MARCH 2015

The HOPE Foundation for Research on Ageing

Preparing New Zealand for an Ageing Future

Dr Maree Todd,
Clinical Director,
Older People's Health,
Auckland District Health Board.
Chair of the Foundation

To be a researcher one needs to have numerous qualities. These are much the same for those who support research.

One needs opportunity and encouragement. Nurturing an enquiring mind and giving a young student an early taste of research may start them on their research journey. Our summer studentships do this and we have just heard the presentations from two enthusiastic young people at our combined presentation session with the New Zealand Association of Gerontology.

For our donors these scholarships also give an opportunity for an affordable contribution and a meaningful glimpse into what can be achieved. The recommendations from this years students will meaningfully improve the lives of older people having treatment for cancer and entering residential care.

Secondly one needs tenacity. It is rare for a researcher to have a major "Eureka" moment in their careers. One has an idea, then tests it, proves it wrong, but in that process generates more ideas. Proving something does not work is equally valid as the big new breakthrough.

However researchers need to be tenacious as the funding for research is variable, contestable and hard to get. Not only because the research dollar is unevenly spread. If you are working in one of the less "sexy areas" or "emotionally appealing" areas it is even harder.

Ageing research is one of these areas, and yet the need is very high. Not only that we will all age and are likely to benefit from innovations in this area. We hope you will continue to support us as we fund raise, support and advocate in this area.

You need to be in the game to make a difference and be prepared to continue on for a long time to see meaningful progress. Having good mentors is essential and our supporters and the Hope Foundation play a role here also.

You need to have the ability to collaborate and share ideas. Our partnership with the New Zealand Association of Gerontology and the Selwyn Foundation allows us to do more together than separately.

For our researchers we will be repeating the very successful knowledge exchange to allow them to develop new research collaborations.

I ask you to consider your networks and opportunities to engage others in our cause, where ever they may be in New Zealand. They might just need the opportunity and encouragement to help us in a shared vision to help prepare New Zealand for an ageing future.

Karen Andersen Yates,
Chair, Friends of the Foundation

It is a pleasure to be able to serve the HOPE Foundation, on the Friends Committee, in my new role as chairperson.

I have been a member of Friends of the HOPE Foundation for a number of years but the impact of the work of the Foundation came to me when I first attended a report back from the summer students' research. These small pieces of research on older people's health, by young people in a well supervised setting contribute to the overall knowledge available to clinicians and policy makers for senior's care and wellbeing.

I am a nurse by profession and found my passion in preventive health working in the community. Enabling people of all ages to keep well and achieve their own potentials has been a large part of my work experience. My other career was psychotherapy, where I worked with trauma, depression, and other issues which prevent satisfying lives.

The Friends committee owes much to Joan Mary Longcroft for the way she established the Friends of the HOPE Foundation. Her energy and vision as well as good business sense set the Friends Committee on a solid path. Carolyn Ward followed as chairperson, working tirelessly for five years in that capacity, to promote interest in and support for the Hope Foundation. The Friends Committee members are senior people who live healthy, satisfying and contributing lives, each processing an enthusiasm to promote the Friends of the HOPE Foundation.

The annual donation for Friends of the HOPE Foundation is now due. Please fill out the renewal form on the back page and post it.

I would strongly encourage you to join in the events that are coming up. Later in the year, you will be informed of fund raising events presently being planned.

Chair: Dr Maree Todd,
PO Box 32082, Devonport, Auckland 0744
Charities Commission No. CC24328

www. hopefoundation.org.nz

Executive Officer: Rex Paddy
Ph Home 09 445-2453
rpaddy@ihug.co.nz

The HOPE Foundation

HOPE-Selwyn

SCHOLARS AND SUMMER STUDENTS CHOSEN FOR 2015

The cornerstone funding from the Selwyn Foundation plus additional grants from Family Trusts have enabled us to extend our grants to researchers in 2015. Specifically this has meant one extra Scholar for the Universities of Auckland and Massey plus for the first time a grant to a University of Canterbury Scholar.

Age-Related neural correlates of autobiographical memory conjunction errors

Aleea Devitt, School of Psychology, University of Auckland

Memory is a constructive process, whereby the individual details comprising a memory are stored in different locations across the brain, and these must be relocated and reintegrated to form a coherent memory at retrieval. This constructive process can leave us vulnerable to memory distortions, such as memory conjunction errors. A conjunction error occurs when details from one memory are incorrectly incorporated into another.

It is well known that as we grow older our memory tends to fade. However, what is less well known is that as we age we become more susceptible to making memory errors. My previous research has demonstrated that conjunction errors can occur within autobiographical memory (memory for personally experienced life events). In a more recent study, I have found that older adults are more likely to make conjunction errors than younger adults, especially if the erroneous combination of details feels plausible and familiar. My current research uses functional magnetic resonance imaging (fMRI) to better understand the neural correlates of accuracy and errors in autobiographical memory, and how these may be affected by ageing. Age-related reductions in memory accuracy for laboratory stimuli (such as words) can be attributable to neural declines in the medial temporal and frontal lobes; brain regions that play vital roles in reactivating memories, and monitoring these memories for errors. We wish to explore whether these age effects hold true for more complex types of memory such as autobiographical memory.

Effects of fish oil supplementation on cognitive performance in older adults

Alexia Mengelberg,
School of Psychology, Massey University

Nutritional research has shown that most elderly people are not eating enough fish and seafood to reach the recommended 100 mg per day of docosahexaenoic acid (DHA), and at the same time epidemiological research has shown positive associations between fish consumption and both higher scores on cognitive tests and a slower rate in cognitive decline. As well as being important for reducing inflammation and blood-clotting, DHA in particular is crucial for the integrity of neuronal cell membranes, for neuronal cell signalling, as well as providing a protective mechanism against neuro-toxicity. There has been an increase in the use of n-3 PUFA supplementation for the treatment of cognitive and behavioural conditions; however it is still unclear

for which particular conditions and at what stages of those conditions it is most efficacious. The extent to which genetic and environmental factors affect the progression from healthy age-related cognitive functioning to dementia, remains unclear. This research study proposes to conduct a randomized, double-blind, placebo-controlled intervention trial to investigate the effects of a high dose DHA supplement on cognitive performance in older adults with Mild Cognitive Impairment (MCI). Older adults with MCI have a selective memory impairment but with no sign of dementia and a preserved ability to carry out everyday activities. MCI is considered the earliest detectible stage of dementia and consequently this study hopes to contribute to our understanding of the effects of DHA supplementation on memory as well as the potential for using DHA as a preventative treatment for dementia.

The role of PSA-NCAM in age-related neurodegenerative diseases

Helen Murray, Centre for Brain Research, University of Auckland

The research performed by our lab focuses on how the brain reacts to degenerative diseases by mounting a reparative response. One such response is to shift new brain cells into the damaged brain region. To migrate to their new position, new brain cells make a slippery molecule called polysialic acid-neural cell adhesion molecule (PSA-NCAM) which reduces the friction between the cell and its environment and enables efficient migration to the site of repair. Once in place, the cell must remove PSA-NCAM in order to form connections with neighbouring cells and integrate into its new environment.

This removal process has been poorly understood, however recent work by our lab has demonstrated that cells will internalise PSA-NCAM when they receive specific cues from the extracellular matrix (the material surrounding cells in the brain). It was also discovered that this process is inhibited by insulin and insulin-like growth factor 1 (IGF-1), both of which are elevated in the brain in Alzheimer's disease. An inability to remove PSA-NCAM from the cell surface could prevent neurons from maturing and forming the synaptic connections necessary for survival, resulting in cell death. This research will investigate whether PSA-NCAM expression and distribution is altered in degenerated regions of the human Alzheimer's disease brain as well as in other neurodegenerative diseases such as Parkinson's disease and Huntington's disease. This project will help us understand how the process of cell replacement is affected in neurodegenerative diseases and potentially provide new therapeutic targets for treatments to be developed.

n Scholarships for 2015

The needs of vulnerable people during a disaster

Rebecca Hickmott,
Department of Management,
University of Canterbury

An earthquake measuring 7.1 hit the Canterbury region on September 4, 2010. Some Aged and Residential Care (ARC) facilities sustained significant damage and the Canterbury District Health Board (CDHB), which funds nearly all health and disability services, set up an interagency emergency response team to address the needs of vulnerable people with significant health and disability needs who were unable to access support through the usual channels or whose needs were much greater than can be provided for through other support/help agencies. This team was called the Vulnerable Peoples Team (VPT)

On February 2011 the region was again hit by a devastatingly shallow earthquake near the centre of Christchurch with hundreds injured, loss of life and severe damage to infrastructure. Many ARC facilities were badly damaged and several destroyed. Over 600 ARC beds were lost and 500 elderly and disabled people were displaced. The emergency response for vulnerable people was established again but on a much larger scale. The VPT coordinated the care needs, and for some elderly and disabled persons, evacuation and relocation either within Christchurch or to other locations. The response included representatives from a range of different agencies (e.g., Civil Defence, Ministry of Social Development, Police, and the Military), which had to collaborate in order to meet the needs of the vulnerable people.

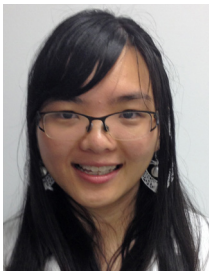
This study focuses on the nature of the communication at the inter-agency interfaces responding to vulnerable people. It proposes to collect narratives from those interacting with operational members of the VPT as they sought to locate and secure the safety of people of concern.

The overarching question for this study is: What can we learn about stabilising inter-agency interfaces from the communication that occurred between the agencies responding to the vulnerable people during the Christchurch earthquakes?

Gene expression profiling in the human subthalamic nucleus in Parkinson's

Jane (Xi Hua) Wu, University of Auckland

Parkinson's disease (PD) is a progressive, neurodegenerative disorder estimated to affect 1-2% in the population over the age of 65. It is one of the most common age-related neurodegenerative disorders in New Zealand. Over the past decade, deep brain stimulation therapy of the subthalamic nucleus has been successful in alleviating symptoms in advanced PD patients. However, the cellular mechanisms and neuro-scientific basis of the surgical procedure are not fully understood. The subthalamic nucleus is considered as the "power-house" of the motor circuitry, playing an extremely important role in PD progression. Abnormal neuronal signaling within this nucleus has been previously demonstrated in many animal models to be related to PD symptoms such as bradykinesia, rigidity and resting tremor. This study intends to define pathological changes within the subthalamic nucleus during PD in order to discover the molecular mechanisms which may play an important role in facilitating the benefits of deep brain stimulation therapy. Early results using immunohistochemistry in the subthalamic nucleus in post-mortem human brain tissue show significant neurochemical changes at the cell receptor level. In particular, the current project using RNA-sequencing technologies intends to elucidate cellular pathways at the genetic level, which lead to the observed neurochemical changes. This discovery would contribute to a better understanding and improved application of deep brain stimulation and other therapies in the future treatment of Parkinson's disease.



Examining the vestibular modulation of hippocampal spatial memory

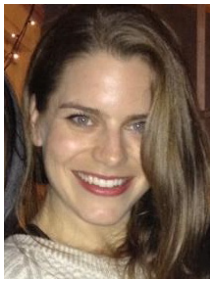
Phillip Aitken,
Department of Pharmacology & Toxicology University of Otago

The vestibular system, located in the inner ear, is the group of sensory organs which detect linear and rotational acceleration. Vestibular dysfunction affects 35% of adults aged 40 years and older, with an increased incidence in patients suffering from neurodegenerative disease. The vestibular system is also implicated in higher cognitive function. Spatial memory, learning, exploration and object recognition have all been shown to be impaired following damage to the peripheral vestibular system. It is hypothesized that the cognitive dysfunction is due to the loss of sensory input into the hippocampus. Vestibular lesions disrupt several hippocampal processes involved in learning and memory such as place cell firing, theta rhythm and hippocampal field potentials. Vestibular lesions also produce atrophy of the hippocampus in humans, this atrophy is thought to increase the progression of neurodegenerative diseases which also atrophy the hippocampus. Conversely, activation of the vestibular system produces increased hippocampal activity. Currently our understanding of how hippocampal function may be influenced by vestibular information is poor. By examining the electrophysiological and neurochemical effect of vestibular modulation and PPT inactivation in the hippocampus this project will attempt to determine the mechanism by which the vestibular system produces changes in spatial learning and memory.

Thanks to Our Sponsors . . .

The Selwyn Foundation

The Selwyn Foundation is our cornerstone sponsor and currently funds 80% of our activities.
Other sponsors include:
The Maclean Trust
The Monty Fairbrother Charitable Trust
St Joans Trust
TM Hoskings Charitable Trust
The BW and SW Picot Trust
The Friends of the HOPE Foundation



Antioxidant effects of a high cysteine protein supplement

Yanita McLeay, School of Sport & Exercise Science Massey University

Oxidative stress occurs when the body's antioxidant system is unable to remove reactive oxygen species (ROS) at an appropriate rate. Elevated levels of ROS, and associated oxidative stress, is a primary cause of aging and age-related diseases including Alzheimer's disease, age-related macular degeneration, muscle wasting, heart disease and cancer. It may therefore be suggested that increasing antioxidant status throughout life and in the aging population may help prevent these ROS associated diseases. Keratins are animal-based proteins high in the sulphur amino acid cysteine; an important precursor for the intracellular antioxidants glutathione (GSH) and taurine. GSH is involved in both the breakdown and removal ROS and therefore plays a key role in the antioxidant status of the body. Taurine is a non-protein amino acid involved in many processes including antioxidant activity, lipid metabolism, mitochondrial protein synthesis and muscle function.

The primary aim of this doctorate is to determine the effect of a novel proprietary keratin supplement antioxidant status, using casein-based protein as a control. This will be tested using exercise as a model for oxidative stress, both with and without keratin supplementation. Blood and tissue antioxidant status, oxidative stress levels and associated impact on physical work capacity will be tested. The results from this study will have significant applications for enhancement of the health of the aging population and contribute valuable information to the NZ health system for dealing with age-related diseases. Furthermore, this research will set the scene for future researchers to use these preliminary results in the design of projects focused on improving health in the aging population.

HOPE-Selwyn Summer Students 2015

Stumbling blocks for older people in cancer treatment

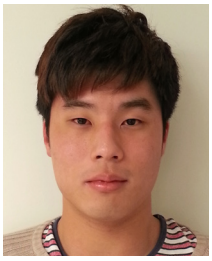
Olivia Hawke, Department of Nursing University of Auckland

Older people are more likely to have complex needs when engaging in cancer treatment. They tend to have comorbidities, geriatric syndromes and additional social suport needs which can be difficult for services to anticipate and address . In addition the physical, financial and emotional toll of cancer treatment can be detrimental to their quality of life, functional ability and adherence to treatment. Access to services for those who live locally can be hindered due to transport issues, financial hardship and social isolation. There are also issues navigating the side effects of cancer treatments, which can impact older peoples quality of life. Despite their over-representation in the cancer population, there is a knowledge gap regarding the experiences of older people undergoing cancer treatment. Due to predictions that the burden of cancer is only going to increase in the older population, research in this area is crucial to providing services that are accessible and address the specific needs of older people. This will ensure every older person gets the maximum benefit from cancer treatment whilst adequately managing other aspects of their lives.

The primary aim of this study is to explore the experiences of older people undergoing cancer treatment. Objectives are:

1. To identify factors that impact on the experiences of older people undergoing cancer treatment.

2. To guide cancer services to make adjustments in order to better cater for the needs of this older population



Residential Aged Care

Bernard Kim, Freemason's Department of Geriatric Medicine, University of Ak

The aging population of New Zealand presents many challenges to health professionals, the elderly themselves and ultimately to society as a whole. Although many older people remain independent in activities of daily living, and the proportion of older people living in residential aged care (RAC) is falling, the rise in total numbers of older people projected to occur in New Zealand will result in a large increase in RAC use in the next 20 years. The increased numbers of people who will need this service has meant that interventions are sometimes placed which try to reduce or delay entry into an RAC. It has recently been shown that there is a period of health-related instability which precedes (indeed precipitates) entry into RAC. However, the literature on avoidance/ delay in RAC entry is complex and contradictory, and there has been no attempt to investigate the perceptions of older peoples themselves (or their family/whanau/carers) in terms of what, if any, interventions they feel might be beneficial in this regard.

BECOME A FRIEND OF THE HOPE FOUNDATION

☐ Yes I would like to become a Friend of the HOPE Foundation and donate $25 per year as an individual or $40 per family per year.

Name: ..... Email: .....

Address: .....

I enclose my cheque made out to the HOPE Foundation

Mail cheque to: The HOPE Foundation PO Box 32082 Devonport Auckland 0744.

If you wish to make a donation by Direct Deposit using your online banking facility our bank account number is:
060201 0030580 00
Please include your name and phone number in the detail which appears on our statement and email your address details to rpaddy@ihug.co.nz so that we can issue a receipt.

Charities Commission No. CC24328. All donations over $5 are tax deductible and receipts will be issued.
In accordance with the Privacy Act your personal information will only be used for the purposes of the HOPE Foundation for Research on Ageing.