

# Research Award Highlights



Auckland Medical  
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# Scholarship and fellowship highlights

## DAVIS & CARR SENIOR RESEARCH FELLOWSHIP

### Dr Peter Freestone

Department of Physiology,  
University of Auckland



Parkinson's disease is a particularly cruel disorder. It impacts your movement and mobility and even the ability to interact socially. Investigating why one section of the brain deteriorates and how to combat the condition has been a 10-year quest for emerging leader in biomedical research, Dr Peter Freestone. He is pioneering the use of cutting edge technology, called optogenetics, to improve the understanding of what happens to the brain of someone with Parkinson's. Optogenetics is a relatively new technique in neuroscience, involving the use of light to activate single neurons within a tightly interconnected network, and allows a very high level of precision when studying brain function. His research aims to deepen the understanding of what changes in the Parkinson's brain and identify more effective therapies to improve the lives of those living with the disease.

## DAVID & CASSIE ANDERSON POSTDOCTORAL FELLOWSHIP

### Dr Sarah Stewart

Department of Medicine,  
University of Auckland



Dr Sarah Stewart aims to develop an ultrasound screening programme that will detect the deposition of urate crystals in the joints of people before they show any symptoms of gout, enabling clinicians to treat the disease before it becomes problematic. For the 20% of adults who struggle with the pain of gout every day, Dr Stewart's research has the potential to prevent the development of gout and the associated chronic symptoms that can be debilitating and disabling for so many.

## POSTDOCTORAL FELLOWSHIP

### Dr Catherine Tsai

Department of Molecular Medicine  
and Pathology, University of Auckland



Vaccines remain the most cost-effective and feasible means of infectious disease control. Dr Tsai will test and further develop novel, easily deliverable (via the nose!) food-grade vaccines for diseases including tuberculosis (TB), flu, gonorrhoea, and colorectal cancer. In the case of TB, as many as one in three people are infected, non-symptomatic carriers of the tuberculosis-causing bacterium. No current vaccine exists for TB so using this system to develop effective, safe, and cheap vaccines will have wide-reaching local and global benefits.

# Doctoral Scholarships



## Zoe Woolf

Inaugural recipient of the Helen Goodwin Doctoral Scholarship

Zoe Woolf is a Doctoral student in the Department of Pharmacology and Clinical Pharmacology, University of Auckland. She studies glioblastoma multiforme (GBM), the most common and aggressive brain tumour in adults. GBM carries a dismal mean survival period of only 15 months. Zoe's project investigates the roles of immune cells in GBM to find more targeted therapies to save lives. There have been numerous advances in recent decades to improve disease management and treatments, but aggressive cancers such as GBM remain incurable. Given the rapid progression of these tumours, there is an urgent need for the development of successful treatments for glioblastoma multiforme.



## Dr Bashar Matti

Dr Bashar Matti is a Surgical Fellow and Doctoral student in the Department of Surgery, University of Auckland. Prostate cancer is the most diagnosed cancer in New Zealand. Bashar's project will investigate the patterns of Prostate Specific Antigen (PSA) testing in New Zealand to establish ethnicity specific, age-based reference values for PSA results to create a New Zealand specific prostate cancer risk calculator. Especially notable is that his work will explore the ethnic and socioeconomic disparities in cancer screening. This will be invaluable for patients and their health providers to better understand their risk of harbouring cancer. This project is the first of its kind in Australasia and will positively impact the quality of care that New Zealand men receive.

## Molly Abraham

Molly Abraham is a Doctoral student in the Department of Physiology, University of Auckland. Molly's research will provide a novel insight into the role of the molecule hyaluronan in normal brain function. Autism spectrum disorder (ASD) is one of many diseases in which hyaluron is predicted to play a role. ASD affects approximately 40,000 New Zealanders, and can significantly impair social, occupational, and other important aspects of daily life. Her work will investigate whether disruption of hyaluronan and the extracellular matrix (scaffolding around brain cells) contributes to various neurodevelopmental disorders like Autism spectrum disorder, and whether hyaluron is a target for disruption as a potential therapeutic strategy for neurological disorders.



## Joyce Mathan

Joyce Mathan is an Optometrist and Doctoral student in the Department of Ophthalmology, University of Auckland. Keratoconus is a potentially blinding disease of the cornea which has been shown to be more common in those with Down syndrome, individuals who are already burdened with multiple disabilities. Further, New Zealand has among the highest global proportions of corneal transplants for treatment of keratoconus in both general and paediatric populations. To reduce the burden of vision related impairment and the need for donor corneas for transplants for all keratoconus patients, the aim of Joyce's project is to introduce a screening and treatment initiative in New Zealand, tailored to the unique needs of those with Down syndrome. By preserving vision, there is the opportunity to preserve the unique potential and abilities of those with Down Syndrome.



# Researchers say...



**"Funding provided by the AMRF is nothing short of essential to allow me to do this work."**

**Dr Matt Glasgow**

Liggins Institute, The University of Auckland, studying Social and Economic Costs of High Blood Sugar in Newborn Babies.



**"I'm extremely grateful to the charitable donors who have made this work possible, and I hope they, and their loved ones, will benefit from my work."**

**Dr Tim Angeli**

Auckland Bioengineering Institute, studying Diagnosing digestive disorders



**"This fellowship is so important because it has allowed me to come home and use my skills to help youth at-risk here in New Zealand."**

**Associate Prof Sarah Hetrick**

Department of Psychological Medicine, The University of Auckland, studying A Smartphone App To Reduce Teen Self Harm

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