby continuing to inform research. The neonatal cooling caps developed by the Fetal Physiology and Neuroscience team seem a fantastic example of this - a practical response to a real-world problem - and of course, I'm excited that it is happening here in New Zealand.

Now about you. Where are you from and what brought you to Auckland?

I am originally from the rural boondocks of the Bay of Plenty but I'm a confirmed urbanophile by now. I studied at Canterbury University, and came to Auckland with dragging heels and gritted teeth, for the sake of my partner's career. It's been over eight years now, and I have to say (behind my hand, and with apologies to all my Mainland friends), that I actually really love it here...

Introducing Ray Gilbert

Who are you and what do you do?!

I am the Neuroscience Lab Manager in the Centre for Brain Research. We have 100+ scientists and students working in various ways to help find out how the brain functions and what happens when it goes wrong. Basically I'm responsible for making sure that everything runs as smoothly as possible so they can get their research done. I also handle a lot of the financial side of the CBR. It keeps me busy but I work with a group of talented and enthusiastic people who are trying to make a real difference.

What's been your career to date to bring you to this point?

I've done a number of technical and laboratory roles in my career within the University environment and outside – mostly around microscopy and tissue culture. As well as the brain I've worked with cartilage, lung, heart, mammary gland and other tissues in the Universities of Auckland and Otago, MRC Toxicology Unit Leicester, Life Technologies (NZ) and Neuronz.

What interests you about being part of the Centre for Brain Research?

Being part of such an exciting and dynamic organization with people who are so passionate about what they are doing. The centre is so different to anything that has come before it and its strong interactions between science, clinic and community brings aspects that we would not have encountered as a straight scientific organization.

What would you say is the most exciting area in brain research right now?

I'm an imaging person at heart so the new developments mapping and displaying the microscopic organization of the brain really fascinate me – I nearly fell off my chair a few years ago when I saw the first Brainbow paper and some of the work constructing 3D brain atlases from whole brain to molecular level! It really is awe inspiring.

Now about you. Where are you from and what brought you to Auckland?

I was born in Papakura but as the son of a career soldier moved a lot early in life. I did my degree and first job in Dunedin then came back to Auckland to work for a few years. I did an atypical OE as I worked mainly in the Midlands and East Anglia in the UK before returning to here. My family is in Auckland and of course we're based in the top University in the country, so I'm pretty much here for the long haul!

Introducing Mirelle Powell

Who are you and what do you do?!

Hi, I am Mirelle Powell, Administrator for the CBR and PA to Professor Richard Faull. I'm the person who keeps everyone in check here at the CBR!

What's been your career to date to bring you to this point?

I have always worked in secretarial or administration based roles – and got this job by luck! I started temping here and liked it so much, I applied for the role and got it!

What interests you about being part of the Centre for Brain Research?

I like being in such a stimulating environment, with so many interesting people. One of the aspects I love is working with the postgraduate students – although they can also drive me mad sometimes! I host many of the events as well, which suits me as I enjoy playing 'Mum' and feeding everyone up!

What would you say is the most exciting area in brain research right now?

Well I'm quite biased working with Professor Richard Faull, so I think it is amazing that we have a Human Brain Bank right here in the centre. The generosity and bravery of the families who donate is incredible, and we hope it will make such a difference for families with brain disease.

Now about you. Where are you from and what brought you to Auckland?

I'm originally from Hertfordshire in England. I worked for Marks and Spencer, a department store in the UK, and there I met my husband, Brent, who is Kiwi. To cut a long story short, we got married and had two sons, Alex and Ryan! I gave up work and whilst on a career break, my husband was offered a position with Marks and Spencer in Hong Kong. We lived there for 3 years whilst the boys were small and visited New Zealand for a holiday. The rest is history, as we left Hong Kong and 14 years later we are still here!

The Neurological Foundation Human Brain Bank

A world-class scientific resource.

Founder and Director Professor Richard Faull
Deputy Director Dr Maurice Curtis
Douglas Research Fellow Dr Henry Waldvogel
Technical Officer Marika Eszes

This article was first published in Headlines, the magazine of the Neurological Foundation of New Zealand

In 1994 the Human Brain Research Group at the University of Auckland, headed by Professor Richard Faull, was granted funds by the Neurological Foundation to purchase a minus 80 degree chest freezer. This freezer became the foundation of the only human brain bank in New Zealand and set Professor Faull and his team on an extraordinary brain research journey. The Neurological Foundation of New Zealand Human Brain Bank is now acknowledged as a world-class scientific resource. It is located in the Centre for Brain Research in the University of Auckland's Faculty of Medical and Health Sciences.

The ability to store fresh, frozen human brain tissue was a huge advance in the brain research programme and complemented the existing fixed tissue collected over the previous ten years. (Fixed tissue is tissue that has been preserved by a chemical process). The Neurological Foundation Human Brain Bank now houses an extensive collection of human brain tissue with tissue from over 400 brains, including normal brains and those representing nine different neurological diseases. Research on this tissue provides vital insight into neurodegenerative diseases such as Alzheimer's, Huntington's and Parkinson's diseases, motor neurone disease, epilepsy and schizophrenia.

Tissue from the Neurological Foundation Human Brain Bank is used by numerous researchers at the Centre for Brain Research, and at research institutions and universities throughout New Zealand. The Human Brain Bank has also provided opportunities for valuable international collaborative studies with leading research scientists in England, Switzerland, Sweden, USA and Japan.

The Neurological Foundation is immensely proud of the Human Brain Bank and of the incredible work carried out by Professor Faull, Dr Curtis and their teams. The Foundation also acknowledges the huge generosity of neurological disease patients and their families who bequeath their brains to make the research possible. This generosity is reflected in the expansion of the Human Brain Bank which now consists of five minus 80 degree freezers.

Professor Richard Faull is pictured here with Jocelyn Bullock, who recently retired after 28 years working alongside Richard.

The Neurological Foundation of New Zealand Human Brain Bank is run in a disciplined, responsible, and respectful manner, mindful of the circumstances that have led to the tissue being used in crucial neuroscience research.

Neurological Foundation Human Brain Bank Technical Officer Jocelyn Bullock has recently retired after 28 years working alongside founder Professor Richard Faull. The Neurological Foundation acknowledges Jocelyn's tireless dedication and respectful management of all of the technical aspects of the Human Brain Bank and wishes her well in her retirement.

Douglas Research Fellow

The Douglas Charitable Trust has committed to supporting the Research Fellow position at the Neurological Foundation Human Brain Bank for a term of three years from January 2012. Neuroscientist Dr Henry Waldvogel has been named the Douglas Research Fellow, Neurological Foundation Human Brain Bank, and will assist Professor Faull and Dr Curtis with the administration and care of all brain tissue. Dr Waldvogel will continue his teaching and neurodegenerative research as part of this role.

Contact the team at:
brainbank@auckland.ac.nz

The Neurological Foundation of New Zealand – 40 years of exceptional support for Brain Research

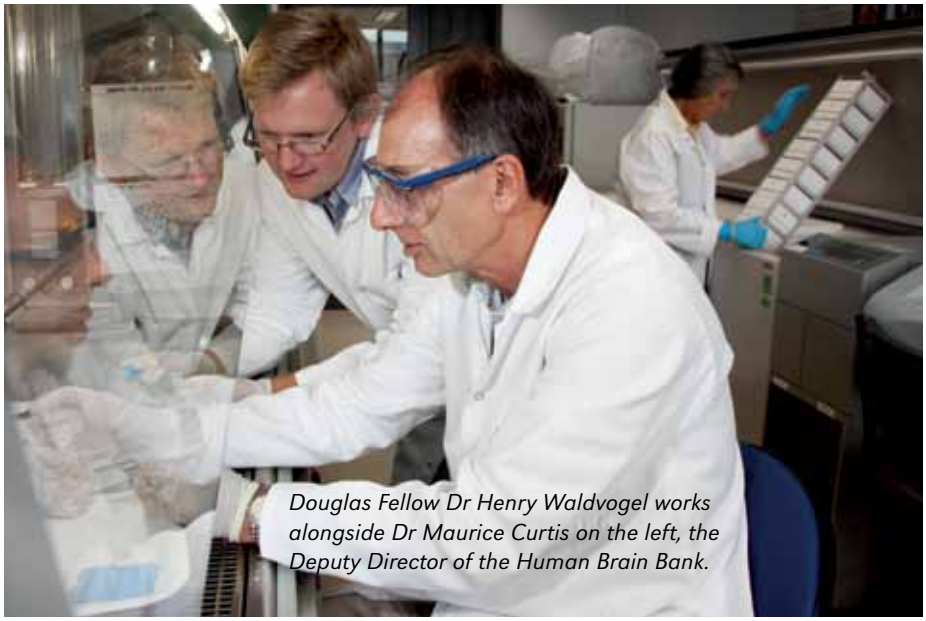
By Professor Richard Faull, Director of the Human Brain Bank

Human Brain Bank Technical Officer Marika Eszes is shown here on the left, working with PhD student Malvindar Singh-Bains.

In 1972 when the Neurological Foundation was formed, I was a young naive medical graduate pursuing brain research under the supervision of Professor John Carman, aiming for a PhD at the recently established University of Auckland Medical School. I had developed a passion and an enthusiasm for brain research as a young medical student at Otago University, along with my house officer training in neurosurgery with Mr Philip Wrightson and Mr Graeme MacDonald at Auckland Hospital. Little did I know what a critical role the newly established Neurological Foundation would play over the next 40 years in fostering the development of our research studies on human brain diseases at the University of Auckland!

In the early 1980s, at the request of families affected by Huntington's disease, we had begun a human brain research programme in partnership with the community and doctors in the hospital. The success of these early human brain studies on Huntington's disease was expanded with the generous support of families to include research on Alzheimer's, Parkinson's, motor neurone disease and epilepsy. In 1993 the Neurological Foundation provided the essential funding for the formal establishment and recognition of the "Neurological Foundation Human Brain Bank", which has ultimately become a world recognised and unique resource of human brain tissue, for research studies in New Zealand and internationally.

Over the years the Neurological Foundation has not only supported our human brain bank and research studies but, in addition, has provided vital career development funding via the Miller PhD Scholarships and Philip Wrightson Postdoctoral Fellowships for many of our young promising researchers who have contributed to major new and exciting discoveries on the human brain and neurodegenerative diseases. Outstanding contributions have included the discovery that, contrary to all dogma, the adult human brain does contain stem cells and has the capacity to repair itself throughout life by the generation of new brain cells. These and other exciting developments on our understanding of the pathogenesis, molecular biology and genetics of human brain diseases have enabled New Zealand neuroscientists to stay at the very cutting edge of brain research and to give new hope to families affected by brain disease.



Douglas Fellow Dr Henry Waldvogel works alongside Dr Maurice Curtis on the left, the Deputy Director of the Human Brain Bank.

The vital funding provided by the Neurological Foundation to our early career researchers has enabled them to not only gain research experience in leading brain research laboratories worldwide, but most importantly has also facilitated their return to New Zealand to establish their own research groups which have expanded the horizons and opportunities for world class brain research in New Zealand. This funding, together with the support by the Foundation of our established international leading neuroscience and clinical research groups, has been a major factor in facilitating the development of the Centre for Brain Research at the University of Auckland. We are now able to promote collaborative brain research, linking neuroscientists in the University with doctors in the hospitals and patients in the clinic, in order to develop new treatments for people with brain diseases. My very warmest thanks and personal congratulations on 40 years of exceptional support for brain research in New Zealand. We look forward with anticipation, enthusiasm and excitement to the next 40 years of brain research in New Zealand.

Myths of the Brain

Our discussion at Brain Day dispelled a few myths about the brain and had the audience in stitches! We have compiled the top ten myths here for your enjoyment.

Our panellists

Professor Richard Faull

Director of the Centre for Brain Research and Distinguished Professor at the University of Auckland, Richard is a worldwide expert on the human brain.

Professor Ian Kirk

Cognitive neuroscientist Ian Kirk studies how behaviour is controlled by the brain.

Professor Louise Nicholson

Anatomist Louise Nicholson studies the molecular basis of brain disease and is currently part of a team developing a national research programme around spinal cord injury.

Emeritus Professor Mike Corballis

Cognitive Neuroscientist Mike Corballis is legendary in New Zealand for his studies on brain function, focussing on left and right sided controls.

From L-R: Professor Ian Kirk, Professor Mike Corballis and Professor Louise Nicholson.

Can the adult human brain make new brain cells?

Yes, contrary to the longstanding dogma, the adult human brain does contain stem cells which can multiply and produce new replacement cells. Most importantly these new brain cells have the potential to repair the brain and perhaps even slow disease progression. *Professor Richard Faull*

Can you teach an old dog new tricks?

Yes, brain cells are "plastic" – they are constantly changing and developing with every new experience. Animal studies show that brain cells are altered both structurally and functionally with every sensory input. *Professor Richard Faull*

"The male brain is about 10% bigger than the female but this has nothing to do with intelligence and only reflects the difference in physical size between men and women!" Professor Louise Nicholson

Can genetic diseases of the brain like Huntington's disease be cured by just "turning off" the mutated gene?

Not easily, because it is difficult to just silence the mutant gene without affecting other genes and administering the magic gene silencer to all the brain specific regions affected by the gene is technically very difficult - but researchers are working on it and there are exciting possibilities. *Professor Ian Kirk*

Do men have bigger brains then women?

Of course not! Your brain size is relative to your body size (mass) and this ratio is constant. For every kilogram you weigh your brain is an equivalent 20 grams in size. On average men are bigger than women so their brains are bigger too. The male brain is about 10% bigger than the female but this has nothing to do with intelligence and only reflects the difference in physical size between men and women! *Professor Louise Nicholson*

Breaking the back of something - Does a broken back mean it's 'over'?

First, there is a difference between a broken back and a damaged spinal cord. The 'back' refers to the bones for the vertebrae that protect the spinal cord and bones can mend with time. Damage to the spinal cord presents as an inability to move and this depends on the level of injury. The term paraplegic refers to complete paralysis of the lower half of the body including both legs, usually caused by damage to the spinal cord. Quadriplegic refers to a person who is paralyzed in both arms and both legs, indicative of spinal cord injury in the upper cervical (neck) area – this is also referred to as tetraplegic.

However our own research and that of international colleagues shows that life most certainly isn't over if you 'break your back". We are currently looking at ways to enhance spinal cord regeneration and repair in our Spinal Cord Injury Research Facility.
Professor Louise Nicholson

Did he really leave his heart in San Francisco? And is it a broken heart we need to mend?

Although we advertise 'Hearts on Valentine's Day' and all of our love songs speak to the 'heart', research shows that it is the brain that is the organ of love! We can actually locate sites in the brain activated by the complex emotions and patterns of love. An area of the brain at the base of the forebrain called the basal ganglia is dopamine rich and associated with reward. Some specific parts of the basal ganglia are involved in the early stages of love, giving you that honeymoon feeling, while other brain areas like the Globus Pallidus are associated with friendship and maternal love.
Professor Louise Nicholson

"There is no good evidence that the right brain is more creative. One of our more creative acts is the production of language, and that is largely left-brained. It all depends on what you want to create—a poem, a painting, or a symphony—and even in these cases both sides of the brain are probably involved."
Professor Mike Corballis

The dual brain myth

Is the left brain analytic and computational, while the right brain holistic and creative? No! While in most people the left brain does look after language and the right side looks after spatial attention, there is actually far more overlap than the popular view suggests. The right brain has reasonable comprehension of language—it's problem lies in actually producing it. And the left brain can direct attention, but less effectively than the right. There is no good evidence that the right brain is more creative. One of our more creative acts is the production of language, and that is largely left-brained. It all depends on what you want to create—a poem, a painting, or a symphony—and even in these cases both sides of the brain are probably involved.
Professor Mike Corballis

Are left-handers in their right minds?

Mostly, no! The majority of lefties have language and control of skilled manual action in the left brain, just as righties do. The main difference is that left-handers are less consistently lateralized, so their brain functions are more likely to be spread over their brain and not confined to one area. This actually means they tend to be more protected after a brain injury. There may be something of an evolutionary tradeoff between symmetry and asymmetry—people with strong asymmetry (mostly right-handers) may have an advantage in complex activities such as reading and speaking, while those lacking asymmetry (ambidextrous people and some left-handers) may have advantages in activities requiring physical balance and spatial awareness, as in some sporting endeavours, and perhaps in activities such as hunting that were critical in our earlier history. *Professor Mike Corballis*

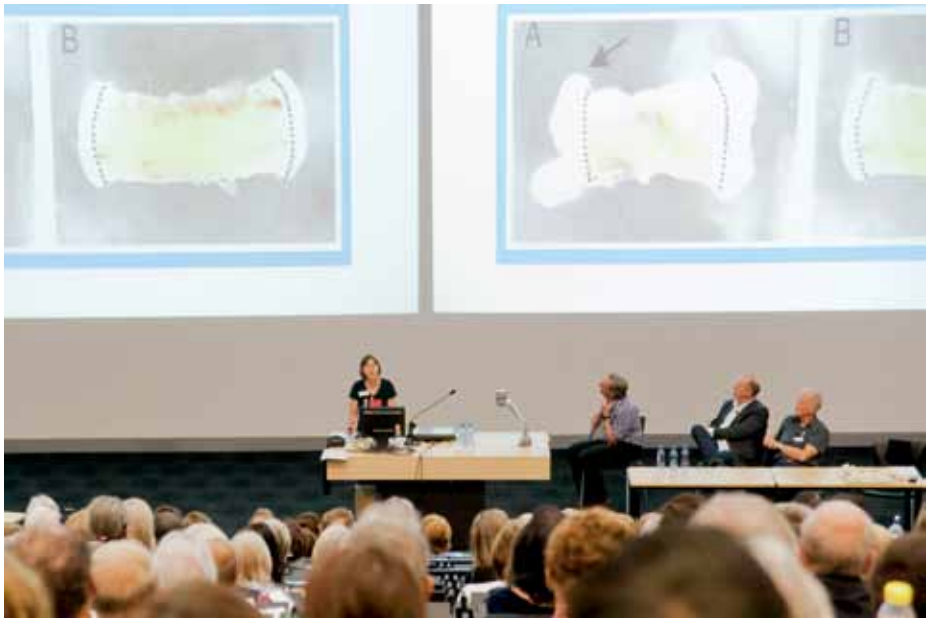
Do we use only 10% of our brains?

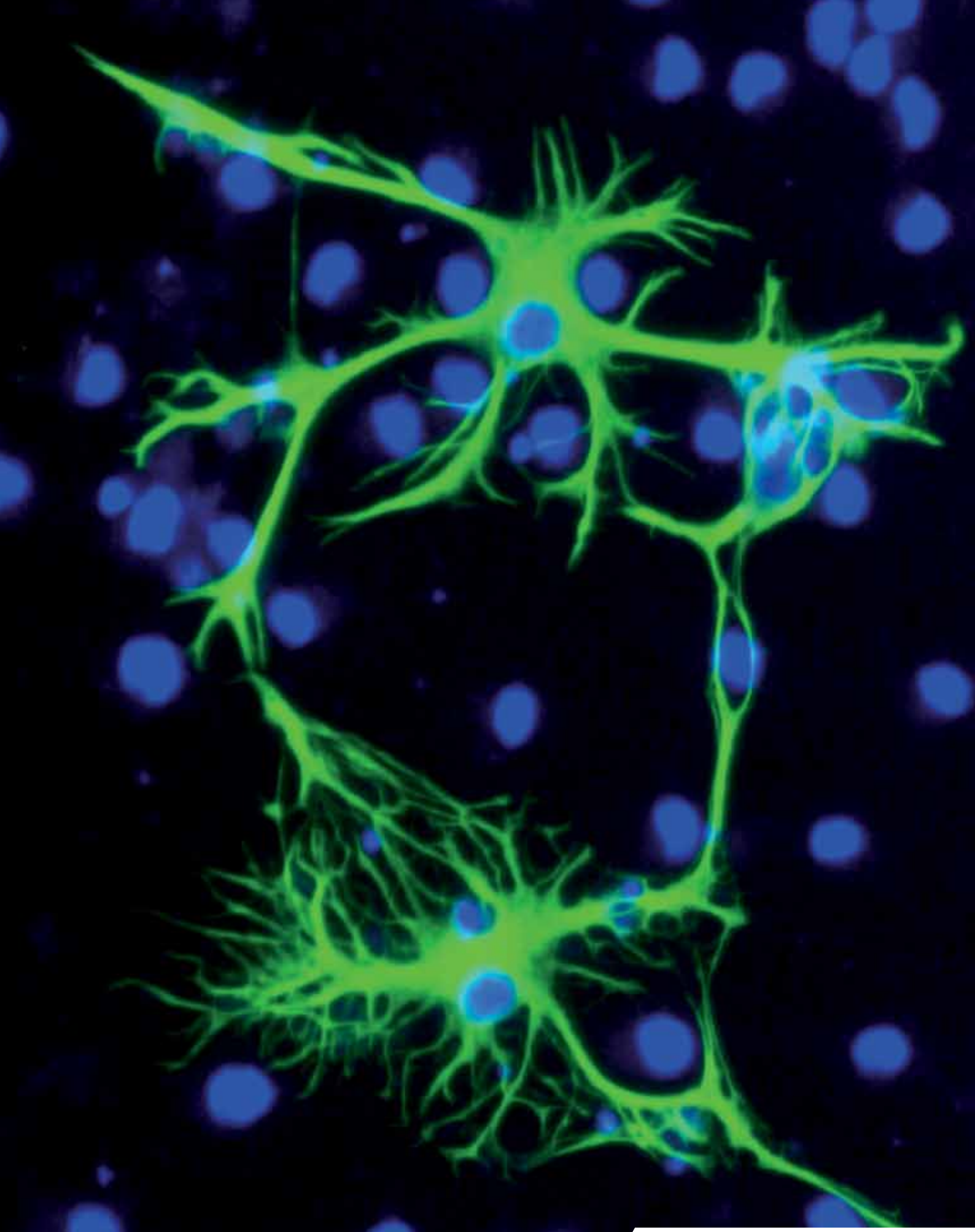
No. Brain imaging has yet to find any region of the brain that is silent. It may be true that we could learn more (e.g., piano playing, second languages) if we put our minds to it, but this is not to say that that great chunks of our brains are lying idle. That is, we could probably mould our brains more than we do, but we still use pretty well all of it.
Professor Mike Corballis

Are traumatic memories repressed?

If anything, traumatic events are remembered better than non-traumatic ones, although we may consciously try not to bring them to mind. Memory for events is in any case poor, whether the events are traumatic or not. Another danger is that therapeutic practices aimed at recovering memories thought to be repressed may actually have the effect of creating false memories—that is, believing that some traumatic effect took place when in fact it didn't. *Professor Mike Corballis*

You can read more about brain myths and other interesting facts on the brain in Professor Corballis' latest book "Pieces of Mind: 21 Short Walks Around the Human Brain".





This striking image was the winner of our 2012 Calendar Competition, and was taken by Dr Renee Gordon. It shows two new neurons forming a synapse, the connection between brain cells which enables us to think.

CENTRE FOR
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Te Whare Wānanga o Tāmaki Makaurau