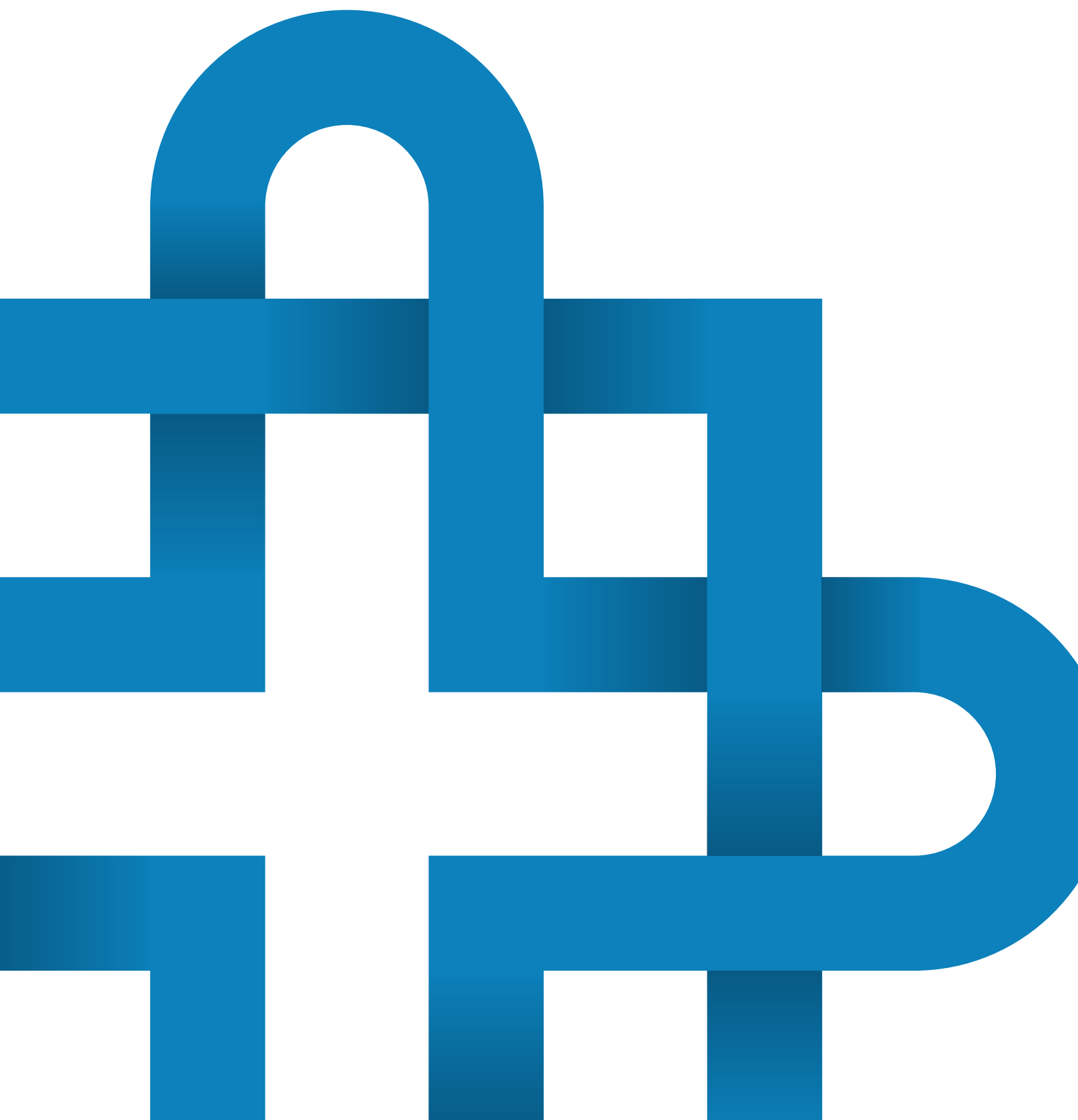


New Zealand
Brain Research
Institute

Annual Report 2015





NZBRI improves brain-health for our community, through research,
education and best clinical practice

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The NZ Brain Research Institute is a subsidiary of the



Snapshot 2015

3032 Outpatient clinics

14 Public talks and media interviews

1122 Research Participant Sessions

25 Staff

5 Completed Theses

27 Students

Countries Represented

NZ

Pakistan

Malaysia

Saudi Arabia

UK

USA

India

Belgium

Iran

China

Disciplines

Bioengineering

Mathematics

General Medicine

Neurology

Neurophysiology

Neuroscience

Nursing

Physics

Physiotherapy

Psychology

Radiography

Radiology

OUR PEOPLE - GOVERNANCE

The NZBRI Governance and Management Team come from the academic, business and medical sectors and their combined expertise ensures a thriving Research Institute.



John Bayley – Chairman



Prof Ivan Donaldson



Mike Stenhouse



Prof Richard Faull



Cheryl Doig



Prof Steve Weaver

MANAGEMENT



Dr Michael MacAskill
Research Director



Prof Tim Anderson
Clinical Director



Kate Russell
Commercial Director

Research Committee

Dr Michael MacAskill (chair)
Dr Sridhar Alla
Prof John Dalrymple-Alford
Prof Richard Jones
Dr Tracy Melzer
Krysta Trevis

Kathryn Mulcock
Prof Tim Anderson
Sophie Grenfell
Leslie Livingston
Dr Daniel Myall
Bob Young

Mustafa Almuqbel
Dr Rebekah Blakemore
Dr Carrie Innes
Dr Debbie Mason
Dr Toni Pitcher

CHAIRMAN'S REPORT

2015 has seen the continuation of a diverse range of activity emanating from the Institute's founding theme of research of the brain and its degenerative disorders. In particular, participation in the national *Brain Research New Zealand* Centre of Research Excellence has provided additional impetus to the Parkinson's programme as the mainstay of our activity and is resulting in expanded research collaborations and new projects for the Institute.

With a concentration on cognitive decline and the onset of dementia, novel research is being commenced to determine the effect of the deposition of specific proteins in the brain. This will involve increased use of PET (positron emission tomography) scanning developments in addition to existing MRI utilisation.



The year has benefited by the mutual adoption of a closer relationship with the CMRF as the parent entity of NZBRI. Operating under a common commercial executive structure, a commonality in branding has been developed and extensive public promotion and marketing to raise the profile of the kindred organisations has been implemented during the year. Within this programme the BRI retains its identity as the organisation conducting its brain research function as distinct from CMRF's more general responsibility in the procurement and provision of research funds. Under the closer association the CMRF has undertaken to provide limited support for the Institute's annual activity expenditure to facilitate BRI's future financial sustainability.

Early in the year Sue Bramwell regrettably relinquished her membership of the BRI Board as a result of time commitments to her principal organisation. We acknowledge Sue's valued period of service as a Director particularly in relation to her extensive experience in the "not for profit" and fundraising fields.

Cheryl Doig was appointed as a Director in July coming from a background in education with current interests in commercial leadership and futuristic strategies. Simon Carey was appointed in November as a third representative of the CMRF recognising the closer relationship of the two entities. Simon is the treasurer of the CMRF.

The aim is to maintain an appropriate balance of scientific, research and commercial expertise on the Board. In association with its research, clinical and commercial executive directors this mix is seen to provide effective governance and strategic direction to the Institute's endeavours.

The BRI operates under a company structure, which is fully owned by the CMRF. Summarised financial and performance information derived from the audited Performance Report for New Zealand Brain Research Ltd for 2015 is included within this publication. The financial outcome for the year was essentially a break-even surplus of \$4251, on activity expenditure of \$1.17 mill. These monies are spent in the provision of research facilities, premises and administrative functions in support of personnel and research projects being conducted by the Institute. It is pleasing to note that the level of expenditure on direct research support relative to associated administration costs has increased significantly from last year.

Income of \$1.17 mill. included a \$250,000 grant from the CMRF parent under the new association arrangements. Designated capital funds invested through the CMRF increased by \$168,000 during the year to \$1.53 mill. which again benefited from a substantial donation from the Orr Family Trust.

These capital funds are held by the CMRF in a separate Brain Research Institute Portfolio for the exclusive expenditure by the Institute and are utilised at the discretion of the BRI Board. Craigs Investment Partners manage investment of the Portfolio and have continued to perform competitively during a year of volatile returns in investment markets.

On behalf of the Board I acknowledge the extensive commitment and effort of all those who contribute to the ongoing interests of the Institute, noting especially those involved on a voluntary basis. Medical research is an expensive business, where output cannot necessarily be measured in dollar terms. We are therefore grateful for the regular donations and generous bequests, which assist in the continuance of research programmes. The Friends of the BRI are a highly valued and enthusiastic support group within this promotion and funding arena and have been particularly successful this past year.

We acknowledge the Alan Trembath Estate and Joanna and Kevin Hickman for their generous support. Alan was well known to the BRI and throughout his later life, remained a staunch supporter of our cause.

The success of the Institute relies on both the collective outcomes of individual research effort and effective direction and management by a competent executive team. The proven input of Dr Michael MacAskill and Prof Tim Anderson as the Research and Clinical Directors respectively in leading the various research groups and their principals is well recognised. Since her appointment in 2014, Kate Russell as the Commercial Director has consolidated the management and administration of the Institute in association with her CMRF chief executive responsibilities. With her executive team, Kate has attained beneficial improvement and savings in the commercial management and operational efficiency of the BRI.

I conclude the Institute is well served by its dedicated people.

John G Bayley, *Chairman*



Researchers Siobhan Lockie and Dr Amy Wang from Canterbury University during Brain Awareness Week

RESEARCH DIRECTOR REPORT

The New Zealand Brain Research Institute has three main purposes:

- To increase our understanding of the brain through patient-focussed research,
- To improve the standard of care for people affected by neurological disorders
- To educate scientists, clinicians, and the public.



More than 700 people took part, in person, in our research projects, including people with neurological disorders such as Parkinson's, Huntington's, as well as healthy control participants. More remotely, we conducted national phone interviews with hundreds of people with multiple sclerosis, and analysed millions of Pharmac prescribing records to estimate the national prevalence and incidence of Parkinson's.

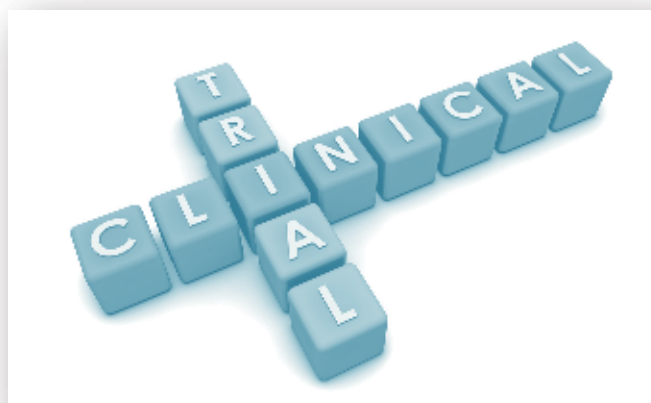
An important component of our research also involves gathering detailed information from the spouses, children, or caregivers of our patients. We thank all of them for their ongoing support, particularly as many projects involve multiple visits, and some quite involved experiences, such as hour-long MRI brain scanning sessions.

The Institute's involvement in the national *Brain Research New Zealand* Centre of Research Excellence (CoRE) has grown substantially this year. NZBRI researchers were successful in receiving funding from the CoRE for several new projects. Gathering a head of steam at the moment is the Parkinson's "Enrichment" project, lead by Prof. John Dalrymple-Alford. Again, here we are focussing on people at risk for subsequent cognitive decline. To counter this, John and his multidisciplinary team have developed a number of mental and physical enrichment tasks, to assess their feasibility to counter cognitive decline.

To identify 40 suitable patients required a massive effort to screen 203 possible candidates. Fortunately, this exciting project has attracted a great group of capable graduate students, and funding for support staff. The first patients are now underway in the programme.

A key strength of the Institute is the close contact between researchers and the neurological clinics, which allows us to recruit for projects, which are of an ambitious scale internationally. In 2015, the Canterbury DHB neurology clinics hosted within the Institute conducted 3032 outpatient sessions. Our students could be found there regularly, interviewing and assessing patients.

The NZBRI clinic facility also hosts commercial pharmaceutical trials, allowing early access to new medications. For example, continuous infusion of duodopa gel has been made available as an alternative to the standard oral doses of levodopa in pill form. This smooths out dopamine levels through the day, reducing the unstable "on/off" response to oral medication that can be disabling for some people with Parkinson's.



Another new initiative in 2015 was research into substance abuse (smoking and binge drinking). The Neurotechnology group, led by Prof. Richard Jones, hosted two Masters students from the Psychology Department at Canterbury University (Jessica Langbridge and Stephanie Henderson). They have applied sophisticated EEG techniques to examine brainwave activity in binge drinkers and smokers, to better understand the mechanisms both of addiction and of possible treatments.

Also new in 2015 was a strengthened link with the Medical Physics programme at the University of Canterbury. NZBRI hosted two of its Masters students (Megan Stark and Guneet Kaur). They were able to apply their physics knowledge to support our major project examining PET imaging. PET (positron emission tomography) is a powerful technique, which allows us to measure chemicals within the living brain.

In particular, we're examining the deposition of amyloid in people with Parkinson's and mild cognitive impairment. A build up of amyloid is well-known in Alzheimer's. Our project will be the first to see if it is also predictive of the development of dementia in an at-risk group in Parkinson's.

At the end of 2015, we were fortunate to gain funding from the Neurological Foundation to extend this work to also look at the deposition of the tau protein in Parkinson's. This places the Institute firmly at the forefront of international efforts to understand the underlying relentless progression of this disease.

The past year has been notable for establishing major new initiatives and 2016 is looking even more promising for the Institute.

Michael R MacAskill, PhD, Research Director

Congratulations

NZBRI 2015 GRADUATES

Simon Knopp, PhD. *Department of Electrical and Computer Engineering, University of Canterbury.*

John LaRocco, PhD. *Department of Electrical and Computer Engineering, University of Canterbury.*

Eng Toh, MBChB / PhD. *Department of Medicine, University of Otago, Christchurch.*

Amy Wang, PhD. *Department of Psychology, University of Canterbury.*

Samantha Groves, MSc. *Department of Psychology, University of Otago*

NZBRI 2015 PUBLICATIONS

- An investigation of the relationship between latitude and multiple sclerosis severity in New Zealand.* Alla, Pearson, Taylor, Roxburgh, Clarke, Miller, Richardson, Abernethy, Willoughby, Sabel, Mason. *Multiple Sclerosis Journal*.
- Anterior thalamic nuclei lesions and recovery of function: Relevance to cognitive thalamus.* Dalrymple-Alford, Harland, Loukavenko, Perry, Mercer, Collings, Ulrich, Abraham, McNaughton, Wolff. *Neuroscience and Biobehavioral Reviews*.
- Anxiety and depression in Parkinson's disease patients in Saudi Arabia.* Alamri, Al-Busaidi, MacAskill, Anderson. *Journal of the Neurological Sciences*.
- The capacity for volitional control of pharyngeal swallowing in healthy adults.* Lamvik, Jones, Sauer, Erfmann, Huckabee. The capacity for volitional control of pharyngeal swallowing in healthy adults. *Physiology & Behaviour*.
- Construction of joint confidence regions for the optimal true class fractions of Receiver Operating Characteristic (ROC) surfaces and manifolds.* Bantis, Nakas, Reiser, Myall, Dalrymple-Alford. *Statistical Methods in Medical Research*.
- Decreased regional cerebral perfusion in moderate-severe obstructive sleep apnoea during wakefulness.* Innes, Kelly, Hlavac, Melzer, Jones. *Sleep*.
- Deep grey matter MRI abnormalities and cognitive function in relapsing-remitting multiple sclerosis.* Debernard, Melzer, Alla, Eagle, Van Stockum, Graham, Osborne, Dalrymple-Alford, Miller, Mason. *Psychiatry Research: Neuroimaging*.
- Deficit in late-stage contingent negative variation provides evidence for disrupted movement preparation in patients with conversion paresis.* Blakemore, Hyland, Hammond-Tooke, Anson. *Biological Psychology*.
- How Do I Examine for a Supranuclear Gaze Palsy?* Anderson. *Movement Disorders Clinical Practice*.
- Impaired spatial working memory after anterior thalamic lesions: Recovery with cerebrolysin and enrichment.* Loukavenko, Wolff, Poirier, Dalrymple-Alford. Impaired spatial working memory after anterior thalamic lesions: Recovery with cerebrolysin and enrichment. *Brain Structure & Function*.
- Mental health and Parkinson's disease: from the cradle to the grave.* Alamri. *British Journal of General Practice*.
- Parkinson's disease in the Gulf Countries: An updated review.* Alamri, MacAskill, Anderson, Benamer. *European Neurology*.
- Prediction of driving ability: Are we building valid models?* Hoggarth, Innes, Dalrymple-Alford, Jones. *Accident Analysis and Prevention*.
- A randomised controlled feasibility trial of a specific cueing programme for falls management in patients with Parkinson disease and freezing of gait.* Martin, Weatherall, Anderson, MacAskill. *Journal of Neurologic Physical Therapy*.
- Safety, tolerability and pharmacodynamics of a novel immunomodulator, MIS416, in patients with chronic progressive multiple sclerosis.* Luckey, Anderson, Silverman, Webster. *Multiple Sclerosis Journal: Experimental, Translational and Clinical*.
- Tracking Parkinson's disease over one year with multimodal magnetic resonance imaging in a group of older patients with moderate disease.* Melzer, Myall, MacAskill, Pitcher, Livingston, Watts, Keenan, Dalrymple-Alford, Anderson. *PLOS ONE*.

CLINICAL DIRECTOR REPORT

I'm pleased to report on the clinical activities at the NZBRI during 2015. It has been a particularly busy year both in the clinics and with the clinical research. I continue to run twice weekly Parkinson's and Movement Disorders clinics in the Van Der Veer clinical area at 40 Stewart Street. There is an increasing demand on these clinics mainly from the increasing numbers of Parkinson's patients being referred by their general practitioners and other specialists, and also the need to review patients regularly. Parkinson's is a progressive and therefore consequently changing condition requiring regular review of symptoms and medications. Other conditions treated in these clinics include various tremors, jerks and spasms, all problems with a variety of different neurological causes.



The Parkinson's and Movement Disorders clinics are critical to much of the research activity at the NZBRI. It is through these clinics that patients are offered the opportunity to participate in our clinical research activities. I continue to be amazed at the extraordinary generosity of our patients in their willingness to be part of our research projects. For some of the studies the commitment for patients is considerable, comprising several visits and many hours of their time, over 8 years for some. It is, however, also an opportunity for patients to mention any current concerns or difficulties they may be having with their health between formal clinic visits and to thereby obtain timely specialist advice.

Dedicated multidisciplinary Huntington's disease (HD) clinics are held at the Van Der Veer clinical area at the NZBRI every six weeks or so. Huntington's is a familial neurological disorder that usually manifests in middle age but can develop in the teens or even in old age – we see people presenting with initial symptoms in their 60's and 70's. It causes distressing involuntary movements as well as behavioural change and dementia. The clinics allow for close liaison between the neurologist, psychiatrist, general practitioner, and community workers, all for the better care of people with this unfortunate condition. In parallel with the HD clinics we continue to review HD patients under the auspices of the Enroll-HD study funded by the CHDI (Cure Huntington's Disease Initiative). This large international study already has a total of more than 7,000 participants and aims to ultimately find a cure for this debilitating genetic disorder. Our NZBRI site has enrolled some 80 participants into the study, including some from the Otago-Southland region via my undertaking clinics in Dunedin, with the generous support from neurological colleagues there.

Parkinson's nurse Helen Skene continues to provide day-to-day specialized nursing support to patients with Parkinson's and other movement disorders, via her own supervised clinics and over the phone. Helen liaises closely with nurses from the local Parkinson's society and she and I meet regularly with the society nurse, Bronnie Alexander. Helen increasingly provides an apomorphine pump service in which patients with difficult-to-control Parkinson's have continuous infusion of this dopamine replacement medication via a thin needle under the skin in the abdomen. She also supervises Parkinson's patients who have had deep brain stimulators implanted by Auckland neurosurgeons.

Dr Debbie Mason, Neurologist, undertakes specialised multiple sclerosis (MS) clinics at the NZBRI Van Der Veer clinic facility. She supervises two MS outpatient nurses who are also based at the NZBRI and who provide close oversight of the newly funded advanced MS therapies now available for many patients. Dr Mason also conducts several clinical trials in MS aided by Jane Eagle, nurse coordinator. As with the Parkinson's clinics, Dr Mason's clinics have enabled recruitment of patients for participation in NZBRI-based MS epidemiological research studies, investigating the incidence and prevalence of MS in New Zealand.

Professor Tim Anderson, *Clinical Director*

MRI IMAGING

Researchers at the NZBRI had another busy scanning year in 2015. As in past years, imaging is being employed to answer a wide range of questions, including clinical groups (Parkinson's, post-traumatic stress disorder, very low birth weight, sleep apnoea) as well as sheep with Batten's disease and investigation into prosthetic hips.

In 2015, we performed 260 hours of MRI scanning (Hagley Radiology) and 49 amyloid PET scans (Southern Cross Hospital).

Seven studies commenced imaging data acquisition in 2015:

1. Prof Tim Anderson (Otago) and Prof John Dalrymple-Alford (Canterbury): An HRC-funded study will utilize advanced MRI and amyloid PET to investigate development of future dementia in Parkinson's disease with Mild Cognitive Impairment.
2. Prof John Dalrymple-Alford (Canterbury): A CoRE-funded study investigating physical and cognitive enrichment in Parkinson's disease
3. Dr Tracy Melzer (Otago): A CMRF-funded study to acquire amyloid PET images in Parkinson's disease with normal cognition and dementia.
4. Associate Prof Mathias Basner (University of Pennsylvania, USA): A NASA-funded study to investigate brain changes during a 1-year Antarctic winter-over mission.
5. Prof David Palmer (Lincoln): Pilot scanning of sheep that received gene-therapy injections to combat Barren's disease.
6. Prof Phil Bones (Canterbury): NZ Orthopaedic Association supported study to improve image reconstruction around metal implants.
7. Prof Caroline Crowther (Auckland): HRC-funded trial, Magnesium Sulphate at 30 to 34 weeks' gestational age: Neuroprotection Trial, Christchurch recruitment.

Two studies completed MRI data collection this year:

1. Dr Toni Pitcher completed collection for a study investigating anxiety in Parkinson's disease (n=54)
2. Dr Debbie Snell completed collection for a study investigating outcomes in those who have experienced mild traumatic brain injury (n=97).

The Brain Research New Zealand Centre of Research Excellence (CoRE) officially opened this year and members of the NZBRI are part of this initiative. The CoRE has already facilitated collaboration with imaging researchers working together on nationwide projects spanning Auckland, Christchurch, and Dunedin.

Amyloid PET imaging was a new initiative this year, with the first scan in May 2015. Scan quality is excellent (Figure 1). However, obtaining the radiotracer from Melbourne has been slightly more difficult than expected.

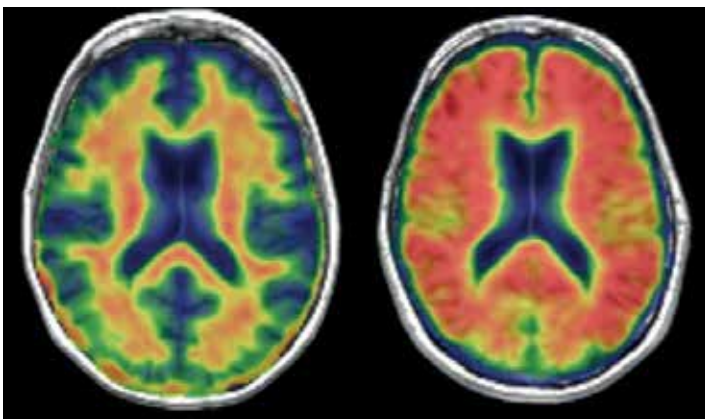


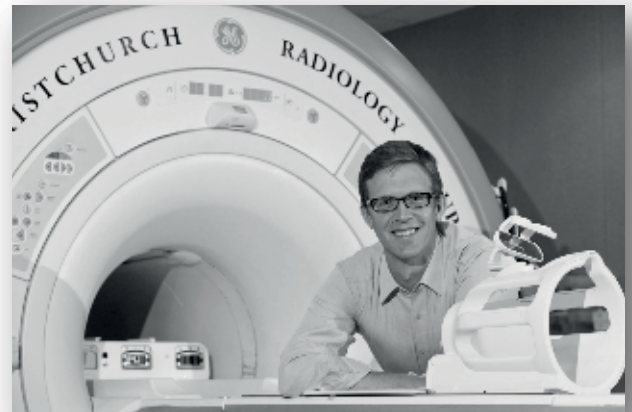
Figure 1: On the left, an example of a 'normal' or amyloid-negative PET scan. On the right, a positive amyloid scan. Red indicates areas with increased amyloid deposition, specifically in the cortex.

2016 will be an exciting year. Pacific Radiology Group (parent company of Christchurch Radiology Group) has purchased two new, top-of-the-line 3 tesla Siemens scanners. The first is scheduled for installation by the end of June in Dunedin. The second will be at St. George's Hospital by the last quarter of 2016. This is a very exciting development, as the new scanners will provide access to many new techniques not currently available.

The new scanner in Dunedin will change our involvement in the Dunedin Multidisciplinary Health & Development Study. In the next wave of follow up, they will acquire brain scans in the ~1000 participants. MRI scanning will now occur in Dunedin, but we still remain involved in the setup of the imaging side of the study.

Throughout 2015 and 2016, we will continue to attract high-quality students to work on imaging projects. Four students completed degrees in 2015 (Dr Amy Wang, PhD; Samantha Groves, MSc; Simon Dyson, Honours; Samantha Groves, summer student). A further three PhD (Dr Simon Feng, Mustafa Almuqbel, Kyla Wood) and two MSC (Guneet Kaur, Megan Stark) students utilized imaging in their research in 2015.

Dr Tracy R Melzer, PhD, *MRI Research Manager*



2015 ADVERTISING CAMPAIGN



Our 2015 Advertising campaign featured strong images that stimulated much conversation. Our thanks to our 'models' Professor Tony Kettle, Dr Tracy Melzer and Sue Robinson.

FUNDRAISING

2015 saw a raft of new fundraising activity for NZBRI. In March we launched the Twilight Charity Race Day at Riccarton. More than two hundred people enjoyed the hospitality, food and entertainment, with many people leaving with cash and great prizes. Well-known racehorse owners, Kevin & Jo Hickman were instrumental in making this day a success, with \$10,000 raised for NZBRI.



Our Trivia Night was sell-out. With 31 teams entered and a waitlist for tickets. The MC was highly entertaining, and some of the questions certainly got the “grey matter” working hard. Although it was a fun evening, there was a dash of competitiveness from the Universities, law firms and a range of Canterbury businesses, along with a lot of laughter and some furious debate over answers.

Thanks to the support of Christchurch Casino, Rydges Latimer Christchurch and Multi Media, the evening bought in a lot of new supporters.

2015 saw the establishment of a donor database for the BRI, following a donor acquisition campaign led by parent company, the Canterbury Medical Research Foundation, in February. We are very keen to expand this database in the coming years to establish a firm footing with a loyal donor following.

Bequests are a mainstay of any research entity’s fundraising efforts and NZBRI is working to educate more people about the possibility of leaving their money to our cause. One person who knew implicitly, the value of supporting our work was the late Alan Trembath. Alan has supported the Institute over a number of years and we were notified of his passing in the middle of 2015. Alan very kindly left the bulk of his estate to the NZBRI and we will use this to grow our capital base and ensure our work continues into the future.

Our sincere thanks to Alan and to his family who supported his desire to leave a lasting legacy to the NZBRI.

Like many other charitable entities, NZBRI also has benefactors who wish to remain anonymous in their giving.

One such donor has assisted us greatly in the 2015 year, with a large gift that has helped us to push the Parkinson’s research in particular, along. This donor has in fact, pledged a million dollars to our Institute over a five-year period from 2014 – 2019 which is a tremendous boost to our work. Our hope is that as this donor reads this, they will identify themselves and know we send them our heartfelt thanks, whilst respecting their desire to remain anonymous.

Our major fundraising challenge moving into the 2016 is to grow our notified bequest folio and encourage corporate supporters from the Canterbury to support our cause through sponsorship partnerships.



LEAVE A LEGACY

FRIENDS OF THE BRAIN RESEARCH INSTITUTE

The Friends of the Brain Institute (FBI) was established for the purpose of fundraising for the New Zealand Brain Research Institute and its neurological research programme. We aim to raise the public profile of the Institute and from time to time give back to the community in a meaningful way, including educational support to patients, their families and others, through seminars and workshops. We have been successful in achieving our aim of creating a lucrative fundraising programme, raising the profile of both our Friends group and the NZBRI. It is apparent from positive feedback from our supporters that the local community is becoming increasingly aware of our Friends group and the work of the NZBRI.

The FBI committee is made up of volunteers from diverse walks of life and experience. The committee includes Professor Ivan Donaldson, Gabrielle Tasman, Mel Brew, Douglas McCaul, Liz Barry, Caroline Wagteveld McKenzie, Fay Keeling, Sharon Rees-Thomas and Kathryn Mulcock.

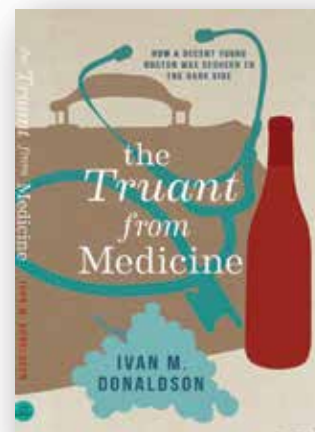
The FBI held two very successful fundraisers in 2015. We were delighted with the turn-out of supporters to our Court Theatre sponsored fundraiser, "MAMIL", in September. It was an entertaining evening of laughter, a raffle and spot prizes, which raised \$4,500. We sincerely thank the Court Theatre for their generous sponsorship.

The FBI's fourth Annual Golf Tournament at the Christchurch Golf Club was held in November. We had expected the new Clubhouse to be completed in time for the tournament. However unexpected delays intervened, making it necessary to cap the number of teams and players entering, resulting in an early sell-out of the event.

The FBI golf tournament has become a highlight of our fundraising year with our supporters and sponsors rewarding the FBI with loyal patronage year after year.

We were thrilled with this year's result, raising \$33,317. Our thanks to our wonderful sponsors including the 2015 Major Sponsor - The Christchurch Radiology Group, Pegasus Bay Wines, Strawberry Fare, Sharpies Golf Christchurch, Mike Pero Cashmere, Classic Holidays - Christchurch and Allergan New Zealand Limited.

The NZBRI continues to receive proceeds from Professor Ivan Donaldson's book "The Truant from Medicine", raising \$2,940.00 in 2015. Proceeds from sales in previous years amount to \$8,000. We thank Ivan for this significant and ongoing financial contribution to the NZBRI's research programme.

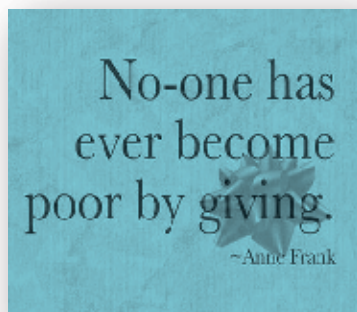


Thank you to all members of our Friends committee who provide committed and tireless service. In particular, Gabrielle Tasman for her work in coordinating our Court Theatre fundraisers, Mel Brew and Doug McCaul who orchestrate our Annual Golf Tournament with vim and vigor and a special thank you to Caroline Wagteveld McKenzie whose experience, infectious enthusiasm and practical roll-your-sleeves-up attitude and administration ensure the success of any fundraiser.

Thank you to our families, friends and our many dedicated sponsors, both individuals and business, who remain constant in their support of the Friends and the NZBRI.

Kathryn Mulcock - *Chair, Friends of the Brain Research Institute*

ACKNOWLEDGMENTS



The Institute can only continue to thrive through the support of our loyal donors, research partners and funders. Our sincere thanks to all of those who provide encouragement to us throughout the year.

Individual Donors \$500 plus

Orr Family Trust
Kevin and Joanna Hickman
Edith Tripp

Professor Ivan and Chris Donaldson
Frank Dickson
Various donors who wished to remain anonymous

Trusts and Foundations

Alan Trembath Charitable Trust
Dove Charitable Trust
Margaret Hutchings Charitable Trust

Christchurch Casino Charitable Trust
Pub Charity
NZ Music Foundation

Service Clubs and Professional Associations

The Order of St Lazerus of Jerusalem

Estates

Alan Trembath

Event Sponsors

Pegasus Winery
Christchurch Golf Club
Multi Media
Strawberry Fare
Allergan

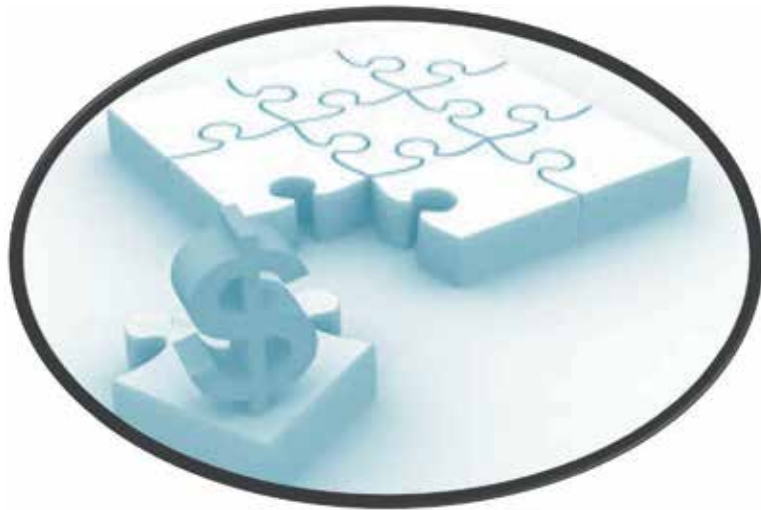
Rydges Latimer
Canterbury Radiology Group
Canterbury Jockey Club
Mike Pero Cashmere
Ballantynes

Strategic Partners

University of Otago – Christchurch
Canterbury District Health Board
Neurological Foundation
Canterbury Radiology Group

University of Canterbury
Health Precinct Advisory Committee
MS Society NZ

FINANCIAL PERFORMANCE 2015



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Approval of Performance Report

The Directors are pleased to present the Performance Report, including the financial statements of New Zealand Brain Research Limited, for the year ended 31 December 2015.

For and on behalf of the Board of Directors:



John G Bayley



Ivan Donaldson

Dated:

Entity Information

as at 31 December 2015

Legal name of entity	New Zealand Brain Research Limited
Type of entity and legal basis	The entity is a company and registered under the Companies Act 1993, and is a registered charity.
Charity registration number	CC20457

Entity's purpose or mission

The New Zealand Brain Research Institute improves brain-health for the community through research, education and by employing best clinical practice.

The Institute works collaboratively and across a number of partner institutions and universities involved in brain research. Focused on research alongside clinical practice and education for patients and the wider public, the Institute has a unique place in the Canterbury research landscape. Nurturing young research talent from across the region, the impact of the work of the Institute is global.

Entity structure

The organisation is governed by a Board of Directors as follows:

John G Bayley - Chairman
 Simon Carey - Canterbury Medical Research Foundation Representative
 Cheryl Doig
 Prof Ivan Donaldson
 Prof Richard Faull
 Michael Stenhouse - Canterbury Medical Research Foundation Representative
 Steve Weaver - Canterbury Medical Research Foundation Representative

The board meets bi-monthly with all management staff in attendance.

Management staff - all of whom report directly to the Board consist of:

Kate Russell - Commercial Director
 Dr Michael MacAskill - Research Director
 Prof Tim Anderson - Clinical Director

Main sources of entity's cash and resources

The main funding sources are through the following:

Overheads charged on research project funding
 Individual and corporate donations
 Bequests
 Special events
 Bank and investment interest and dividends
 Cost recovery on space used by University of Canterbury and University of Otago personnel taking part in research at the New Zealand Brain Research Limited

Entity Information

as at 31 December 2015

Main methods used by the entity to raise funds

Marketing and promotion for public to obtain awareness of entity which in turn fuels donations and bequest income.

Running events

Direct mail outs for donation income.

Entity's reliance on volunteers and donated goods or services

The entity has a low-medium reliance on volunteers.

New Zealand Brain Research Limited has a committee called the Friends of the BRI who run fundraising events (all volunteers) and for these events the entity at times receives donated prizes.

Research subjects are all volunteers.

The entity receives very little in the way of gifts in kind.

Registered office	66 Stewart Street Christchurch
Physical Address	66 Stewart Street Christchurch
Incorporation number	1851961
Incorporation date	21 August 2006
IRD number	94-592-666
Shareholders	Canterbury Medical Research Foundation Inc. <div style="text-align: right;"> <div style="border-top: 1px solid black; display: inline-block; width: 100px; text-align: right;">100</div> <div style="border-top: 3px double black; display: inline-block; width: 100px; text-align: right;">100</div> Ordinary shares </div>
Accountants	KPMG Level 3 62 Worcester Boulevard Christchurch 8013
Bankers	ANZ Bank Christchurch
Solicitors	Anthony Harper Christchurch

Statement of Service Performance

as at 31 December 2015

The New Zealand Brain Research Institute (NZBRI) has three main charitable aims:

- to reveal new knowledge about the brain and its dysfunction,
- to improve the standard of care for people with neurological disorders, locally, nationally, and globally.
- to educate clinicians, scientists, and the public on brain research findings and techniques.

Reveal new knowledge about the brain and its dysfunction

Output: Publish research outputs in peer-reviewed journals

The primary output of a research institution is publication of papers in peer-reviewed scientific and clinical journals.

Performance measures

Quantity: At least 20 papers published per year.

Performance

80%

Quality: Publish in international journal, unless compelling reason to disseminate locally.

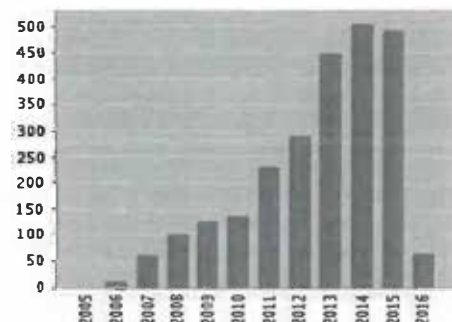
100%

(1) For verification, see publication list on our public site nzbri.org/labs/publications

Outcome: NZBRI research papers will be cited widely in the academic literature

The primary outcome of a successful research paper is influence upon scientific and clinical thought, as measured by the number of times that paper is cited by other research groups.

Citations are tracked by recognized services such as Web of Knowledge. The chart here was generated from that website on 3 March 2016, using a search for papers published by NZBRI (or its preceding name, the Van der Veer Institute). The y axis represents the number of citations to NZBRI papers by other researchers. It can be seen that the impact of NZBRI publications continues to grow strongly, since the formation of the Institute in 2004.



NZBRI papers are being cited in external publications such that it is clear that they are being influential in setting international diagnostic criteria for Parkinson's disease.

(1) Citation data for the preceding year have a considerable lag in being gathered and hence the estimate for 2015 is likely to be an underestimate at present.

(2) The absolute number of citations varies across citation collecting services but the trend over time should be consistent.

Output: Produce quantitative assessments of new and existing participants in research studies.

Performance measures

Quantity: Follow-up existing participants in primary longitudinal and imaging Parkinson's studies.

Performance

183 participants assessed across ~ 640 visits. Retention rate > 90%.

Quantity: Identify and recruit 40 participants for major new study of cognitive enrichment in Parkinson's.

203 patients given screening assessments. To date, 20 suitable candidates identified (50% recruitment complete).

Quantity: Recruit participants into other independent sub-studies in Parkinson's (n= 39, 43, and 30).

100% recruitment complete.

Statement of Service Performance

as at 31 December 2015

Quantity: Recruit participants into study assessing influences on smoking cessation. 37 smokers and 12 controls recruited.

Quantity: Recruit participants into study of influences upon binge drinking. 41 binge drinkers and 10 controls recruited.

Improve the standard of care for people with neurological disorders

Output: Provide clinic facility for neurological outpatient assessments.

Performance measures

Quantity: Number of new and existing Canterbury DHB outpatient visits hosted.

Performance

3032 outpatient assessments conducted on-site by CDHB neurologists.

Outcome: Canterbury people will receive improved care or levels of assessment by involvement in pharmaceutical trials or international studies.

Duodopa trial. One local patient was recruited into a trial of duodopa. This provides a unique continuous intestinal administration of medication in gel form, alleviating complications experienced by patients following long-term use of oral medication. The infusion pump and medication is provided free of charge to the patient.

HD-ENROL study. This international study aims to recruit 10 000 patients with Huntington's disease world-wide. Seventy participants have been recruited at NZBRI (75% patients, remainder asymptomatic family members). This involves an annual assessment, additional to their standard clinical contact, providing improved opportunities to address issues and symptoms.

Educate clinicians, scientists, and the public on brain research findings and techniques

Output: Provide opportunities for students to complete graduate qualifications in brain research.

Performance measures

Quantity: Number of PhD completions

Performance

4 theses submitted (8 ongoing)

Quantity: Number of Masters degree completions

1 thesis submitted (8 ongoing)

Quality: Pass external national/international expert examination

100%

Output: Provide public education opportunities for brain research.

Performance measures

Quantity: Number of presentations given by researchers to community service and education groups

Performance

9 talks (to U3A, Rotary, Kiwanis, Probus branches)

Quantity: Number of public talks given

2 talks (Brain Awareness Day and Multiple Sclerosis Day)

Quantity: Number of interviews in public media

3 (TVNZ News, Radio New Zealand, Christchurch Press)

Statement of financial performance

for the year ended 31 December 2015

	Note	2015 \$	2014 (unaudited) \$
Revenue			
Friends Income		51,354	50,955
General Income		8,755	28,566
Grants received		318,609	200,000
Bequests received		-	203,589
Donations received		219,546	9,576
MRI scanning		78,234	-
Interest Received		1,224	1,341
Pharmaceutical research income		250,418	204,918
Rent received		225,647	236,903
Events income		16,733	-
Gross surplus		1,170,519	935,848
Expenses			
Research costs	1	512,024	369,715
Administration	2	654,243	603,154
Total expenses		1,166,268	972,868
Net profit/(deficit)		4,251	(37,020)

These statements are to be read in conjunction with the notes to the financial statements

Statement of financial position

as at 31 December 2015

	Note	2015 \$	2014 \$ (unaudited)
Accumulated surpluses	3	266,304	262,053
Current assets			
Cash and bank balances	4	125,445	207,071
Debtors		80,772	61,392
Prepayments		8,007	-
GST refund due		9,562	15,030
Shareholders' current accounts	6	28,710	-
		252,495	283,494
Non current assets			
Property, plant and equipment	5	141,447	168,439
Total assets		393,942	451,933
Current liabilities			
Cash and bank balances	4	55	-
Creditors		58,662	80,662
Income received in advance		51,073	33,728
Canterbrainers donations		260	-
Accrued charges		17,588	4,200
Shareholders' current accounts	6	-	71
		127,638	189,880
Total liabilities		127,638	189,880
Net assets		266,304	262,053

These statements are to be read in conjunction with the notes to the financial statements

Statement of cash flows

for the year ended 31 December 2015

	Note	2015 \$	2014 (unaudited) \$
Cash flows from Operating Activities			
Cash was received from			
Donations and bequests		219,546	213,165
Event income		68,087	50,955
Grants		218,609	200,000
Services provided		321,608	237,844
Rent received		213,089	236,903
Net GST proceeds		15,031	-
Cash was applied to			
Grants		(124,622)	-
Cash paid to suppliers and employees		(1,008,754)	(913,845)
Net GST proceeds		-	(694)
Net cash flows from Operating Activities		(77,407)	24,328
Cash flows from Investing and Financing Activities			
Cash was received from			
Investment income		1,224	1,341
Cash was applied to			
Payments for property, plant and equipment		(5,499)	(899)
Net cash flows from Investing and Financing Activities		(4,275)	442
Net increase / (decrease) in cash		(81,682)	24,770
Opening cash		207,071	182,301
Closing cash		125,389	207,071
This is represented by:			
Bank Accounts and Cash		125,389	207,071

These statements are to be read in conjunction with the notes to the financial statements

Statement of accounting policies

for the year ended 31 December 2015

Basis of preparation

The entity has elected to apply PBE SFR-A (NFP) Public Benefit Entity Simple Format Reporting - Accrual (Not-For-Profit) on the basis that it does not have public accountability and has total annual expenses of equal to or less than \$2,000,000. All transactions in the Performance Report are reported using the accrual basis of accounting. The Performance Report is prepared under the assumption that the entity will continue to operate in the foreseeable future.

Property, plant and equipment

Items of property, plant and equipment are stated at cost less accumulated depreciation and impairment losses.

Where an item of property, plant or equipment is disposed of, the gain or loss recognised in the profit and loss statement is calculated as the difference between the sale price and the carrying amount of the asset.

Depreciation

Depreciation is calculated to write off the cost of items of property, plant and equipment less their residual values using the diminishing value method over their useful lives, and is recognised in surplus or deficit. The depreciation rates used are as follows:

Building fit out 7.5% - 20.0% diminishing value
Plant and equipment 10.0% - 60.0% diminishing value
Computer equipment 48.0% - 50.0% diminishing value
Furniture and fittings 11.4% - 60.0% diminishing value

Bank accounts and cash

Bank accounts and cash in the statement of cash flows comprise cash balances, credit card balances and bank balances.

Receivables

Receivables are stated at estimated realisable value after providing against debts where collection is doubtful. Bad debts are written off during the period in which they are identified.

Income tax

The entity is wholly exempt from New Zealand income tax having fully complied with all statutory conditions for these exemptions.

Goods and services tax

The entity is registered for GST. All amounts are shown exclusive of Goods & Services Tax (GST), except for debtors and creditors which are shown inclusive of GST.

Changes in accounting policies and transition to the new PBE SFR-1 (PS) standard

This is the first set of statements prepared using the new PBE SFR-A (PS) standard, and comparative information for the year ending 31 December 2014 has been restated to comply with the new standard.

These statements are to be read subject to the compilation report on page 2 of this report

Notes to the performance report

1 Research costs	2015	2014
	\$	(unaudited) \$
Research costs	205,147	249,132
Research salaries	150,008	120,583
MRI scanning costs	32,247	-
Scholarships and grants	124,622	-
	512,024	369,715
2 Administration	2015	2014
	\$	(unaudited) \$
Accountancy fees	18,021	12,325
Audit fees	2,604	3,000
Management fees	50,000	36,000
Power	14,711	20,041
Security	1,044	1,044
Repairs and maintenance	12,961	5,097
Cleaning	20,807	21,460
Bank charges	536	576
Bad debts expense	157	-
Computer expenses	41,793	28,788
Fundraising expenses	19,229	8,555
General expenses	15,889	16,764
Interest - IRD	27	-
Insurance and ACC	18,775	21,434
Marketing, publicity and functions	12,095	4,475
Legal fees	638	-
Printing and stationery	23,003	16,502
Staff expenses	3,479	-
Wages - general	50,604	56,638
Leases	306,918	305,197
Telephone, tolls and internet	10,466	3,785
Depreciation	32,489	41,475
	654,243	603,154

Notes to the performance report

3 Accumulated Surpluses

	2015	2014 (unaudited)
	\$	\$
Balance at 1 January	262,053	299,073
Surplus / (deficit) year	4,251	(37,020)
Balance at 31 December	266,304	262,053
Closing balance	266,304	262,053

4 Cash and bank balances

	2015	2014 (unaudited)
Petty cash	47	-
ANZ cheque account	124,573	106,775
ANZ Direct Online Account	824	100,296
Visa Business	(55)	-
	125,389	207,071
Total cash and bank balances classified as follows:		
Current assets	125,445	207,071
Current liabilities	(55)	-
	125,389	207,071

5 Property, plant and equipment

	Cost \$	Depreciation \$	Acc depn \$	Carrying value \$
Buildings	78,681	6,464	3,460	44,081
Plant and equipment	320,982	17,492	258,869	62,113
Office equipment	2,140	614	1,448	692
Furniture and fittings	53,766	7,919	19,206	34,560
Balance as at 31 December 2015	455,569	32,489	314,123	141,447

	Cost (unaudited) \$	Depreciation (unaudited) \$	Acc depn (unaudited) \$	Carrying value (unaudited) \$
Buildings	78,681	7,450	28,137	50,544
Plant and equipment	320,982	24,255	241,376	79,606
Office equipment	1,536	649	833	702
Furniture and fittings	48,872	9,12	11,287	37,586
Balance as at 31 December 2014	450,071	41,475	281,632	168,439

These notes are to be read subject to the compilation report on page 2 of this report

Notes to the performance report

6 Shareholders' current accounts

	2015	2014 (unaudited)
	\$	\$
Canterbury Medical Research Foundation Inc.		
Balance at beginning of year	71,290	7 42 9 0
	71,290	74,290
Current account movement	(100,000)	3,000
	(100,000)	3,000
Balance at end of year	(28,710)	71,290
Total shareholders' current accounts	(28,710)	71,290

7 Operating lease commitments

	2015	2014 (unaudited)
	\$	\$
Lease commitments under non-cancellable operating leases are as follows:		
Current portion	279,765	184,722
Non current portion	390,288	153,185
	670,053	337,907

8 Capital commitments

There are no capital commitments as at 31 December 2015 (2014: \$nil).

9 Contingencies

There are no contingent liabilities as at 31 December 2015 (2014: \$nil).

Notes to the performance report

10 Related parties

During the year there have been trading transactions between the company and Canterbury Medical Research Foundation Inc. (CMRF). The company is a 100% owned subsidiary of CMRF.

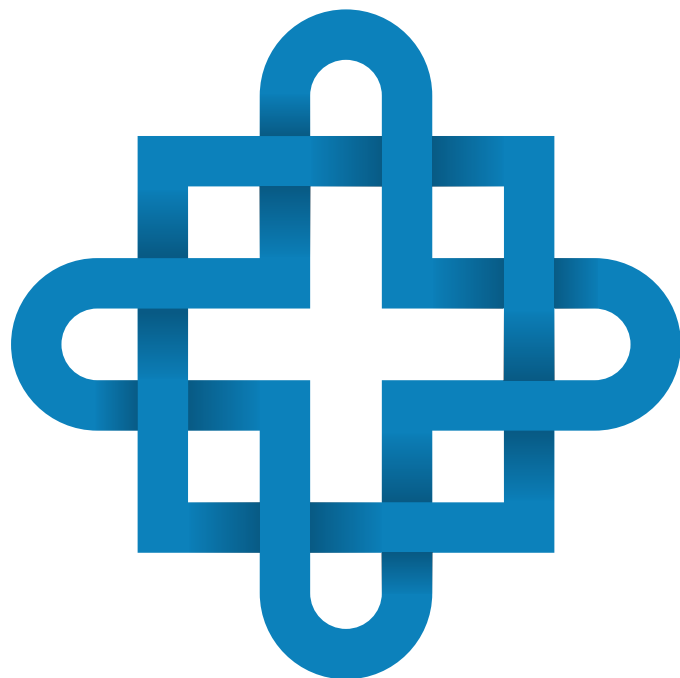
CMRF holds a Craigs Investment Portfolio for the specific use of New Zealand Brain Research Limited with funds of \$1,534,146 at 31 December 2015 (2014 \$1,366,052). The portfolio earned investment income of \$64,612 for the year ending 31 December 2015 (2014 \$65,386). The portfolio also earned unrealised gains of \$53,132 (2014 \$46,746) and realised gain/(loss) of \$10,216 (2014 (\$17,854)). This income is disclosed in the consolidated annual accounts for CMRF and accumulates to the funds held in the Craigs Portfolio for the specific use of the company.

There were \$50,000 of net contributions to the portfolio during the year. (2014 net withdrawals of \$200,000).

There are grants paid from CMRF to the company each year. For the year ended 31 December 2015 \$150,000 was physically paid, and \$50,000 was recognised by way of drawdown in the portfolio. A further \$100,000 has been recognised as grant income receivable from CMRF at balance date. This brings the total grant income recognised in the statement of financial performance to \$300,000. In 2014 the grant received of \$200,000 was in relation to the drawdown from the Craigs Portfolio.

CMRF and New Zealand Brain Research Limited lease premises from Stewart Street Holdings Limited and Stewart Street Investments Limited which are partly owned by interests associated with Mike Stenhouse and Ross Hutton who are members of the executive committee. Rental payments made during the year to Stewart Street Holdings Limited and Stewart Street Investments Limited amounted to \$323,720 (2014 \$305,197).

There were management fees of \$50,000 paid to CMRF during the year ending 31 December 2015.



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