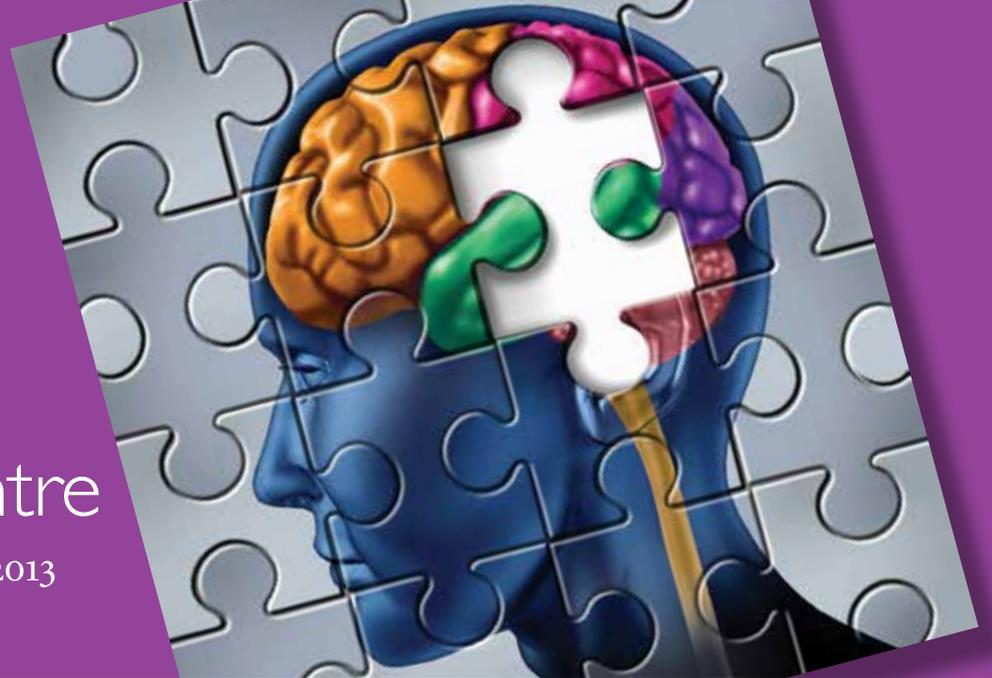




# Brain Health Research Centre

NEWSLETTER SEPTEMBER 2013



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## NEWS IN BRIEF

### BHRC PhD student wins the AWCBR poster prize

Congratulations to Anatomy student Laura Boddington who won the Best Student Poster Presentation at the recent Australasian Winter Conference on Brain Research. Laura's poster titled "Behavioural evaluation of theta-burst stimulation after forelimb motor cortex lesion in rats" was picked as the winner from 54 entries.



Laura Boddington

## Researchers close to Alzheimer's diagnostic test

The BHRC is close to discovering a blood test which will identify people at risk of developing Alzheimer's disease. A large team of researchers, funded by the Health Research Council (HRC) have been working on this.

The HRC Programme is titled 'Cognitive decline during ageing and Alzheimer's: Biomarkers and therapeutic targets'. Nine Principal Investigators from the Departments of Anatomy, Biochemistry, Human Nutrition, Psychology, and the Schools of Medicine and Pharmacy are working collaboratively on this exciting project.

The ability to identify Alzheimer's at its earliest stages would enable successful treatment of early onset symptoms. Preliminary results show there is an increase in some molecules of affected samples from healthy patients and patients with Alzheimer's disease.

The BHRC recently hosted a public lecture in Queenstown with one of our own team, Professor Bob Knight joining Associate Professor Michael Valenzuela from the University of

Sydney. There was huge public interest in this seminar with standing room only.

Professor Knight spoke about the Centre's diagnostic study, whilst Dr Valenzuela talked about proactive activities we can all take part in to help delay or prevent Alzheimer's disease. Dr Valenzuela explained that our brain is just another muscle which needs to be exercised regularly. As we age, often people become mentally lazy and do not take up new activities, particularly after retirement. Dr Valenzuela said that whilst there is currently no cure for the disease, it is possible to delay the onset by retaining a healthy diet, remaining physically, socially and cognitively active, and challenging the brain to learn new skills. Learning regular new activities, such as taking up a musical instrument or learning a new language are shown to help our brain remain fit. We need to continue to challenge the brain with new processes to achieve the best results. Just doing a crossword each day is not sufficient.



Dr Margaret Ryan and Dr Diane Guévremont from Dr Joanna Williams' lab working on the biomarker project.

# Funds boost research for BHRC Neurosurgeon



The BHRC extends grateful thanks to the Unity Otago Friendly Society who recently made a significant contribution towards research funds for the Neurological Foundation of New Zealand Chair in Neurosurgery Professor Dirk de Ridder. The Unity Otago Friendly Society donated \$27,992 in July. Sadly for them, their society is winding up, but they felt that the neurosurgery research was an ideal recipient of their remaining funds. This organisation started in the 1840's when there was seen to be a need to help new settlers save money as they developed their new life in the colony. We are extremely grateful for their generous gesture.

BHRC Clinical Director Dr Nick Cutfield and Deputy Vice Chancellor Richard Blaikie with Lodge Chairperson Sue Chantwell and members of the Unity Otago Friendly Society.

## New Roche scholarship to support BHRC students

Two new scholarships will be available to BHRC Postgraduate students next year. In addition to the Helen Rosa Thacker Scholarship in Neurological Research, highlighted in our March newsletter, we are now also able to offer the Roche Hanns Möhler Doctoral Scholarship.

Roche New Zealand has generously funded the new doctoral scholarship, named in honour of Professor Hanns Möhler. The scholarship will be awarded to an accomplished PhD or Postdoctorate, whose thesis would benefit from an extension at the end of their existing grant.

Professor Hanns Möhler studied chemistry and biochemistry at the University of Freiburg, Germany, gaining a PhD in biochemistry in 1968. His long-standing involvement with Roche began five years later at Hoffmann-La Roche, Basel, Switzerland. Dr Möhler spent 15 years focusing on therapeutic neuroscience in mental and neurological disorders. One of his important contributions was involvement in the research that identified molecular control elements in the brain that modulate emotions and cognitive behaviour. He has authored more than 300 peer-review papers and for the last 25 years has been included in the 'Highly Cited Researchers' list, compiled by the Institute for Scientific Information.

These scholarships will be of invaluable assistance in supporting the excellent research that our Postgrad students are undertaking.

### Roche Hanns Möhler Doctoral Scholarship

An award of \$10,000 to a Brain Health Research Centre PhD or Postdoctorate student, with preference given to PhD students, who are near the completion of their thesis. Candidates must be able to demonstrate a good record of aptitude throughout their PhD, and how their work would benefit from an extension at the end of their existing scholarship.

A condition of the scholarship is that the successful candidate must be able to present their research to Roche in Auckland (travel funded by Roche) at the completion of their thesis.

### Helen Rosa Thacker Scholarship in Neurological Research

An award of \$5,000 to recognise, reward and inspire a good male student born in New Zealand. Awarded to a PhD or postdoctorate in neurological research. Preference will be given to PhD students. The award can be held alongside existing scholarships.

Both scholarship applications are now open, and due 01 November 2013. For more information about them, and how to apply visit [www.otago.ac.nz/bhrc](http://www.otago.ac.nz/bhrc).

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## Donation for Dementia research in memory of John Colling

The Brain Health Research Centre wishes to acknowledge the recent generous donation by the Colling family from Cromwell. The donation was made in lieu of flowers at the funeral of John Selwyn Colling. The family have asked that the donation be used for the Centre's dementia research, in particular the neuroprotection studies.

John was born in 1951 and worked for the National Bank in Cromwell, Wanaka and Dunedin before being appointed as the Regional Manager for AMP Southland in Invercargill. During this time he bought a deer and sheep farm in the Pourakino Valley near

Riverton, which he farmed for 10 years until his dementia made it too difficult. Aside from playing cricket and bowls, rugby was John's main passion. He represented Otago in rugby in the 1970's, playing a total of 66 games. John was also heavily involved with coaching various age groups after he retired from playing. John died in July this year at the age of 61. His wife Judith, daughters Emma, Amy and Tiffany, and six grandchildren remember him as a special man who loved to be around people.

# Virtual and Augmented Reality researcher joins BHRC

Associate Professor Holger Regenbrecht, from the University of Otago's Department of Computer Science, is the newest member of the Brain Health Research Centre. Dr Regenbrecht has worked in the field of Virtual and Augmented Reality for over 15 years.

Augmented reality technologies can change the way we view the world, and challenge our sense of what we perceive or believe to be 'real'. The technology offers considerable promise for rehabilitation and treatment of limb impairments and pain due to physical, neurological, and psychological factors.

Dr Regenbrecht is a member of the University's Augmented Reflection Technology (ART) group. The ART group has developed two prototype systems; The Augmented Mirror Box System, which targets a psychotherapeutic approach, and the TheraMem System, which targets physical rehabilitation, particularly for stroke victims.

The systems produce an effective mixed virtual and real environment, to confuse a patient about their perception of their limbs. Pictured right, a participants hands are placed in a covered box, and are then displayed in a computer-manipulated way on

screen to 'fool the brain' about limb ownership and presence. The group is working on ways both systems can be developed for scientific and therapeutic purposes.

Dr Regenbrecht is looking forward to being part of the BHRC, which he says will considerably open up possibilities for collaboration to improve his knowledge and understanding of neuroplastic processes.



Technology developed by the Augmented Reality Technology group.



Associate Professor Holger Regenbrecht

## 2013 Hot Topic Lecturer: Associate Professor Dorothy Oorschot



Associate Professor Dorothy Oorschot with Professor David Bilkey and BHRC Deputy Director John Reynolds.

Associate Professor Dorothy Oorschot from the Department of Anatomy, was chosen to present this year's Hot Topic Lecture. Each year, one of our Centre members is invited to present their research during a lunchtime seminar. The successful applicant is selected on the merit of their research, their most recent journal article, and their collaborations with colleagues nationally and internationally.

Dorothy's talk entitled 'Spectrum of animal brain and behavioural deficits closely resembling human extreme prematurity' was based on

her collaborative paper recently published in the prestigious *Journal of Neuroscience*.

The survival rate of premature birth is now relatively high. Research shows that 50-70% of these babies will have some behavioural and memory deficits later in life, which may cause significant health problems. Brain injury in prematurely born children is associated with a high risk of neurodevelopmental disability.

Dr Oorschot's paper demonstrates for the first time a model to replicate the human brain at extreme prematurity. The model provides a valuable, and clinically relevant new tool to investigate treatment interventions. The exciting application of this work is to prevent brain injuries and associated deficits in children born extremely prematurely.

This collaborative project is an excellent example of integrating neuroscience and clinical expertise at the Centre, with research being carried out in three laboratories.

## Art in Neuroscience

### Artists and scientists merge minds to create original art works

The public were treated to a fascinating and thought provoking exhibition of paintings, installations, sculptures, videos, prints, photographs and jewellery at the Hunter Centre recently. The Brain Health Research Centre hosted this event which was a collaboration between 15 neuroscientists from the BHRC and 17 artists from the Otago Polytechnic Dunedin School of Art.

The collaboration expressed the way the world views research and in this instance, the role of the brain and what can go wrong.

Department of Anatomy Senior Lecturer Dr Ruth Napper was the project coordinator along with Peter Stupples from the Dunedin School of Art. Thank you to both Ruth and Peter for all their hard work in organising such an exciting exhibition.

Dr Ruth Napper with an art work by Rowan Holt, which was purchased by the University of Otago to remain in the Hunter Centre.



# Supporting the BHRC in 2013

## Looking for speakers for your organisation?

Our scientists are keen to share their work with the public and have a range of topics that are fascinating for the public. If you would like a speaker for your community group, please contact us on 03 479 4066 or [bhrc@otago.ac.nz](mailto:bhrc@otago.ac.nz) and we can arrange someone to speak on a topic of interest to your organisation.

## Donating to the BHRC

Our team of researchers are committed to developing new treatments for neurological disorders and looking for answers. With your support, we can significantly enhance our research and ability to discover new treatments for brain diseases.

Donations to the BHRC are administered through The University of Otago Foundation Trust, a registered NZ charity. Cheques can be made out to 'The University of Otago Foundation Trust-BHRC', or to make a secure online donation visit [www.givealittle.co.nz/org/BHRcentre](http://www.givealittle.co.nz/org/BHRcentre)

There are a number of ways you can support our Centre, including considering a gift in your will, or a gift in memory of a loved one. Alexis is available to discuss options with you. Give her a call on 03 479 4150 or [bhrc@otago.ac.nz](mailto:bhrc@otago.ac.nz)

## Upcoming events – please join us

### 'Dementia – The epidemic is here' with Mrs Wendy Fleming and Professor Warren Tate

Wednesday 16 October, 5:15pm

Waitaki Girls High School Hall, 270 Thames Street, Oamaru

Registrations: Jane Reynolds, [bhrc@otago.ac.nz](mailto:bhrc@otago.ac.nz) or 03 479 4066

Mrs Wendy Fleming is the Chair of Alzheimer's New Zealand Charitable Trust, and the Vice-Chair of Alzheimer's Disease International. Wendy is also an Honorary Life Member, and past Chair of Alzheimer's New Zealand.

Professor Warren Tate, an internationally renowned molecular biologist, will present 'Proteins on the brain and RNA in the blood: Alzheimer's disease under the microscope'. Professor Tate was awarded the 2010 Rutherford Medal for his outstanding achievements in molecular biology and molecular neuroscience, and in 2011 he was awarded a Companion of the New Zealand Order of Merit for services to science.

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## NEWS IN BRIEF

### Guest speaker warns of Alzheimer's 'epidemic'

The Minister for Senior Citizens and Associate Minister of Health, Hon Jo Goodhew opened the year's BHRC conference. The Minister spoke in her address about the government's plans to address the increase of age-related diseases. She acknowledged that this will have a huge impact on the world economy as more and more people live longer and need care. This year the conference included a public lecture on Alzheimer's disease. Guest speaker Wendy Fleming, Vice Chair of Alzheimer's Disease International, also touched on the cost of Alzheimer's disease. There are currently 40,000 people in New Zealand diagnosed with dementia. By 2050 this is predicted to be 170,000 people. Countries around the world are now acknowledging this cost with dementia being a topic for discussion at this year's G8 summit.

Thank you to Life Technologies who generously supported our conference this year.



L-R Professor Cliff Abraham, Wendy Fleming, Hon Jo Goodhew, Dr Brian McMahon and Associate Professor John Reynolds.

### Neurological Foundation grants success

In July, three BHRC members received project grants from the Neurological Foundation of New Zealand. Grants were awarded to Dr Andrew Clarkson - Stroke, Dr Liana Machado - Functional Improvement, and Associate Professor John Reynolds - Parkinson's disease.

### BHRC researcher selected to Australian brain research think tank

Deputy Director of the BHRC, Associate Professor John Reynolds has been the only New Zealander to be selected to attend an Australian Brain Research Think Tank. Dr Reynolds travelled to Australia in July to participate in the 2013 Theo Murphy High Flyers Think Tank. Dr Reynolds was the only New Zealander to be selected to attend the Think Tank, hosted by the Australian Academy of Science. Sixty of the brightest mid-career researchers discussed this year's topic 'inspiring smarter brain research in Australia'.

### South Island Brain Bee

The BHRC would like to thank the Rotary Club of Dunedin East for supporting this year's Brain Bee Challenge. Over ninety Year 11 students travelled to Dunedin from all over the South Island to take part in the neuroscience competition as well as a series of short lectures and tours of the neuroscience laboratories. Hosted by the University of Otago, Villa Maria College (Christchurch) won both the team and individual event. Congratulations to Millie Young and her winning team.

