

BRAIN RESEARCH NEW ZEALAND – RANGAHAU RORO AOTEAROA

Summer Research Scholarships for Māori Students 2020-2021

Brain Research New Zealand – Rangahau Roro Aotearoa is delighted to offer summer scholarships to give Māori students experience on research projects led by a BRNZ member and within BRNZ's research scope over the 2020-2021 summer break. Students are advised to contact one of our investigators to discuss possible research topics. We encourage all Māori students currently studying at 200, 300 or 400 level to talk to potential supervisors about this rewarding opportunity.

Students will need to have a supervisor from within the CoRE during the period of the award (six-ten weeks). Summer Scholarships are worth \$5,500 for a 10-week scholarship.

Applications close: **5pm, 1 September 2020**

Application Guidelines

1. The student must identify as Māori.
2. The supervisor(s) must be either a Principal or Associate Investigator member of BRNZ (see list below).
3. Ten weeks is the maximum duration for the project. The minimum time is six weeks, and commitment e.g. workload is expected to be equivalent to 37.5 hours per week. The student is expected to commit and make themselves available throughout the declared timeframe.
4. The start time is negotiable but should only begin after the student's exams have finished. The latest finishing date should be 12 February 2021.
5. The programme is open only to students who are returning to university study and will be enrolling in 2021 for degree or diploma courses offered at any one of BRNZ's collaborating institutions (the universities of Auckland, Otago, Canterbury and AUT).
6. Provided the project meets the following criteria, payment to the summer scholars concerned will be as a non-taxable bursary at the pro rata rate of \$5500 for a ten-week project. Payments will be made in several instalments, with the first payment approximately 3 weeks after the student has started the project and the final payment once the final report has been received.
7. The student must be a full participant in a research project (i.e. not merely providing a routine service such as data preparation or entry). The project must also be of educational benefit to the student.
8. The student must submit a research report of 3-4 A4 pages on completion of the project in order to receive his/her final payment. Written reports should be submitted directly to Sam Farr (brnz.admin@otago.ac.nz) after being signed off by the supervisor and received no later than 1 April 2021.

9. Students who are currently enrolled for a Masters or PhD are not eligible to apply.

Dr Hinemoa Elder, BRNZ's Māori Strategy Leader, is available to answer any questions from interested students via email at hinemoa@xtra.co.nz

The supervisor is responsible for submitting the application, which has 2 parts: science and Māori engagement. The supervisor should prepare the science part of the application, but in consultation with the student who will need to sign the application to show agreement with the project plan. It is the supervisor's responsibility to ensure the project scope is feasible within the proposed timeframe and given the student's individual capabilities. The student will need to write a brief summary (400 words maximum) of their engagement with Māori communities on campus and/or at home (whānau, marae, hapū, iwi) or how they plan to engage more with these communities over the next 12-18 months. Please submit the requested information to Sam Farr (brnz.admin@otago.ac.nz) via the relevant Research Office by **5 pm, 1 September 2020**.

Principal Investigators

University of Otago - Dunedin

1. **Prof Cliff Abraham (cabraham@psy.otago.ac.nz)** - Neural mechanisms of learning and memory, cellular and molecular events underlying nervous system plasticity and Alzheimer's disease. Expertise in electrophysiological, behavioural and immunofluorescence microscopy approaches to studying the mechanisms mediating the induction and persistence of synaptic plasticity in vivo and in vitro, and their relevance to memory. Blood biomarkers of Alzheimer's disease.
2. **Dr Andrew Clarkson (andrew.clarkson@anatomy.otago.ac.nz)** - Post-stroke neuroprotection and regeneration and repair mechanisms promoting recovery of function following a stroke involving novel combinations of intensive rehabilitation, drug therapy and more recently stem cells to enhance brain repair processes. This utilises behavioural, electrophysiological, optical imaging and anatomical measures to assess recovery after stroke.
3. **Dr Nick Cutfield (Nick.Cutfield@southerndhb.govt.nz)** – Developing predictive blood biomarkers for Alzheimer's; Vestibular schwannoma; Relationship of high frequency eye movement recordings to cognition and balance in Parkinson's disease; Augmented reflection technology in neurorehabilitation.
4. **Prof Ruth Empson (ruth.empson@otago.ac.nz)** – Cellular and network identity in the motor cortex, Cerebellar circuitry; Movement disorders including ataxia, motor neurone disease and spinal injury; Contribution from the cerebellum to cognitive processes and its disruption in the poorly treated disorder autism. A combination of electrophysiology, live imaging and molecular approaches are used.
5. **Prof Leigh Hale (leigh.hale@otago.ac.nz)** – Clinical neurorehabilitation; Fall prevention in older adults and adults with intellectual disabilities, Parkinson's disease and Alzheimer's disease; Use of virtual reality in stroke rehabilitation; facilitating Self-management following stroke, Measuring physical activity with accelerometry in people with neurological dysfunction; facilitating physical activity in people with disability.
6. **Prof Holger Regenbrecht (Holger.Regenbrecht@otago.ac.nz)** - Human-Computer Interaction (HCI), Augmented reality, 3D Teleconferencing, psychological aspects of Mixed Reality, three-dimensional user interfaces (3DU) and computer-aided therapy and rehabilitation.
7. **Assoc Prof Stephanie Hughes (stephanie.hughes@otago.ac.nz)** - Identifying molecular pathways that regulate neuronal development, maintenance and disease; Transcription factors of the forebrain embryonic zinc finger family and their role in neuronal development and maintenance; and on the molecular consequences of mutations in Batten disease, a childhood neurodegenerative disorder. Developing tools and gene therapy vectors for Batten disease as well as Alzheimer's and Parkinson's disease. Development and packaging of novel lentiviral and AAV vectors.
8. **Prof Brian Hyland (brian.hyland@otago.ac.nz)** - Neurophysiology of midbrain dopamine systems and pathways which modulate dopamine neuron activity. Effects of abnormal dopamine activity, such as occurs in Parkinson's disease, on activity in the motor control pathways.

9. **Assoc Prof Ping Liu (ping.liu@stonebow.otago.ac.nz)** – Neurobiological basis and intervention of cognitive decline associated with aging and Alzheimer's disease, as well as schizophrenia; Biological basis of learning and memory. Expertise in a combination of behavioural, in vivo microdialysis, neurochemical, molecular biological, immunohistochemical and electrophysiological approaches.
10. **Assoc Prof Liana Machado (liana@psy.otago.ac.nz)** - Neuropsychology and cognitive psychology expert. Her research investigates cognitive deficits that emerge as a result of brain disease and healthy aging, and methods by which these deficits can be minimized via simple accessible methods.
11. **Prof Pauline Norris (pauline.norris@otago.ac.nz)** - Research focuses on access to, and use of, medicines. Particular interest in how lay people understand and use medicines, and looking at particular population groups and barriers they face in accessing and using safe and appropriate medicines. I use both qualitative and quantitative research methods. Research in the Pacific and with Pacific people in New Zealand, medicines use in Tairāwhiti, medications in everyday life.
12. **Assoc Prof Louise Parr-Brownlie (louise.parr-brownlie@otago.ac.nz)** - Neural mechanisms underlying voluntary movements and the movement deficits of Parkinson's disease. Motor thalamus and motor cortex function are being explored using cutting-edge optogenetic technology that enables characterisation and manipulation of part of the basal ganglia-thalamocortical pathway. Optogenetic modulation of brain activity in an animal model of Parkinson's disease to learn how this alters motor thalamus and motor cortex activity, and behaviour. Electrophysiological, behavioural and immunohistochemical techniques.
13. **Prof Richie Poulton (richie.poulton@dmhdru.otago.ac.nz)** - Developmental psychopathology, gene X environment prediction of complex disorders, and psychosocial determinants of chronic physical disease. Dunedin Longitudinal Study.
14. **Prof John Reynolds (john.reynolds@otago.ac.nz)** - Learning and memory mechanisms in the basal ganglia and cortex in the mammalian brain, with a particular focus on normal and disordered synaptic mechanisms in Parkinson's disease and stroke. Expertise in electrophysiological recording, molecular biology, immunohistochemistry and operant behaviour.
15. **Prof Dirk De Ridder (dirk.deridder@otago.ac.nz)** – Pathophysiological mechanisms clustering groups of pathologies, such as thalamocortical dysrhythmias (pain, tinnitus, epilepsy, depression, Parkinson's disease, schizophrenia) or obsessive compulsive spectrum disorder; clinical neuromodulation; and neural correlates of the “self” how the self is generated in the brain, its relation to the environment (e.g. of importance in MCI and dementia), to others and god. Expertise in interpreting functional imaging data (PET, fMRI, EEG, MEG), and the application of non-invasive neuromodulation techniques (TMS, tDCS, tRNS, tACS, EEG feedback) and invasive brain implantation techniques.
16. **Prof Ted Ruffman (tedr@psy.otago.ac.nz)** - Social understanding in infants, children and in young and older adults; whether emotion recognition, understanding of social gaffes, and the ability to detect a lie deteriorate in older adulthood; gambling behaviour in older adults.
17. **Assoc Prof Phil Sheard (phil.sheard@otago.ac.nz)** - sarcopenia, the age-related loss of muscle mass and strength that has profound implications for the elderly. He is specifically interested in the role of the motor nerve terminal because progressive withdrawal of the motor nerve from the muscle fibre seems to be a conspicuous feature of elderly muscle. He is currently examining age-related changes to the neuromuscular junction with a view to using this information to establish whether motor nerve withdrawal is a cause of muscle fibre death, or a consequence of it. Associate Professor Sheard uses electrophysiology, electron microscopy, confocal microscopy, fluorescence and transmitted light microscopy, histochemistry, immunohistochemistry, and anterograde and retrograde cell tracing techniques.
18. **Prof Paul Smith (paul.smith@otago.ac.nz)** - Vestibular and auditory systems; Vestibular dysfunction and tinnitus; Effects of vestibular damage on the hippocampus; effects of cannabis on the brain; and applications of statistics to pharmacology. The effects of vestibular and auditory damage on the brainstem vestibular and cochlear nuclei, and other areas of the CNS such as the cerebellum and medial temporal lobe.
19. **Prof Warren Tate (warren.tate@otago.ac.nz)** - Understanding protein synthesis and, in particular, decoding and recoding mechanisms on the ribosome at stop signals; molecular mechanisms of mammalian memory and how they are impaired in human neurological diseases, particularly Alzheimer's.

20. **Assoc Prof Joanna Williams (joanna.williams@otago.ac.nz)** - Understanding the molecular steps involved in memory formation, maintenance of memories and identifying how these are perturbed in disease. Expertise in modern molecular biological, bioinformatics and proteomic techniques focused on the regulation of key glutamate receptors and how gene expression is altered in response to memory events.
21. **Assoc Prof Yiwen Zheng (yiwen.zheng@otago.ac.nz)** – understanding the underlying mechanisms of tinnitus and developing target-specific therapies through drugs and brain stimulation techniques. Expertise in a range of biochemical, electrophysiological and behavioural approaches.

University of Otago - Christchurch

22. **Prof Tim Anderson (Tim.Anderson@cdhb.health.nz)** – Human movement and oculomotor disorders, with particular focus on Parkinson’s and Huntington’s disease; Identification of biomarkers, and predictors, of cognitive impairment in Parkinson’s disease. Identification and treatment of mild cognitive impairment as a pre-Alzheimer’s state.
23. **Dr Tracy Melzer (tracy.melzer@nzbr.org)** – Brain development and other neurological conditions, including Parkinson’s disease. Expertise in MRI.

University of Canterbury

24. **Prof John Dalrymple-Alford (jc.dalrymple.alford@gmail.com)** - Neuropsychology, including disorders of memory; neurodegenerative disorders; recovery of function after brain damage; Behavioural Neuroscience, including animal models of the effects of brain damage in humans; neural transplants; hippocampal system function; enriched environments; Behavioural pharmacology.
25. **Prof Tim David (tim.david@canterbury.ac.nz)** - Mathematical and numerical models of cerebral autoregulation, neurovascular coupling, and cardiovascular blood flow utilising mathematical analysis and large high performance computing techniques.

University of Auckland

26. **Dr Monica Acosta (m.acosta@auckland.ac.nz)** – animal models of retinal degeneration and brain pathologies associated with visual problems.
27. **Prof Alan Barber (a.barber@auckland.ac.nz)** - Clinical neurology, stroke specialist. Research interests include the use of advanced neurophysiology and MRI techniques in stroke.
28. **Distinguished Prof Dame Margaret Brimble (m.brimble@auckland.ac.nz)** - Synthesis of novel peptide hormones and proteins especially peptides derived from neurotrophins. Construction of peptide-based drugs engineered to improve pharmaceutical performance. Synthesis of complex bioactive natural products using asymmetric synthesis, heterocyclic chemistry and organocatalysis. Peptide chemistry, with two peptide-based drug candidates now in clinical trials. Synthesis of complex glycopeptides, lipopeptides, labelled peptides, peptidomimetics and long peptides. Rigorous structure determination using nuclear magnetic resonance, mass spectrometry and X-ray crystallography. Synthesis and screening compounds from natural product library using Biobank tissues.
29. **Prof Winston Byblow (w.byblow@auckland.ac.nz)** - Neural control of movement in health and disease, including ways to enhance motor recovery after stroke, and improve movement abilities of people with movement disorders. Expertise in neuroplasticity assessment, functional MRI, noninvasive brain stimulation, electromyography.
30. **Dr Gary Cheung (g.cheung@auckland.ac.nz)** - Community psycho geriatrician. Clinical expertise includes the diagnosis and management of early cognitive disorders. Research interests include clinical education, driving and dementia, advance care planning in dementia, outcome measures and rating scales in old age psychiatry.
31. **Prof Bronwen Connor (b.connor@auckland.ac.nz)** - Gene therapy for Parkinson’s disease and Huntington’s disease; development of stem cell replacement therapy for Parkinson’s disease,

- Huntington's disease and stroke; identification of novel agents for the treatment of depression. Biological function and role of neural stem cells in the adult brain, and the response of neural stem cells to brain injury or disease. Somatic cell reprogramming of adult human fibroblasts to produce neural precursor cells for disease modelling, drug-screening and cell replacement strategies.
32. **Prof Garth Cooper (g.cooper@auckland.ac.nz)** - Discovery of novel peptide hormones and proteins, detailed functional analysis of purified proteins in cellular and whole animal models and human systems. Construction of peptide-based drugs and development of proteins with functions engineered to improve pharmaceutical performance. Defining new drugs and drug targets, based upon the identification of new proteins and physiological processes. The metabolic basis and experimental therapeutics of Alzheimer's disease and Huntington's disease.
 33. **Dr Sarah Cullum (sarah.cullum@auckland.ac.nz)** – geriatric psychiatrist with experience in cognitive assessment and dementia diagnosis, management and prevalence.
 34. **Prof Maurice Curtis (m.curtis@auckland.ac.nz)** - Mechanisms of stem cell proliferation in neurodegenerative diseases. Understanding the regulation of stem/progenitor cell migration in the brain at the molecular and cellular level. Plasticity in the Alzheimer's and Parkinson's brain. Early origins of neurodegenerative diseases with an emphasis on Alzheimer's disease and Parkinson's disease. Deputy Director of the NFNZ Human Brain Bank.
 35. **Prof Mike Dragunow (m.dragunow@auckland.ac.nz)** - Molecular mechanisms of human brain neurodegeneration and repair and development of novel treatments for brain diseases using adult human brain material, tissue microarray, cell culture models (cell lines and primary adult human brain cultures), molecular pharmacology and high-content analysis. Understanding causes of human neurodegeneration and testing and development of new treatment strategies.
 36. **Dr Makarena Dudley (Te Rarawa, Te Aupouri, Ngati Kahu ki Whangaroa) (m.dudley@auckland.ac.nz)** - Clinical psychologist with significant experience working with Traumatic Brain Injury. Research interests include dementia in Māori, and the development of a Māori theory/model of dementia working towards developing an assessment/screening measure for dementia in Māori.
 37. **Distinguished Prof Sir Richard Faull (rlm.faull@auckland.ac.nz)** - Molecular biological and anatomical studies on the chemical changes in the following major neurodegenerative diseases of the human brain – Huntington's disease, Alzheimer's disease, schizophrenia, Parkinson's disease, epilepsy and Motor Neuron disease. Clinical profile and chemical anatomical pathology and genotype in HD to determine whether variations in clinical symptomatology are reflected by variations in the chemical pathology and HD gene. Establishment of a transgenic sheep model of Huntington's disease. Molecular mechanisms and patterns of nerve cell death and repair in neurodegenerative diseases focusing on the role of transcription factors and growth factors, and using *in vitro* cell culture models, and transgenic animal models. Investigations on the potential of various novel methods to treat neurodegenerative diseases including gene therapy techniques (decoy DNA, antisense DNA, peptide nucleic acids), and neurotrophins to prevent neuronal death in neurodegenerative diseases. Neurogenesis in the human brain including whether stem cells in the adult human brain and spinal cord have the ability to proliferate and form new neurons in response to brain injury and disease, pathways of neurogenesis in the human brain, mechanisms involved in the induction of neurogenesis, and whether stem cells have the potential to 'repair' the injured or diseased adult brain and spinal cord.
 38. **Assoc Prof Jian Guan (j.guan@auckland.ac.nz)** - Biological function of insulin-like growth factor-1 and its metabolites in preventing and improving the recovery from acute injuries and in chronic neurological conditions in neonatal, infant, young adult and aging brains. Effects of nutrition on brain development, premature aging and cognitive function; vascular degeneration and remodeling in neurological conditions and recovery. Animal based experiments and models, behavioral testing, neuronal anatomy, neurobiology and pharmacology.
 39. **Prof Ngaire Kerse (n.kerse@auckland.ac.nz)** - Maximising health for older people by studying the pathway from impairment to dependence with a particular interest in the very old and those with dementia in all settings. The LILACS NZ cohort study examines predictors of successful advanced ageing in Māori and non-Māori. A mix of clinical, health services and public health research aims to improve care and outcomes for older people. In the CORE, development and testing of interventions delivering dual cognitive and physical training to prevent progression of MCI is a priority and examining predictors of progression of cognitive decline in the very old. Establishment of the dementia clinics is also a priority.

40. **Prof Ian Kirk (i.kirk@auckland.ac.nz)** - Neural systems involved in memory and attentional processes, and the genetic mechanisms that modulate these systems such as BDNF and COMT. Functional (EEG and fMRI) and structural (DTI) imaging to investigate the temporal and spatial neurodynamics, and the anatomical substrates, of cognitive processes. Atypical processing in a number of disorders including Alzheimer's and Parkinson's disease.
41. **Prof Janusz Lipski (j.lipski@auckland.ac.nz)** - Cellular and molecular mechanisms of neuronal damage in models of Parkinson's disease and stroke. Physiology and pathophysiology of dopaminergic neurons in the Substantia Nigra, and pyramidal neurons in the hippocampus. Cellular effects of neurotoxins, L-DOPA, psychostimulants and TRP channel activation. Neuroprotective role of glutamate transporters and antioxidants. In vitro models (acute brain slices and organotypic slice culture), electrophysiology, calcium imaging, measurement of cell swelling, ROS production, immunocytochemistry/western blots, receptor pharmacology and optogenetics.
42. **Prof Johanna Montgomery (jm.montgomery@auckland.ac.nz)** - Molecular mechanisms that underlie the physiology of excitatory synapses in the brain combining electrophysiology, molecular biology and imaging techniques to investigate how changes in synapse function could underlie developmental disorders such as Autism, and neurodegenerative disorders such as Huntington's Disease and hearing changes.
43. **Prof Suzanne Purdy (sc.purdy@auckland.ac.nz)** - Communication and cognition in adults and children with auditory and neurological dysfunction (including auditory processing disorder, Parkinson's disease, stroke/aphasia and autism). Research areas include speech perception and production, language, affective prosody and auditory processing. Techniques include behavioral assessment of cognition, perception and wellbeing and electrophysiological evaluation of auditory and language processing function across the lifespan. Recent studies have examined music based (choral singing) therapies for people with neurological disease (aphasia & Parkinson's disease) and emotional word based therapy for people with aphasia.
44. **Assoc Prof Grant Searchfield (g.searchfield@auckland.ac.nz)** - Hearing and deafness, Hearing aids, Auditory cognitive processes and training, Mechanisms of tinnitus assessment and management of tinnitus, Auditory adaptation in response to aging and psychosocial influences. Particular interest in the use of digital technology APPs, multisensory processing, hearing aids and non-invasive brain stimulation for the assessment or management of tinnitus and Neurosensory disorders.
45. **Prof Cathy Stinear (c.stinear@auckland.ac.nz)** - Neuro-rehabilitation, human neurophysiology and neural plasticity focused on translating neuroscience discoveries into clinical practice. Using neurophysiology and neuroimaging tools to accurately predict the potential for motor recovery after stroke for individual patients and testing a range of neuromodulation techniques including TMS for promoting neural plasticity and enhancing the effects of neuro-rehabilitation.
46. **Prof Peter Thorne (pr.thorne@auckland.ac.nz)** - Interest in hearing and deafness. A major focus on the mechanisms, treatment and prevention of sensorineural deafness due to cochlear injury, especially after noise exposure (noise-induced hearing loss) and with age, using animal models and clinical populations. Approaches include molecular, anatomical and electrophysiological techniques to assess the inner ear, and systems to deliver and trial putative otoprotective compounds to the inner ear. Interest in the use of imaging to investigate the cochlea and auditory pathways and have developed techniques to assess cochlear injury using MRI and to the study of inflammatory approaches associated with cochlear implantation using animal models. Now applying these methods to assess the integrity of the blood-labyrinth barrier and development of inflammation in the human inner ear, especially with Meniere's disease. Interest in the development of cochlear innervation and neurodegenerative changes in the auditory system associated with noise exposure and age and how these may relate to the development of cognitive impairment. Collaborate on human population epidemiological and intervention studies around noise-induced hearing loss.
47. **Assoc Prof Lynette Tippett (l.tippett@auckland.ac.nz)** - Understanding the clinical and neuropsychological effects of neurological disorders, and the neural bases of these effects with a strong emphasis on neurodegenerative disorders (particularly Huntington's Disease, Alzheimer's Disease and Motor Neuron Disease). The neural basis of cognitive functions, with a particular focus on memory, expertise (musical and computer-gaming) and effects of expertise on lateralisation of function: Methods include both behavioural and experimental paradigms and neuroimaging techniques (using a combination of DTI, fMRI and EEG).

48. **Prof Russell Snell (r.snell@auckland.ac.nz)** - Molecular mechanisms of simple and complex neurodegenerative disorders, utilising knowledge of causal genes and their pathways to develop model systems to investigate the molecular pathogenesis of these disorders and screen for and test potential therapeutic agents. In particular, Huntington's disease, Alzheimer's disease, and Spinocerebellar ataxia. Genetic candidate screens looking for statistical association with DNA variation and disease in large human cohorts. Molecular methods to dissect disease mechanisms including tissue culture, proteomics, human tissue analysis, metabolomics, RNAseq and animal models (nematode worm model (*C. elegans*) of Alzheimer's disease and sheep models of Huntington's and Alzheimer's disease). Analysis of exome and whole genome sequence with focus on neurodegenerative diseases of unknown cause, and Autism.
49. **Assoc Prof Srdjan Vlajkovic (s.vlajkovic@auckland.ac.nz)** - Cellular and molecular basis of cochlear homeostasis, and mechanisms of sensorineural hearing loss. Oxidative stress and inflammation in the development of noise-induced and age-related hearing loss. Purines (ATP and adenosine) involvement in cochlear physiology and the development of cochlear injury.
50. **Assoc Prof Debbie Young (ds.young@auckland.ac.nz)** - Use of adeno-associated viral (AAV) vector for gene therapy and generation of rodent models of PD, HD, AD, stroke and epilepsy. Development of new gene regulation, cell targeting and gene editing tools for gene therapy. Development of antibody-based cognitive enhancers and therapies using immunisation and passive antibody transfer methods and behavioural testing in rats. Role of brain autoantibodies from human patients in disease pathogenesis and behaviour. Development of novel recombinant proteins for generation of therapeutic antibodies.

Auckland University of Technology

51. **Prof Nicola Kayes (nkayes@aut.ac.nz)** - The intersection between health psychology and rehabilitation, challenging conventional rehabilitation practice through the development of innovative strategies to engaging in rehabilitation. Key research interests include an exploration of factors influencing engagement in rehabilitation (including the role that health professionals play), the development of innovative strategies for facilitating engagement for people with chronic disabling conditions, and the development of outcome measures responsive to the needs of people engaging in the rehabilitation process.
55. **Prof Valery Feigin (valery.feigin@aut.ac.nz)** - Stroke and Traumatic Brain Injury prevention, epidemiology and treatment/rehabilitation; neuroepidemiology
56. **Prof Denise Taylor (denise.taylor@aut.ac.nz)** - Neurological rehabilitation and health of older adults, research and implementation work based on ideas of population health to improve the health of large populations of people including the importance of economic evaluations alongside clinical trials.

Auckland District Health Board

57. **Dr Richard Roxburgh (RichardR@adhb.govt.nz)** - Neurologist with expertise in Neurogenetics and an interest in Huntington's disease and neuromuscular disorders.
58. **Dr Phil Wood (mail@thememoryclinic.co.nz)** - Geriatric medicine specialist with an interest in mild cognitive impairment and Alzheimer's disease.

BRNZ Associate Investigators

University of Auckland – Auckland

59. **Prof Suzanne Barker-Collo (s.barker-collo@auckland.ac.nz)** - Clinical neuropsychology with interest in traumatic brain injury neuropsychological assessment and rehabilitation, post-stroke cognition and mood.
60. **Dr Erin Cawston (e.cawston@auckland.ac.nz)** – primary field of research involves the molecular

pharmacology of G-protein coupled receptors (GPCR). Erin's research to date has involved various aspects of GPCR regulation from ligand stimulation, signalling and trafficking. Additionally she has studied various family A GPCRs and gained important insights related to their diversity.

61. **Dr Andrea Kwakowsky (a.kwakowsy@auckland.ac.nz)** - principal interest is in the relationship of the GABAergic system in the aging brain and in Alzheimer's disease
62. **Dr Simon O'Carroll (s.ocarroll@auckland.ac.nz)** - Simon's primary area of interest is in neuroinflammation, the blood brain barrier (BBB) and systemic inflammation and cognitive decline.
63. **Prof Cris Print (c.print@auckland.ac.nz)** - Use of bioinformatics to improve our understanding of pathology. Bringing bioinformatic information together with clinicopathological information and traditional cell biology/transgenic studies.
64. **Assoc Prof Henry Waldvogel (h.waldvogel@auckland.ac.nz)** - Chemical neuroanatomy of the human brain and changes that occur in neurodegenerative diseases particularly in Huntington's, Parkinson's, Motor Neuron and Alzheimer's disease; major interest in the inhibitory neurotransmitter receptors GABA_A GABA_B and glycine receptors and their associated proteins. Studies at both the regional and cellular level with high resolution light and confocal laser scanning microscopy. Animal models of Huntington's disease including the transgenic sheep model.
65. **Dr Catherine Morgan (c.morgan@auckland.ac.nz)** is a medical physicist with experience in MRI research, including pulse sequence programming, protocol optimisation, image post-processing, and image analysis. Currently focused on developing novel imaging methods to study Alzheimer's disease and is part of BRNZ's study of mild cognitive impairment and early Alzheimer's.

University of Otago - Dunedin

66. **Prof Michelle Glass (hod.pharmacology@otago.ac.nz)** - The expression, function and molecular biology of the cannabinoid receptors, and their potential role in treatment of neurodegenerative diseases such as Huntington's disease and Parkinson's disease.
67. **Dr Ailsa McGregor (ailsa.mcgregor@otago.ac.nz)** – neurodegenerative diseases, neuroprotection and repair, in particular the development of disease models with clinically relevant endpoints for investigating potential therapies. Ailsa's research focuses on pharmacological enhancement of motor recovery after stroke and cholinergic dysfunction in Huntington's Disease and vascular dementia.
68. **Dr Toni Pitcher (toni.pitcher@nzbr.org)** - MRI in PD, saccadic eye movement deficits in PD, pharmacoepidemiology, genetic risk factors in PD
69. **Dr Moana Theodore (Ngāpuhi, Te Arawa) (moana.theodore@otago.ac.nz)** – Lifecourse research, with particular interest in Effective interventions (e.g. quality kaupapa Māori early life and whānau programming) leading to improved outcomes (e.g. health) later in life for tamariki (children). Tools to measure Māori psychological constructs. Interface research approach between mātauranga Māori and Western science.

Auckland District Health Board

70. **Assoc Prof Barry Snow (BSnow@adhb.govt.nz)** - Neurologist specialising in movement disorders such as Parkinson's disease.
71. **Dr Ed Mee (EdwardM@adhb.govt.nz)** - Adult neurosurgery including cerebral vascular disease, brain tumours, epilepsy and trigeminal neuralgia. Particular interest in cervical radiculopathy and lumbar disc disease.

Auckland University of Technology

72. **Dr Rita Krishnamurthi (rita.krishnamurthi@aut.ac.nz)** - Stroke epidemiology, stroke and NCD prevention, health promotion in high risk communities, dementia epidemiology, and prevention.