



Auckland Medical
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Early career researcher investigates post-op recovery in older patients

Older people who have elective abdominal surgery are informed of the long-term impacts and recovery outcomes of invasive surgery. In an emergency, however, there is little time before deciding which level of surgery is right for them. Dr Brittany Park wants to change that.



Dr Brittany Park with AMRF Board member Mr Peter Goodfellow

The House Officer at Middlemore Hospital, Te Whatu Ora Counties Manukau, has been awarded an AMRF Douglas Goodfellow Medical Research Fellowship to look at the health and mobility of people 65 years and over, before and after an emergency laparotomy to assist patients in the future.

"An emergency laparotomy refers to when the surgeons make a midline cut in the abdomen, to access the abdominal contents.

"It's bigger than keyhole surgery, it is a much bigger operation, and recovery takes longer," she explains.

It is estimated that each year one in 10 of the 2,000 New Zealanders aged 70+ that undergo an emergency laparotomy will die following their operation, a rate twice that of younger adults. However the impact of surgery on those who survive is less understood. So Brittany is conducting research

using pre- and post-op health criteria to better inform patients of likely outcomes.

Sue Brewster, AMRF's executive director, says, "We are so fortunate to be able to support Brittany's work, this award adds to the legacy of the Goodfellow family's long history with AMRF and medical research.

"And with an aging population comes a growing number of people who may need this

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SURGERY IN THE 21ST CENTURY: COMING TO A THEATRE NEAR YOU

Save the date - 18th April 2023, 7 pm in the AMRF Auditorium at the University of Auckland Medical School, 85 Park Road, Grafton

Professor Jennifer Weller will present her 10+ years of research on how simulating life-like situations in operating theatres has helped to minimise and eliminate hundreds of undetected patient safety risks.

We'll also hear from Dr Tim Angeli-Gordon on the use of a new, non-invasive technology to measure electric changes in the stomach to improve diagnosis and treatment of inadequately studied gastro-intestinal diseases and disorders.

To join us, simply register your interest by emailing events@medicalresearch.org.nz or phone 09 923 1701.



Striding along the research pathway

Every year your support helps our young, talented researchers stride further along the career pathway of their choice. We were delighted to be able extend this support by increasing our scholarship stipend at the end of last year, ensuring we keep up with inflation and our researchers can continue in their studies.



Bronwyn Riley

Dept of Physiology,
The University of Auckland

AMRF Doctoral Scholarship

THE TAIL STRIATUM IN PARKINSON'S DISEASE

I am really privileged to be a recipient of an AMRF doctoral scholarship and, in memory of my grandfather, Emeritus Professor John Gavin, I am focusing on Parkinson's disease.

I'm part of a laboratory group looking at the tail striatum (a recently recognised region of the brain) and links to impaired sensor perception experienced by those with Parkinson's.

These non-motor symptoms can be disruptive and distressing.

They are exhibited as vivid, visual hallucinations in up to 75% of patients and, less frequently, auditory hallucinations usually described as non-verbal muffled sounds.

What we do know is that the level of dopamine in the tail striatum determines how responsive it is to sensory input and in Parkinson's disease, dopamine is depleted – therefore, neurons respond to input abnormally. So my research will help determine how dopamine availability alters the response of tail striatum neurons to what we see, touch, smell, taste or hear in the different cell types and distinct regions within the tail striatum.

This scholarship enables me to continue in my quest to lessen the impact of Parkinson's on the 10,000+ New Zealanders and their families who deal with this debilitating disease on a daily basis.



Samuel James

Dept of Physiology,
The University of Auckland

Doctoral Scholarship supported by the Hugh Green Fund

NEW THERAPIES FOR DIABETIC HEART DISEASE

This scholarship supports me to focus solely on my PhD research: investigating the causes of diabetic heart failure and identifying novel treatment targets to test new therapies.

My lab group made an exciting discovery recently in that the diabetic heart handles glucose sugar differently from the normal heart.

My study will characterise the disturbances in these molecular pathways using heart samples from a pre-clinical in vivo model of diabetes and using cultured heart cells.

Gene therapy will be used to test the therapeutic potential of

targeting this pathway in an in vivo model of type 2 diabetes.

I am so thankful to the Hugh Green Diabetes Fund for helping me work towards my overall goal of generating new knowledge on the mechanisms of diabetic heart disease and to discover novel treatment options for a disease where there is currently no viable therapy.

***Read about
Dr Renita Martis's
new AMRF
fellowship
on page 4***

procedure – therefore it's imperative to understand its impact."

Brittany has so far recruited 40 patients through Middlemore, and will track their recovery at intervals over the first year after their operation.

"The combination of both being unwell to the point that you need major surgery and then having that operation are both big things to recover from. And the process is not that you wake up and you're ready to go home," she points out.

"Some older patients need assistance before surgery, and sometimes they won't get back to even that level of independence, they might even be discharged to a nursing facility."

Brittany hopes her research will help quantify the likelihood of recovery for patients based on their level of mobility and independence pre-surgery.

She and her research team have adapted a frailty test currently



Dr Brittany Park with her mother, Zaneta Park, and step-father, Mike Tate, at the 2022 AMRF Research Awards

The example she gives is a patient who has bowel reconstruction after removing cancer. The recovery process for reconstruction might be a lot longer than creating a stoma, where a part of the bowel is brought up to the abdominal skin surface for waste collection.

"The actual recovery from the stoma operation is probably less intense but the patient then suddenly has to learn how to look after a stoma. Or the surgeon might be guided, based on the frailty test results, to try a

that age is only one factor, as two 80-year-olds could have completely different lifestyles to start with. One might walk their dog every day, another may already have additional health needs.

"When I was a fourth year medical student, one of the projects I did involved chatting with patients after the operation. It was eye opening to see the impacts for these patients following the surgery, and inspired me to want to do this project.

"We are collecting patient data, through the frailty index, creating a set of measures, and then looking at those and countering them with the outcomes.

"It will include the discharge destination, which is a really important one – how many of these patients went from being at home to ending up in a nursing facility? It will better inform the patient.

Those people who take part in the study will have a phone interview at one month and at six months – as the project progresses they will also have a one-year follow up.

"A lot of work involves data, but it's that real human element that will really transform what we do."

"It was eye opening for me to see the impacts for these patients following the surgery, and inspired me to want to do this project."

used in the elective setting to be more appropriate for emergency patients.

"It is about providing informed consent for these patients, so you're able to give them a more accurate indication of what possibly might happen following this type of operation. If you have a better baseline to start with, then you are more likely to have an easier recovery process and maybe have less complications. Where possible, patients need to be offered alternatives."

more conservative, less invasive treatment option first – although this is not always possible in an emergency situation.

"If you're 80, for example, do you want a better chance of living for a longer period of time if we do the major operation but there's a higher risk that you might have complications? Or do you want to focus on your quality of life and we try to make you as comfortable as possible?"

She is cognisant, however,

Investigating secondary eye disease following surgery

Being awarded this AMRF Postdoctoral fellowship means the world to me!

This funding makes it possible for me to continue in my much-needed research into therapies for secondary eye disease, along with enabling my journey in my chosen vocation.

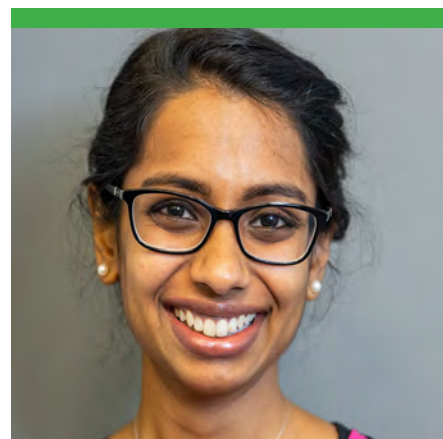
With an increasing ageing and diabetic population, the number of New Zealanders with eye diseases requiring surgery is escalating.

My research investigates the link between secondary eye diseases after two common ocular surgeries performed in NZ - cataract surgery, in which the cloudy lens is replaced by an artificial one, and vitrectomy in which the vitreous humour, a clear gel-like fluid that fills the back of the eye, is removed and replaced with a saline solution. Strong clinical evidence demonstrates that removal of the lens or vitreous accelerates the progression of secondary eye

diseases, resulting in the need for further surgery within 2-5 years. In the absence of preventative treatments, my research addresses the urgent need to better understand the mechanisms that result in diseases following the removal of the lens or vitreous and create new therapeutic strategies to maintain ocular health post-surgery.

This fellowship will open so many doors for me to progress my career as an optometrist and vision scientist.

I will use the next two years to strengthen my research profile; average 3-4 publications a year; develop collaborations; attend international conferences and



Dr Renita Martis

laboratories (e.g. Washington University, St Louis) and work towards my goal of developing an independent area of research in the ageing eye. In parallel, I will develop my teaching profile by supervising in the optometry clinic and by mentoring student projects. I plan to build on this by teaching in the Physiology Capstone Course which is also a great opportunity to recruit future post-graduate students to build my own laboratory group.



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