Annual Report 2025

Auckland Medical Research Foundation

Funding progress | since 1955

Celebrating 70 years
Empowering Researchers
Transforming Lives

Funding progress

Read more on page 35

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MEDICAL COMMITTEE

2025 Medical Committee Members

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Dr Jay Gong BPharm(Hons), MClinPharm, PhD
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GUEST MEMBERS

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Dr Marie-Claire Smith BHSc, PhD
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Dr Cervantée Wild, BA, BHSc (Hons), PhD

AMRF TEAM

Ms Suzanne Brewster **Executive Director**
Ms Suzanne Taylor **Finance Manager**
Dr Hannah Gibbons BSc (Hons), PhD **Research Programme Manager**
Dr Jessica Costa BS, PhD **Development Manager**
Ms Greta Bachmann-Fuller **Administrator**

Charity Services Registration Number: CC22674
IRD Number: 067-290-992

AMRF REGISTERED OFFICE

L3, 81 Grafton Rd, Grafton, Auckland 1010
PO Box 110139, Auckland Hospital, Auckland 1148

Tel +64 9 923 1701
www.medicalresearch.org.nz

"Progress starts with generosity and your giving enables discoveries that keep us moving forward, momentum that will shape the future of our health for generations to come."

Richard Taylor | President

PRESIDENT'S REPORT

A word from our President, Richard Taylor

In 2025, we proudly marked our 70th year of funding medical discovery and progress. This defining milestone was an opportunity not only to celebrate our rich history, but also to showcase the exceptional research community that continues to drive innovation and improve health outcomes.

THANKS TO the enduring generosity of you, our supporters, we were able to award over $5 million in research grants this year. This investment represents a meaningful step forward in our mission and reinforces our commitment to enabling world-class medical research across the region.

Our 70th anniversary was celebrated throughout the year with an outstanding programme of research presentations, highlighting the depth and diversity of talent within our community. A particular highlight was the return of two distinguished international researchers – Professor Donna Rose Addis from Canada, a renowned neuroscientist specialising in neuroimaging, and Professor Robert Gourdie from the United States, an acclaimed cell biologist focusing on cardiovascular and biotech innovations. Their contributions helped make this celebratory year truly memorable and inspiring.

A standout moment of the year was our 70th Anniversary Gala, which brought together supporters and researchers in a remarkable evening of celebration and purpose. We are delighted to share the event raised over $1 million for our Futures Fellowship Fund. This fund will play a pivotal role in supporting mid-career researchers, ensuring that promising scientific careers can continue to flourish at critical stages.

On page 13, you will find the inspiring stories of this year's inaugural career advancement fellowship recipients, Dr Molly Swanson and Dr Priyanka Agarwal. Each year, the calibre, passion, and dedication of those we support is second-to-none, but we remain mindful of the many more who could benefit from funding as we endeavour to grow our impact.

This year was also marked by a profound loss for our organisation when in December, our much loved and valued Finance Manager, Sue Taylor, passed away unexpectedly. Sue's commitment, professionalism, and warmth left a lasting impression on all who had the privilege of working with her. Her contribution to our Foundation was immense, and she is deeply missed by the entire team.

As we conclude this landmark year – my final year as President after seven-and-a-half years in the role and more than two decades on the Board – I welcome Katie Noble as incoming President and extend my sincere appreciation to Sue Brewster and her team for their continued dedication as the engine room of AMRF; to my fellow Trustees for their leadership and guidance; and to our Medical Committee members for their expertise and commitment to research excellence.

My final thanks is to you – our magnificent donors and loyal supporters.

Richard Taylor
AMRF President

MEDICAL COMMITTEE REPORT

A word from our Chair, Professor Larry Chamley

Now entering my second year as our Medical Committee Chair, I'm pleased to report we've had a very strong year – one highlighted by collaboration, growth, and a deepening commitment to the researchers we serve.

THE BOARD'S decision to increase our research budget to a minimum of $4.5M/year enabled us to launch two important initiatives; 1. The AMRF First Fellowship, supporting graduates who have recently completed their PhD, and 2. The Career Advancement Fellowship, designed for researchers 3 to 5 years post PhD. By continuing to invest in early career researchers, we strengthen the pipeline of future research leaders for Aotearoa New Zealand and reinforce the trust they place in us to support their career development.

Alongside these new initiatives, we remain committed to supporting excellent research across biomedical, bioengineering, clinical, and public and population health disciplines, across all grant types and career stages. The demand for research funding continues to grow, with 291 applications submitted in 2025. We awarded 68 grants, reflecting a success rate of 23.3%, demonstrating our dedication to backing high quality, impactful research. None of these grants would have been possible without the generous gifts from you, our family of supporters.

The awarding of these grants is only possible through the expertise, time, and dedication of our voluntary Medical Committee, who carefully assess each application and recommend the awarded grant. In 2025, we strengthened the breadth of expertise on the Committee by welcoming new members from Auckland University of Technology (AUT), the National Hauora Coalition, and the University of Auckland (UoA). We also introduced development members, pairing them with senior colleagues to support their pathway toward full membership. A full list of Committee members can be found on the inside front cover, but I would like to especially welcome Associate Professor Radilaite Cammock (Public Health, AUT), Dr Alana Cavadino (Epidemiology & Biostatistics, UoA), Dr Jay Gong (Pharmacy, UoA) and Associate Professor Gwyn Lewis (Physiotherapy, AUT) as new full members this year.

We also pause to acknowledge the passing of Associate Professor David Christie, a valued colleague whose contribution to the AMRF spanned over 25 years. David joined as a co-opted member in 1991, later serving as Deputy Chair and as a member of the Board until his retirement in 2016. I was always impressed by his quiet manner, great knowledge and caring approach. He was a role model for the Medical Committee. His quiet wisdom, deep expertise, and commitment to research excellence leaves a lasting legacy.

The Medical Committee offers its heartfelt thanks to the Board of Trustees, with recognition to Richard Taylor for his distinguished leadership in his final year as President, and to the AMRF team, so capably guided by Sue Brewster. Their dedication strengthens the connection between our mission and the impact we strive to achieve. We're especially grateful to Dr Hannah Gibbons, whose thoughtful management of the grants portfolio and steadfast support is fundamental to our work. We were saddened by the untimely death of our Finance Manager Sue Taylor. It was always a pleasure working with Sue who helped with the Board's decision to expand research funding in 2025.

This year, we updated our grant portal to Tahua. It provides us with the flexibility to easily modify parts of the application process, along with strengthened security and support from the Tahua team.

Finally, we extend our heartfelt thanks to our loyal supporters. Your trust and continued generosity fuel the progress that transforms research into real world impact. You make it possible for us to champion discoveries that advance medical progress, and we are deeply grateful for your partnership.

Prof Larry Chamley and Carol Chamley

Professor Larry Chamley
AMRF Medical Committee Chair | Professor, Department of Obstetrics, Gynaecology and Reproductive Sciences, University of Auckland

Achievements at a glance

In 2025, we proudly marked our 70th year of funding medical discovery and progress

$105 million
TOTAL RESEARCH FUNDING AWARDED SINCE 1955

70 years
EMPOWERING RESEARCHERS TRANSFORMING LIVES

$1m raised
TOWARDS THE AMRF FUTURES FELLOWSHIP FUND

Funding highlights for 2025

23%
SUCCESS RATE FROM 291 APPLICATIONS

$5.1m
TOTAL RESEARCH FUNDING AWARDED

68
RESEARCH AWARDS GRANTED

2
SCHOLARSHIPS

30
TRAVEL AWARDS

4
FELLOWSHIPS

15
PROJECTS

17
OTHER GRANTS

"Support from organisations like AMRF allows researchers to pursue questions that may ultimately change clinical practice. It gives us the opportunity to generate evidence that can improve care for mothers and babies, both here in New Zealand and internationally."

Dr Christopher Lear | AMRF funding recipient

Following signals that could save lives: Protecting babies before injury occurs

Dr Christopher Lear
Clinician-scientist | University of Auckland and Auckland City Hospital

Every parent hopes for a safe birth. For most families, labour ends with the arrival of a healthy baby. But for a small number, complications during birth can lead to oxygen deprivation, causing brain injury that may result in lifelong disability or even death. For Dr Christopher Lear, understanding how and why this happens has become a life's work. His motivation is both professional and personal.

AS A MEDICAL student and researcher, Chris became fascinated by the extraordinary adaptations that allow babies to survive the challenges of labour. He was also inspired by the work of his mentors, Professors Laura Bennet and Alistair Gunn, whose discoveries have changed the care of newborns around the world. Yet there was another reason he felt drawn to this field.

"My elder sister has dyspraxia, a developmental disorder, and so the chance to contribute towards understanding the origins of neurodevelopmental disability meant a great deal to me on a personal level."

Today, Chris is a clinician-scientist at the University of Auckland and Auckland City Hospital, combining frontline medical training with a research programme focused on preventing brain injury around the time of birth. His goal is simple: identify babies at risk early enough for clinicians to intervene before permanent injury occurs.

That challenge is more urgent than many people realise.

Around 70 babies in New Zealand each year develop brain injury following oxygen deprivation during birth. The condition, known as hypoxic-ischaemic encephalopathy, can lead to cerebral palsy, developmental disability, learning difficulties and, in the most severe cases, death. Families can face a lifetime of medical, emotional and financial challenges.

For decades, clinicians have relied on fetal heart rate monitoring during labour to determine whether a baby is coping well or beginning to struggle. Yet interpreting those patterns remains surprisingly difficult.

Chris' research has helped challenge long-held assumptions. During his PhD studies, supported by an AMRF Barbara Basham Doctoral Scholarship, he investigated how babies respond to oxygen deprivation and infection before birth. Using sophisticated fetal sheep models that closely mirror human pregnancy and labour, he examined physiological signals generated when a baby comes under stress.

What his team discovered was both surprising and important.

One of Chris' landmark publications challenged traditional explanations for fetal heart rate changes during labour. Rather than supporting widely taught theories that had shaped clinical thinking for generations, the research demonstrated that many of these heart rate patterns are driven by an ancient protective reflex known as the peripheral chemoreflex. This reflex helps direct blood and oxygen to vital organs when oxygen levels begin to fall. The findings have helped reshape understanding of what clinicians are actually seeing when they monitor a baby's heart rate during labour.

"Our research showed that some of the explanations clinicians have relied on for years were incomplete," Chris says, "if we want to identify babies at risk of injury, we first need to understand what these signals truly mean."

His work did not stop there. Another area of focus has been the interaction between oxygen deprivation and high blood glucose levels.

Mothers at risk of premature birth are often treated with antenatal glucocorticoids, medications that can be lifesaving for babies by helping their lungs mature more quickly. However, Chris' research revealed a more complex picture. His studies found that elevated glucose levels associated with these treatments could worsen brain injury when a baby was also exposed to severe oxygen deprivation. The findings challenged assumptions that higher glucose levels might be protective and instead suggested that excess glucose may increase vulnerability to injury under specific circumstances.

One publication in particular represented a significant breakthrough.

In 2025, Chris demonstrated that dexamethasone-induced hyperglycaemia before a period of oxygen deprivation could promote severe cystic injury in the developing brain. Importantly, the research identified hyperglycaemia itself as a key driver of harm. This finding opened new avenues for understanding why some babies experience worse outcomes than others and highlighted glucose control as a potentially important factor in protecting vulnerable newborns.

For families affected by diabetes in pregnancy, the implications could be profound. Current AMRF-funded research is building on these findings by exploring whether high glucose levels during labour increase the risk of brain injury when oxygen deprivation occurs. The project is examining how hyperglycaemia changes a baby's ability to adapt to stress during labour and whether it alters the warning signs clinicians rely on to make decisions.

"We are looking for opportunities to intervene earlier," Chris says. "If we can identify factors that increase risk and recognise those patterns sooner, we have a better chance of preventing injury before it happens."

This commitment to clinical translation is a defining feature of his work.

Chris is not interested in research that remains confined to journals and conferences. He wants discoveries to improve clinical care. His studies have helped identify new fetal heart rate biomarkers, refined understanding of labour physiology, and contributed evidence that is changing clinical practice. In 2026, his key findings of what fetal heart rate patterns represent physiologically have been incorporated into the Royal Australian and New Zealand College of Obstetricians and Gynaecologists teaching that is delivered to 9,000 midwives and obstetricians annually across Australia and New Zealand.

He is also collaborating with clinician-researchers across Finland, Japan and the UK to prove his ideas hold up in human populations, while also exploring artificial intelligence and advanced analytics to develop better tools for predicting fetal compromise during labour.

With his Finnish collaborators, he has also led to the finding and publication that existing fetal heart rate monitoring gives few clues to what is known to be another very high risk to babies brains during labour: oxygen deprivation combined with infection.

Chris says, "We're now taking these observations back to the lab to look for better ways to identify these babies who are at high-risk of brain injury."

Along the way, his contributions have been widely recognised.

He has received numerous awards, including the Vice-Chancellor's Prize for Best Doctoral Thesis, publication excellence awards, and an Editorial Board Fellowship with The Journal of Physiology. Since beginning medical training, he has published more than 50 scientific papers, including many as first or senior author.

"One of the most rewarding aspects of this work is that every improvement in our understanding gives us another opportunity to prevent injury before it happens."

Dr Christopher Lear

Yet the measure of success that matters most remains much simpler. Every improvement in monitoring. Every insight into fetal physiology. Every opportunity to prevent brain injury. Each one means better outcomes for babies and families.

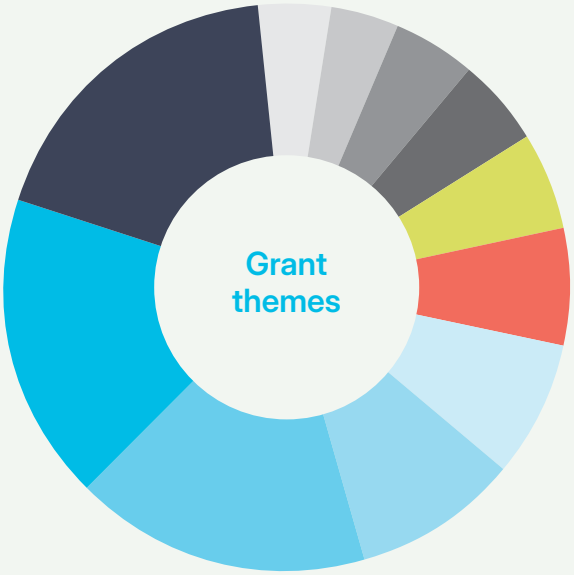
Support from AMRF has played an important role throughout that journey, helping Chris establish himself as an independent researcher while continuing his clinical training. That combination of research and medicine remains central to his vision for the future. "Research gives us the opportunity to ask questions that cannot be answered at the bedside alone," he says. "But the goal is always the same. We want to give every baby the safest possible start to life."

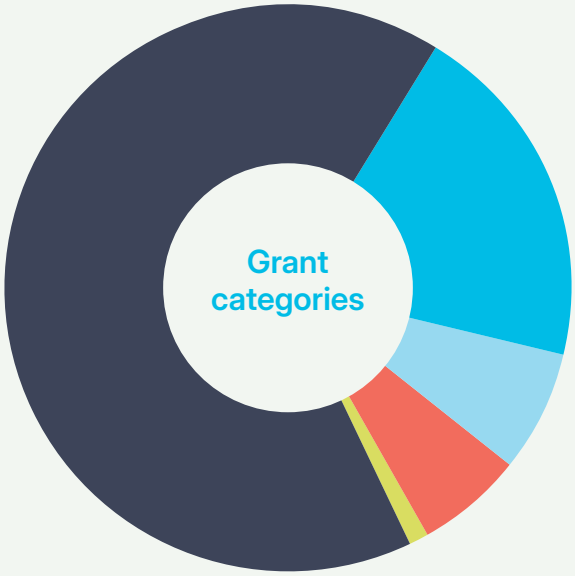
That belief continues to guide his work. Because behind every heart rate trace is a child, a family, and a future worth protecting.

Grants awarded | 2025

> "Having funding through AMRF is crucial to making sure the momentum moves forward."

A/Prof Ghader Bashiri Co-Director, Centre for Anti-microbial Research | University of Auckland





Grant themes

- **Pulmonary, Renal, Nephrology & Gastrointestinal Sciences** **18.47%** [5] $0.94M
- **Neuroscience** **17.62%** [8] $0.90M
- **Cancer** **16.81%** [8] $0.86M
- **Other*** **9.57%** [19] $0.47M
- **Public & Population Heath** **7.57%** [9] $0.39M
- **Sensory Sciences** **6.87%** [2] $0.59M
- **Reproduction, Development, Maternal & Newborn Health** **5.35%** [4] $0.27M
- **Endocrinology, Metabolism & Nutrition** **5.19%** [1] $0.26M
- **Cardiovascular Science** **4.65%** [8] $0.24M
- **Biomedical Engineering** **3.99%** [2] $0.20M
- **Infection & Immunity** **3.90%** [2] $0.20M

* Also includes AMRF Researcher Network Fund, Biomedical Imaging, Cellular and Molecular Biology, Musculo-skeletal Science, and Primary Care

Grant categories

- **Biomedical** **65.85%** [32] $3.35M
- **Clinical** **20.35%** [22] $1.04M
- **Public & Population Health** **7.65%** [10] $0.39M
- **Biomedical Engineering** **6.12%** [4] $0.31M
- **Researcher Network Fund** **0.04%** [1] $2,085

[n] number of grants
$ total value
% **of total expenditure**

Doctoral Scholarships

Josie Tait

THE UNMET NEEDS OF NEW ZEALAND CHILDREN

$159,500 | 3 years 1225002

Mrs Josephine Tait

School of Learning, Development and Professional Practice | University of Auckland

Neurodivergent youth in Aotearoa New Zealand face significant and persistent inequities across the health, education, employment, and justice systems, with Māori, Pacific, and gender diverse young people being disproportionately affected. Further, many neurodivergent young people remain undiagnosed due to systemic barriers. Using data from the Growing Up in New Zealand longitudinal study, this project will investigate disparities in access to services and diagnosis, identify protective and compounding factors across childhood and adolescence, and pinpoint opportunities for early intervention that could improve health and wellbeing outcomes for neurodivergent youth. The findings will fill a significant knowledge gap surrounding undiagnosed neurodivergence and its impact in Aotearoa New Zealand. This research will provide evidence for targeted interventions that could address inequities in access to diagnosis, support, and outcomes. This research will generate actionable evidence to inform policy, early intervention strategies, and service delivery models. By identifying points for timely intervention, the outcomes of this project will highlight strategies to reduce the economic and social costs associated with poor health and wellbeing, educational disengagement, and involvement with the justice system. This study will contribute to systemic change by highlighting service gaps and informing cross-sector approaches that enhance hauora/wellbeing for neurodivergent youth.

MAPPING MACROPHAGE DIVERSITY IN BREAST CANCER

$159,500 | 3 years 1225001

Miss Janneke Grundemann

Auckland Cancer Society Research Centre | University of Auckland

Breast cancer is the most common cancer affecting women worldwide and in New Zealand, representing a significant health burden with ongoing inequities in outcomes. To reduce this burden, we need better ways to predict which early-stage breast cancers are likely to develop into invasive disease, and more personalised treatment options. This is challenging because cancer develops within a complex environment of many different cells. Some immune cells in breast tissue, called macrophages, can help the body defend against cancer, but in some cases, they instead support tumour growth. This project aims to better understand the different types of macrophages in early stages of breast cancer, in people with inherited BRCA1/2 gene variants who have higher risk, and in those with established breast cancer. By mapping where these cells are located and how they interact with nearby cells, we hope to find new signs (biomarkers) that help doctors distinguish low-risk patients from those more likely to develop cancer. We will also study how macrophages influence tumour growth and treatment responses and explore ways to 'retrain' them to restore their cancer-fighting role. Ultimately, this research could lead to new treatment approaches and more confident, personalised decisions for people affected by breast cancer.

Janneke Grundemann

Career Advancement Fellowships

Dr Priyanka Agarwal

A PHARMACOLOGICAL INTERVENTION FOR VENTILATOR INDUCED LUNG INJURY

$590,071 | 4 years | 0.75 FTE 1325001

Dr Priyanka Agarwal
Department of Ophthalmology | University of Auckland

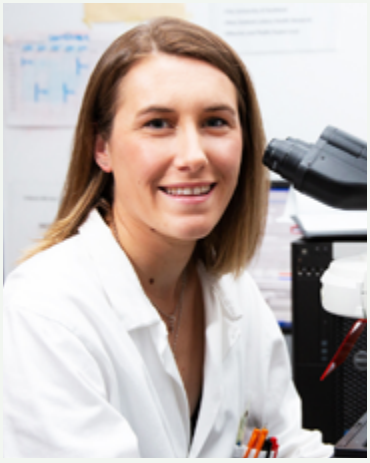
Ventilator support remains a crucial treatment modality for many patients in critical care. Ironically, mechanical ventilation itself can eventually reduce the chances of survival. We have researched a promising molecule in the laboratory that could reduce ventilator induced lung inflammation and injury and improve patient survival. Unfortunately, at present, we have no means to deliver it to the lungs effectively. My research aims to bridge this research gap by working closely with researchers and intensive care clinicians and bring New Zealand's growing capability in biomedical innovation closer to the patients who need it the most. My primary objective is to generate pre-clinical evidence to advance this treatment toward future clinical trials and commercialisation. The potential benefits for New Zealand are substantial as preventing ventilator-induced lung injury would improve patient survival, reduce long-term disability, and ease the burden of healthcare. Moreover, by improving our understanding of lung inflammation and tissue repair, this research could also open the door to new treatments for other respiratory conditions and ensure future pandemic preparedness. Ultimately, this research aims to create a tangible difference for patients and their families – offering new hope, improving recovery, and supporting a healthier future for New Zealanders.

MICROGLIA IN NEURODEGENERATIVE DISEASES

$516,979 | 3 years, 9 months | 0.8 FTE 1325002

Dr Molly Swanson
School of Biological Sciences | University of Auckland

Dr Swanson will lead innovative research into motor neuron disease (MND); a life-limiting condition that causes progressive muscle weakness and currently has no cure. This project focuses on microglia, the brain's immune cells, which normally protect neurons but can shift into harmful states during disease. These toxic states, known as disease-associated microglia (DAMs), are thought to accelerate neuron death in MND. Using advanced stem cell technology, she will recreate these DAM states in the lab and identify the genetic switches, called transcription factors, that drive these toxic DAM states. By turning off these switches with gene-editing tools, the research aims to restore microglia to their healthy, protective state, and improve neuron survival. This work will create a powerful "disease-in-a-dish" model to study MND and pave the way for future therapies targeting DAMs. Because similar microglial changes occur in other neurodegenerative diseases like Alzheimer's and Parkinson's, the findings could have wide-reaching impact. With MND costing New Zealand an estimated $400 million annually, this project offers hope for more effective treatments and positions Aotearoa New Zealand as a leader in neurodegenerative research.



Dr Molly Swanson

Fellowships

Dr Isaac Bernhardt

Douglas Goodfellow Medical Research Fellowship

NEWBORN SCREENING FOR ECHS1 DISEASE IN AOTEAROA

$264,500 | 6 years | 0.5 FTE 1425001

Dr Isaac Bernhardt
Liggins Institute | University of Auckland

Short-chain enoyl-CoA hydratase (SCEH) deficiency is a recently discovered genetic disease that causes potentially fatal brain disease presenting in early childhood. It is rare but is more common in Māori and Pacific people. While it is potentially treatable with a specialised diet and illness plan, most children have suffered permanent neurological injury by the time they are diagnosed. We believe that this could be prevented if treatment could be started before the child has symptoms. All babies in Aotearoa undergo newborn screening with collection of drops of blood onto a filter-paper card at 1-3 days of age, which is tested for a range of rare disorders. However, a suitable screening test for SCEH deficiency is not currently available. The proposed research aims to eventually create this newborn screening test. In this project, we will collect blood and urine samples from people with SCEH deficiency, to develop the screening test. This will include measurement of metabolites (natural chemicals), and direct measurement of SCEH enzyme activity, using mass-spectrometry. Control samples will also be obtained from carrier family members, and healthy unaffected controls. These results will inform the comparison of several possible strategies to detect this disorder by newborn screening.

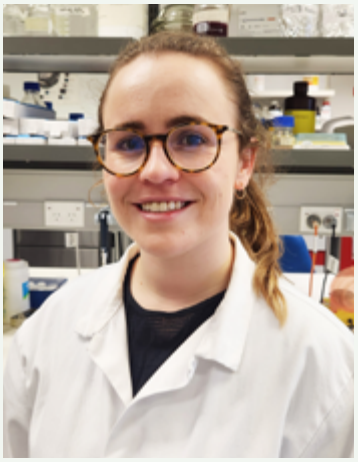
Funded by:
Douglas Goodfellow Charitable Trust

AMRF First Fellowship Edith C. Coan Research Fellowship

TONABERSAT FOR THE TREATMENT OF MILD HYPOXIC ISCHEMIC INJURY $259,776 | 2 years 1325003

Dr Alice McDouall
Department of Physiology | University of Auckland

Oxygen deprivation around the time of birth can cause lasting brain injury, leading to conditions such as cerebral palsy, autism, epilepsy and learning difficulties. These conditions have lifelong consequences for affected children and their families. Despite the known complications of mild oxygen deprivation, there are currently no treatments designed specifically to protect these infants. One process thought to contribute to this injury is the opening of specific channels in brain cells that allow seizure activity and inflammation to spread. Excitingly, my previous research has shown that blocking these channels with a drug called tonabersat can reduce brain injury in neonatal rats. However, it remains unclear when the best time is to give this treatment or whether it can improve long term brain development which I will investigate in a neonatal rat model with this fellowship. The results of this project will provide vital information on how injury progresses and how best to treat brain injury due to mild oxygen deprivation. The findings will directly inform the design of future clinical trials, helping to establish the first targeted treatment for these infants, ultimately bringing us one step closer to preventing lifelong disabilities in babies who have experienced oxygen deprivation at birth.

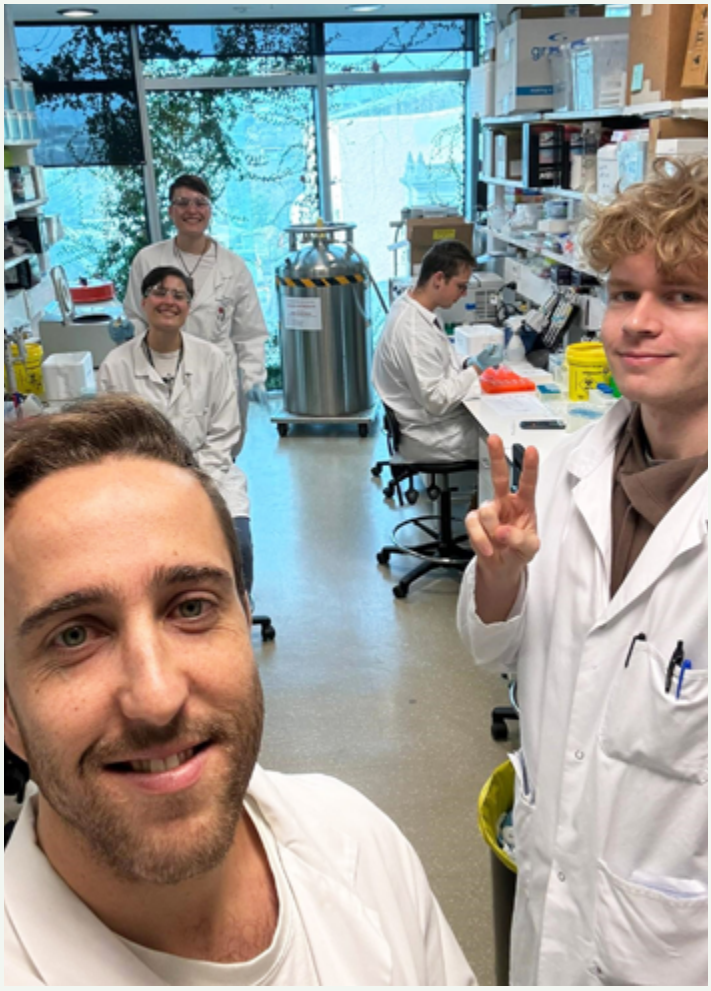


Dr Alice McDouall

Funded by:
Edith C. Coan Trust

perpetual guardian

Projects



A "GENE CREAM" THERAPY FOR EXTREME FRAGILE SKIN CONDITIONS

$200,000 | 20 months 1125003

Dr Hilary Sheppard, A/Prof Paul Harris, Dr Zlatko Kopecki
School of Biological Sciences | University of Auckland

We aim to produce an innovative therapy for people with the rare, yet devastating, fragile skin condition called epidermolysis bullosa (EB). EB is caused by a single defect in genes that create the 'adhesive' that glues skin cells together. Currently there is no permanent cure, just palliative care. We aim to formulate a "gene cream" therapy by combining our state-of-the-art gene editing technology with unique delivery reagents designed to directly penetrate patient skin. This topically applied cream will be designed to correct the defect in patient skin cells and has the potential to provide a simple and potentially long-lived therapy. Although the range of DNA defects that cause EB are broad, this technology can be easily adapted to develop personalised therapies. Our team combines the necessary gene editing, skin engineering, wound healing gel and chemistry expertise to drive this approach towards clinical translation.

Foreground (left to right): **Dr Alex du Rand and Ben Buttle (PhD student)** Background (left to right): **MSc students Jenna and Courtney Masterson and John Hunt (submitted PhD student)**

DELAYED THERAPIES FOR NEONATAL BRAIN INJURY

$199,589 | 2 years 1125008

A/Prof Justin Dean, Dr Petra White
Department of Physiology | University of Auckland

Preterm infants are extremely susceptible to inflammation near birth, which can cause brain injury linked to physical and cognitive disorders. However, exactly how this injury develops remains unclear, and there are no effective treatments. Critically, identifying affected infants and detecting the resulting brain injury takes time. Treatments need to be able to turn the tide for these infants, repairing and restoring their brains. We have devised a three-pronged approach - a treatment trident - repurposing three drugs for treating brain injury in a clinically relevant, delayed timeline. The efficacy of delayed treatment with these agents will be assessed in our very immature rodent model of brain inflammation and impaired brain development. These findings will provide key new knowledge for the future development of clinical strategies to improve neonatal care and child health outcomes.

A/Prof Justin Dean and Dr Petra White at the 2025 Fetal and Neonatal Physiological Society Conference, Rotness Island, Perth, Australia

Projects

Dr Yijun Zhang and Prof Melody Smith

ENVIRONMENTS FOR CHILD HEALTH

$200,000 | 2 years 1125014

Dr Melody Smith, Dr Yijun Zhang, Dr Hyesop Shin, Prof Terryann Clark, Dr Jinfeng Zhao

School of Nursing | University of Auckland

This project looks at how the places where children live, learn, and play affect their health and wellbeing. We know that things like safe streets, green spaces, and good housing can help kids be more active and feel better mentally. But in New Zealand, many children don't get enough physical activity, and mental distress among young people is rising. Our research will combine data from a study that has followed young people since birth with detailed maps of neighbourhood features - such as parks, cycling paths, air quality, and housing conditions - to see how these factors influence health from birth to age 15. We will also look at differences for Māori and other groups to understand equity issues. The goal is to give clear evidence to help design healthier homes and communities. This will support policies that make neighbourhoods safer, greener, and better for children's development. In the long run, this can reduce health problems, improve wellbeing, and create fairer opportunities for all young people in Aotearoa New Zealand.

DIETARY INTERVENTION FOR IBS

$197,468 | 2 years 1125009

Dr Nicola Gillies, Dr Hannah Rapata, Dr Mikaela Law, A/Prof Heidi Staudacher, Dr Rebecca Slykerman, Prof Richard Gearry, A/Prof Andrea Braakhuis, Olivia Young, Karis Gordon

Department of Nutrition | University of Auckland

Irritable Bowel Syndrome (IBS) is a common and debilitating condition characterised by abdominal pain and changes to bowel habit. Almost half of people with IBS also experience anxiety or depression, which drives gut symptom severity, healthcare costs, and declining quality of life. Diet plays a key role in managing IBS, but most strategies focus just on gut symptoms and fail to consider the frequently co-existing mental health concerns. Our research aims to bridge this gap, building on evidence from a pilot trial which showed that the Mediterranean Diet has promise for improving both gut and psychological symptoms. We will conduct a randomised, double-blind, placebo-controlled trial, where 100 people with IBS and depression or anxiety will be randomised to a Mediterranean Diet or a Sham (placebo) diet for 8 weeks. Gut symptoms, psychological symptoms, and quality of life will be measured at baseline and follow-up, and stool samples will be collected to measure gut microbiome changes in the future. If successful, this research could offer a safe and effective dietary approach for IBS that supports both gut and mental health, providing relief for patients and reducing the burden on healthcare services in New Zealand.

Dr Nicola Gillies

Projects

A/Prof Jie Zhang

EV THERAPY FOR CORNEAL REPAIR

$200,000 | 2 years 1125013

A/Prof Jie Zhang, A/Prof Cherie Blenkiron, Dr Yuting Xiao
Department of Ophthalmology | University of Auckland

The cornea is the clear window at the front of our eye; it transmits and bends light to allow us to see. Its clarity is maintained by the innermost layer called the corneal endothelium. The number of cells in this layer peaks shortly after birth, then decreases throughout life. Diseases such as Fuch's endothelial corneal dystrophy can accelerate cell loss. When there are insufficient numbers of endothelial cells, the cornea becomes opaque, and the person loses vision. Current treatment is by corneal transplantation surgery using corneas from donors, but there are not enough donor corneas around the world. Despite the discovery of stem cells for the endothelium in the limbus, the grey area between the cornea and the white of the eye, we do not know why they do not regrow the endothelium. We think the answer may be in the interactions between the stem cells and adjacent support cells. In the lab, the support cells made the stem cells regrow more. The support cells may have released tiny, membrane-bound sacs called 'extracellular vesicles'. In this project, we will test whether the extracellular vesicles can increase regrowth of the cells, and whether they can penetrate the eye.

TROJAN HORSE DRUGS FOR PANCREATIC CANCER

$197,738 | 2 years 1125005

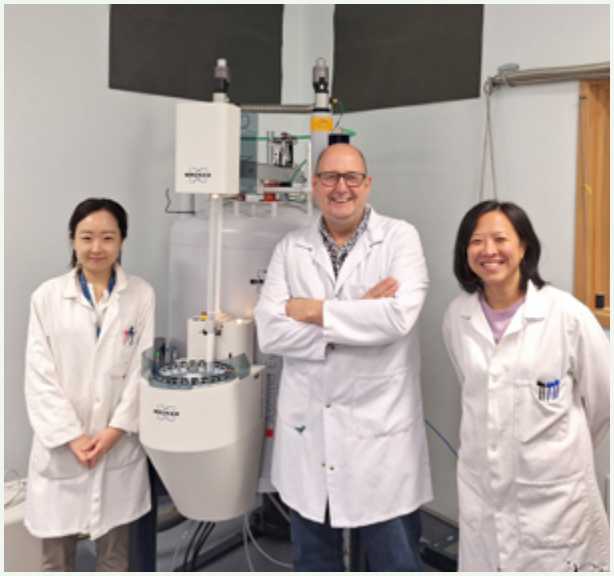
A/Prof Julie Spicer, Dr Dean Singleton, Dr Anna Giddens
Auckland Cancer Society Research Centre | University of Auckland

With a 5-year survival rate of less than 10%, pancreatic cancer is one of the deadliest of all cancers. The only potentially curative treatment is surgery; however, a late-stage diagnosis reached in 97% of patients usually rules out this option. Chemotherapy and/or radiotherapy are then used but can be toxic and offer limited benefits. There is a desperate need for new treatments that can selectively target the primary pancreatic tumour and be used in conjunction with other therapies when the cancer has already spread. All cells, including cancer cells, have molecular pumps that transport essential nutrients, such as amino acids that are required for normal cellular function. Our project aims to attach an amino acid recognised by these pumps to clinical anticancer drugs, creating a 'Trojan Horse' that is transported more readily into the cell. Once inside, the drugs are designed to be released to kill the cancer cell. Utilising chemistry, cell and animal models, we will use a particular type of pump present in high abundance on pancreatic cells to deliver anticancer drugs selectively to the pancreas. We aim to discover a novel, safe, and effective treatment for pancreatic cancer.

A/Prof Julie Spicer (left) **with international collaborator A/Prof Kristina Huttunen in her Transporter-Targeted Drug Delivery laboratories at the University of Eastern Finland**

Funded by: **Anonymous**

Projects



The DNA Damage Response team (left to right)**:**
Dr Cho Hong, A/Prof Michael Hay and Dr Lydia Liew

Funded by: **Anonymous**

DNA-PK PRODRUGS AS RADIOSENSITISERS

$199,996 | 2 years 1125012

A/Prof Michael Hay, Dr Cho Rong Hong, Dr Lydia Liew
Auckland Cancer Society Research Centre | University of Auckland

Radiotherapy is used to treat locally advanced pancreatic cancer, but tumour control is limited by tumour hypoxia, DNA damage repair and normal tissue toxicity within the radiation field. We have identified novel inhibitors of a specific DNA repair enzyme, DNA-dependent protein kinase (DNA-PK), which inhibit the repair of DNA double strand breaks caused by radiotherapy, and radiosensitise cancer cells and tumours. We have developed prodrugs to selectively deliver the DNA-PK inhibitors to treatment resistant hypoxic cells in tumours, but systemic metabolism limited their selectivity. We have identified a specific inhibitor of that metabolism and will explore the combination of this metabolic inhibitor in a codrug approach. We have also designed prodrugs that may be insensitive to the systemic metabolism. We will test the metabolism of the prodrugs by liver enzymes and liver cells, and measure the radiosensitisation of human pancreatic cancer cells, to determine the most effective approach. We will evaluate either a new prodrug or the prodrug/inhibitor codrug combination as a radiosensitiser of human pancreatic tumours in mice.

BOTOX-A FOR RESIDUAL LIMB PAIN

$199,716 | 2 years 5125010

Prof David Rice, Dr Brigitte Gertoberens, Dr Tipu Aamir, Dr Dawn-Louise Adair, Dr Belinda Ihaka, Dr Irene Zeng, A/Prof Gwyn Lewis
Health and Rehabilitation Research Institute | Auckland University of Technology

More than 350 million major limb amputations are performed globally every year. Residual limb pain in the remaining part of the limb is a common, debilitating problem affecting approximately 60% of amputees. This pain can persist for years, affecting mental health and limiting a person's mobility, independence and return to work. Current treatments are often ineffective or have significant side effects, creating an urgent need for safer alternatives. Botox is a promising option with known pain-relieving properties and a well-established safety profile. However, there is currently no high-quality evidence to support its use for residual limb pain. This clinical trial, which arose from clinical experience at The Auckland Regional Pain Service, will compare Botox to placebo injections in people with residual limb pain after major lower limb amputation. Participants will receive three injections over four weeks, and will be measured by whether their pain is at least halved after six weeks, with further follow-up after 3 months. If Botox proves safe and effective, it could reduce health inequities in Aotearoa, lower healthcare costs, decrease reliance on harmful medications, and improve quality of life, mobility, and work ability for amputees in New Zealand and around the world.

Prof David Rice

Projects

Co-PIs of the project:
Dr Nipuni Nagahawatte (right)
and Prof Leo Cheng

ENDOSCOPIC GASTRIC PACING

$200,000 | 2 years 1125004

Dr Nipuni Nagahawatte, Prof Leo Cheng, Prof John Windsor
Auckland Bioengineering Institute | University of Auckland

This project will develop a novel therapy for common digestive motility disorders. Conditions like functional dyspepsia and gastroparesis that compromise stomach function, affect many people and are difficult to diagnose and manage with current treatments. The project will develop and validate a new, less invasive method called mucosal pacing using an established pig model. Unlike traditional treatments that require surgery, mucosal pacing uses endoscopic techniques and will apply electrical pulses directly to the lining of the stomach. This innovative technique aims to address the underlying causes of digestive issues, offering a more effective and long-term solution. By focusing on this new approach, the project aims to improve the quality of life of patients, reduce the need for costly and invasive procedures, and lower overall healthcare costs. This is especially important for New Zealand, where these conditions have a significant impact on many individuals, including Māori communities. It not only addresses a critical local health need but also positions New Zealand as a leader in cutting-edge medical research. It promises to make a meaningful difference in the lives of people and set a new standard in digestive health care.

DISRUPTING FIBROTIC FEEDBACK IN PRIMARY MYELOFIBROSIS $200,000 | 2 years 1125002

Dr Maggie Kalev-Zylinska, Dr Ally Jung Un Choi, Prof Alan Rowan
Department of Molecular Medicine and Pathology | University of Auckland

This project focusses on a better understanding of primary myelofibrosis (PMF), a type of blood cancer that leads to scarring (fibrosis) in the bone marrow and poor patient outcomes. PMF is driven by abnormal bone marrow cells called megakaryocyte (MKs), which produce platelets. However, MKs behave abnormally in PMF and promote fibrosis, making it harder for the bone marrow to produce healthy blood cells. The overriding aim of this research is to uncover new mechanisms driving PMF progression to assist prognostication and the development of new therapies for patients. MKs can sense complex properties of their microenvironment. Thus, we hypothesise that the PMF's fibrotic and stiff bone marrow disrupts how MKs mature and function, inducing changes that accelerate disease progression. This research will use an innovative three-dimensional culture system not applied in previous PMF studies to mimic the stiff and fibrotic bone marrow characteristics of PMF patients. We will test the impact of fibrosis on MKs using methods such as advanced imaging, flow cytometry, and gene expression studies. Findings will provide new insights into mechanisms involved in PMF progression and suggest new biomarkers and therapeutic targets. Ultimately, our work will improve outcomes for people living with this challenging blood cancer.

Top: **Project team** (from left to right)**: Taryn Green (senior research technician), Leandro Ladvanszky (PhD student), Bianca Nijmeijer (senior research technician), Dr Ally Jung Un Choi (research fellow)**

Left: **Study PI Dr Maggie Kalev-Zylinska**

Funded by: **Anonymous**

Projects

Project team (from left to right): **Dr Janine Paynter, Dr Fiona Radcliff, Mr Jonathan Watts-Henwood, A/Prof Helen Petousis-Harris (University of Auckland)** Inset: **Prof Kate Seib (Griffith University)**

ONE VACCINE FOR TWO DISEASES?

$194,820 | 18 months 1125001

Dr Fiona Radcliff, A/Prof Helen Petousis-Harris, Prof Kate Seib, Dr Janine Paynter, Mr Jonathan Watts-Henwood
Department of Molecular Medicine and Pathology | University of Auckland

Gonorrhoea is a significant sexually transmitted infection in humans and highly antibiotic-resistant strains have emerged. If untreated, long-term damage including chronic pain and infertility may result. Treatment or clearance of the infection doesn't prevent re-infection. A vaccine is an effective way of addressing the significant costs, both personal and economic, incurred by the ongoing spread of this infection. The viability of a vaccine was revitalised after the retrospective discovery that MeNZB, New Zealand's vaccine for meningococcal B (a closely related pathogen that causes life-threatening brain inflammation or meningitis), stimulates some cross-protection against gonorrhoea. The MeNZB vaccine was used in a mass vaccination campaign for those <20 years old between 2004-8 before being phased out. The main ingredient of the MeNZB vaccine has been retained in a new MenB vaccine, Bexsero, which provides broader protection. Those vaccinated with MeNZB are now young adults. We have vaccinated a group of young adults with Bexsero and collected samples at regular intervals. The study includes age-matched individuals that were vaccinated with MeNZB in childhood or did not receive this vaccine. Laboratory assays will be used to test the development of immune responses to both MenB and gonorrhoea.

PATERNAL DIET AND FUTURE HEART HEALTH OF THE MOTHER AND CHILD $177,574 | 2 years 1125006

Dr Anna Ponnampalam, A/Prof Kim Mellor, Prof Mark Vickers, Dr Ben Albert
Department of Physiology | University of Auckland

Cardiovascular disease (CVD) is the number one cause of premature death globally with significant sex-specific differences and high prevalence among non-European communities. While a link between poor maternal diet, pregnancy complications and the increased risk of mother's and child's CVD years later is well-established, the impact of the father's diet on maternal and offspring health remains poorly understood. A recent study by our group has demonstrated highly original data that reveals significant sex-specific differences in offspring heart structure and function following paternal exposure to an unhealthy diet. Using our validated animal model, the proposed research aims to determine how paternal diet leads to maladaptive placental development and sex-specific differences in cardiac development of the fetus and heart function in the mother, during pregnancy. Pregnancy offers an opportunity for early identification of women and children at future risk for CVD and provides a window of opportunity to prevent disease manifestation and alter their risk trajectory. This proposal is highly topical and takes a life course view of intergenerational risks associated with father's diet, with the potential to break the vicious cycle that perpetuates the transmission of cardio-metabolic diseases to future generations.

Dr Anna Ponnampalam

Projects

Prof Johanna Montgomery

Funding contribution by:
NR and J H Thomson Charitable Trust

ZINC LINK IN AUTISM $145,479 | 2 years 1125007

Prof Johanna Montgomery, Dr Kevin Lee, Prof James Ellis
Department of Physiology | University of Auckland

Genetic changes cause autism spectrum disorders (ASD). Major genes that are altered in ASD are SHANK genes which are important for brain cell communication. Deletion of the SHANK3 gene causes Phelan McDermid syndrome (PMD), a developmental disorder in which children have autism, severely impaired learning and language, gastrointestinal disorders, seizures, and low muscle tone. We have recently discovered that increasing dietary zinc in animal models of ASD and PMD reverses ASD/PMD-related symptoms. However, it is unknown how zinc affects human neurons, and this information is imperative for our research to advance to zinc-based therapies in people with ASD/PMD. Prof Montgomery has partnered with New Zealand PMD families, and the aim of this research is to grow human brain cells from blood samples from PMD patients and their healthy control family members, as well as from cells with ASD genetic changes in SHANK2. We will examine how zinc affects human neuron physiology. We hypothesise that ASD and PMD neurons exhibit weakened brain cell communication, and that zinc will strengthen this communication. This data will show for the first time how zinc affects human neurons, identifying the potential to advance to trialling dietary zinc treatment in people affected by ASD and PMD.

Jean Cathie Fund for Tinnitus Research

UNILATERAL DEAFNESS AND TINNITUS – FILTERING OUT THE NOISE $149,709 | 2 years 7725015

Dr Michael Maslin, Dr Sreekari Vogeti, Prof Greg O'Beirne
Speech and Hearing | University of Canterbury

This research is focused on understanding how the brain filters out irrelevant sounds while letting sounds of interest through, much like how active noise cancelling headphones block out unwanted sounds. This 'sensory gating' mechanism is normally at work in the auditory brain, filtering (or "gating") random or irrelevant nerve impulses. Tinnitus is thought to arise when this gating process is absent or weaker than normal, leading to the individual perceiving the irrelevant nerve impulses. Studying how the gating process works in humans with tinnitus is at the forefront of our efforts to develop a more complete understanding of tinnitus. Important unanswered key questions include why the gating process might break down leading to tinnitus, and how and where this happens in the brain. Using repetitive sound sequences, it's possible to trigger the gating mechanism experimentally. This project will use non-invasive procedures to investigate sensory gating function amongst people with the same type of hearing loss in one ear, some with tinnitus, others without, along with a control group with neither hearing loss nor tinnitus. The results will help us better understand the causes of tinnitus and explore potential ways to modulate the gating system in individuals with tinnitus.

Dr Michael Maslin

Funded by: **Jean Cathie Fund for Tinnitus Research**

perpetual guardian

Projects

Dr James McKeage

MULTI-JET ACCEPTABILITY STUDY

$92,831 | 18 months 1125011

Dr James McKeage, Dr Manisha Sharma, Prof Andrew Taberner
Auckland Bioengineering Institute | University of Auckland

Many highly effective modern drugs must be injected into a vein (IV). In many cases these drugs would be safe and effective if instead delivered to the fat layer under the skin. This 'subcutaneous' injection is much quicker, cheaper, and easier than IV injection. Unfortunately, if more than 2ml of drug is needed it cannot be accommodated by the fat layer, so IV injection is required. This is the case for many modern cancer therapies. We've developed a novel solution to this problem called "multi-jet injection" where multiple simultaneous injections are performed to avoid the 2ml limit for subcutaneous injections. Multi-jet injection forms the drug into many high-speed jets, which are injected into the skin through an array of microneedles. We have shown that we can do these very large volume injections in the lab and now this funding will support our first injections on people. We predict that because the volume is distributed over many smaller injections and there's no large needles, this will be a comfortable way for patients to receive injections. This funding will allow us to test injection comfort and whether it's impacted by the viscosity of the drug.

Gavin and Ann Kellaway Medical Research Fellowships

A/Prof Amy Chan $27,368 1725006
School of Pharmacy | University of Auckland

Advancing digital therapeutics and clinical risk prediction using wearable data.

A/Prof Scott Graham $21,780 1725004
Department of Molecular Medicine and Pathology
University of Auckland

Collaborative visits across Europe for advancement of our brain cancer research program.

Dr Debbie Zhao $15,800 1725005
Auckland Bioengineering Institute | University of Auckland

Advancing diastolic function assessment in atrial fibrillation with artificial intelligence – an international multicentre study.

Co-funded with:
Heart Foundation

Sir Harcourt Caughey Award

Prof Andrew Taberner $15,000 1725002
Auckland Bioengineering Institute | University of Auckland

Visit by Prof T Alexander Quinn to the University of Auckland

Kelliher Charitable Trust Emerging Researcher Start-up Awards

Dr Mikaela Garland $30,000 1725003
Department of Anaesthesiology | University of Auckland

Research support for her Douglas Goodfellow Medical Research Fellowship titled 'Evaluating the use of topical sevoflurane.'

Funded by:

Kelliher Charitable Trust

Summit Postdoctoral Research Award

Dr Julia Shanks $5,000 6725001
Department of Physiology | University of Auckland

AMRF Best Presentation Award:
Does reduced parasympathetic activity limit exercise capacity in heart failure? A role for vagal co-transmitter vasoactive intestinal peptide.

HealtheX Emerging Researcher Awards

Caitlin Woods $4,000 6725004
Liggins Institute | University of Auckland

AMRF Outstanding Emerging Researcher Award:
Evaluation of a Midwifery Student Employment Model in Aotearoa: Experiences of Students and registered Midwives.

Samuel Lasham $2,500 6725005
School of Pharmacy | University of Auckland

AMRF Doctoral Oral Presentation Runner Up Award:
Harm and harm reduction in the context of psilocybin mushroom use.

Brooke Hawker $2,500 6725006
Department of Pharmacology and Clinical Pharmacology | University of Auckland

AMRF Best Poster Presentation Award:
Investigating the use of lysolecithin to model demyelination in sagittal rat brain organotypic slice cultures.

AMRF Support of the 2025 Medical Students Association Annual Conference

Celina Tsui $850 6725010
MBChB programme | University of Auckland

Zainab Bandukwala $850 6725011
MBChB programme | University of Auckland

Auckland University of Technology Postgraduate Symposium Awards

Priyadharshini Suresh $2,500 6725007
School of Clinical Sciences | Auckland University of Technology

AMRF Best Poster Presentation Award:
Exploring the cortical dynamics of walking using mobile EEG in real-world environment.

Heuiwon (Chris) Han $2,500 6725008
Oral Health, Waitematā | Auckland University of Technology

AMRF Best Abstract Award:
Child protection in dental practice: A review of legal and professional responsibilities in Aotearoa.

Aotearoa Clinical Trials Te Whatu Ora Counties Manukau Research Celebration Award

Dr Andrew Borrie $1,000 6725009
Cardiology | Te Whatu Ora Counties Manukau

AMRF Emerging Researcher Award:
Celebrating a rising investigator whose early contributions show outstanding promise for impact and leadership.

Te Whatu Ora Waitematā, University of Auckland and Auckland University of Technology Collaborative Research Symposium Awards

Dr Georgina McPherson $500 6725003
Womens Health | Te Whatu Ora Waitematā

AMRF Best Senior Researcher:
A qualitative study of pre-diagnostic experiences and awareness of endometrial cancer among wāhine Māori and Pacific women in Auckland health districts.

Tayla Schaapveld $500 6725002
Planning, Funding and Outcomes | Te Whatu Ora Waitematā

AMRF Best Emerging Researcher:
Evaluating Primary Care Practice's LCS Smoking History Accuracy for Māori patients - Implications for a Future Lung Cancer Screening Programme.

Travel Grants

Dr Gemma Aburn
$3,714 6625017
School of Nursing | University of Auckland

Attendance and presentation at the International Children's Palliative Care Network Meeting, Manila, Philippines, 12 - 15 Nov 2025

Dr Anastasiia Artuyants
$3,993 6625001
Department of Molecular Medicine and Pathology | University of Auckland

Attendance and presentation at the International Society for Extracellular Vesicles ISEV2025, Vienna, Austria, and laboratory visits with potential collaborators, 22 - 29 Apr 2025

Dr Trudi Aspden
$3,208 6625002
School of Pharmacy
University of Auckland

Attendance, presentation and workshop facilitation at the biennial Lifelong Learning in Pharmacy Conference, Sydney, Australia, 7 - 10 Jul 2025

Dr Julie Blamires
$4,000 6625003
School of Nursing | Auckland University of Technology

Attendance and presentation at the International Family Nursing Association IFNA Conference in Perth, Australia, 17 - 20 Jun 2025

Dr Esther Calje
$3,995 662500
Liggins Institute | University of Auckland

Attendance and presentation at the Perinatal Society of Australia and New Zealand PSANZ Annual Congress, Brisbane, Australia 17-19 March 2025; attendance and presentation at the Pre-Congress IMPACT meeting 15 - 16 Mar 2025

Dr Peter Choi
$3,913 6625005
Auckland Cancer Society Research Centre | University of Auckland

Attendance and presentation at the 53rd IUPAC General Assembly 53GA and 50th World Chemistry Congress 50WCC in Kuala Lumpur, Malaysia, 7 - 20 Jul 2025

Dr Jason Chua
$4,000 6625006
School of Clinical Sciences
Auckland University of Technology

Collaborative research project work, Perth; and attendance and presentation at the Australasian Pain Society Conference, Melbourne, Australia, 9 - 16 Apr 2025

Dr Victor Dieriks
$4,000 6625016
Department of Pharmacology and Clinical Pharmacology | University of Auckland

Attendance and presentation for AD/PD 2025: Striving for a Better Future for All Those Affected by Neurodegenerative Diseases, 1-5 Apr 2025, Vienna, Austria; Synuclein meeting 8 - 11 Apr 2025, Cambridge, UK; three European laboratory visits

Dr Tonja Emans
$6,500 6625018
Department of Physiology
University of Auckland

Attendance and presentation of an invited talk at the 40th Congress of the International Union of Physiological Sciences IUPS, Frankfurt, Germany, and laboratory visits, 16 Aug – 27 Sep 2025

Dr Lucy Hardie
$3,978 6625009
Section of Epidemiology and Biostatistics | University of Auckland

Attendance and presentation at the World Tobacco Conference 2025, Dublin, Ireland, 23 - 25 Jun 2025

Dr Igor Felippe
$5,500 6625019
Department of Physiology
University of Auckland

Attendance and presentation at the Conference ISAC 2025, Punta Arenas, Chile, 21–24 Oct 2025, and at the 1st International Meeting of Biological and Health Sciences IBHS, Vitoria-ES, Brazil, 29 - 31 Oct 2025

A/Prof Jacqueline Hannam
$4,522 6625007
Department of Pharmacology and Clinical Pharmacology | University of Auckland

Attendance, convenor and presentation at PAGANZ 2025 & IATDMCT 2025 congress, Singapore, 20 - 24 Sep 2025

Dr Sara Hanning
$3,208 6625008
School of Pharmacy
University of Auckland

Attendance, presentation and workshop facilitation at the biennial Lifelong Learning in Pharmacy Conference, Sydney, Australia, 7 - 10 July 2025

Mrs Monleigh Ikiua
$3,305 6625010
Research and Evaluation
National Hauora Coalition

Attendance and presentation at the 22nd Lancefield International Symposium on Streptococci and Streptococcal Diseases, Brisbane, Australia, 1 - 5 Jun 2025

Dr Neera Jain
$4,998 6625020
Centre for Medical and Health Sciences Education | University of Auckland

Attendance and presentation at the 4S Conference in Seattle, WA, USA and visit the University of British Columbia, Vancouver, Canada for research collaboration and guest lecture, 1 - 13 Sept 2025

Travel Grants

Ms Ebony Komene
$4,000 6625021
School of Nursing | University of Auckland

Attendance and presentation at the Nurse Practitioners Association of Ontario, Toronto, Canada, 22 Sep - 4 Oct 2025

Dr Sandy Lau
$6,625 6625022
Department of Obstetrics, Gynaecology and Reproductive Sciences | University of Auckland

Attendance & presentation at the International Union for Physiological Sciences Conference, Frankfurt, Germany, and the International Federation for Placental Associates Conference, Erfurt, Germany, 8 - 23 Sep 2025

Dr Joanne Lin
$4,000 6625011
School of Pharmacy
University of Auckland

Attendance and presentation at the Organisation for Human Brain Mapping OHBM Annual Meeting, Brisbane, Australia, 24 - 28 Jun 2025

Dr Tess Moeke-Maxwell
$4,763 6625023
School of Nursing | University of Auckland

Attendance and presentation at the International Children's Palliative Care Network Meeting, Manila, Philippines, 12 -1 5 Nov 2025

Dr James Morse
$4,247 6625024
Department of Pharmacology and Clinical Pharmacology | University of Auckland

Attendance and presentation at the Population Approach Group of Australia and New Zealand PAGANZ and the International Congress of Therapeutic Drug Monitoring and Clinical Toxicology IATDMCT, Singapore, 17 - 26 Sep 2025

Dr Olena Oryshchuk
$1,676 6625025
Department of Molecular Medicine and Pathology | University of Auckland

Attendance and presentation at the New Directions in Leukaemia Research Conference in Adelaide, Australia, 2 - 4 March 2026

Dr Hayley Reynolds
$3,182 6625026
Auckland Bioengineering Institute
University of Auckland

Attendance and presentation at the IUPESM World Congress on Medical Physics & Biomedical Engineering,in Adelaide, Australia, 29 Sep - 3 Oct 2025

Mrs Manawa Rhind
$4,457 6625013
Research and Evaluation
National Hauora Coalition

Attendance and presentation at the 4th International Indigenous Health and Wellbeing Conference 2025 hosted by the Lowitja Institute, Kaurna Country, Adelaide, Australia, 16 - 19 Jun 2025

Dr Hilary Sheppard
$5,365 6625027
School of Biological Sciences
University of Auckland

Attendance and presentation at the European Society Cell and Gene Therapy Congress, Sevilla, Spain, 7 - 10 Oct 2025

Dr Pushkar Silwal
$4,000 6625014
School of Optometry and Vision Science
University of Auckland

Attendance and presentation at the International Society of Geographical and Epidemiological Ophthalmology ISGEO Congress 2025, and to attend the '2030 IN SIGHT LIVE' meeting, Kathmandu, Nepal, 27 Apr - 1 May 2025

Dr Matthew Sullivan
$4,000 6625015
School of Biological Sciences
University of Auckland

Attendance and presentation at the 21st International Conference on Biological Inorganic Chemistry ICBIC 21, Los Angeles, USA, 28 Jul - 1 Aug 2025

Dr Molly Swanson
$4,500 6625028
School of Biological Sciences
University of Auckland

Attendance and presentation at the Australasian Neuroscience Society Annual Scientific meeting, and the Cellular and Molecular Advances in Neurodegeneration Meeting, Hobart, 30 Nov - 6 Dec and visit Universities of Sydney and Wollongong, Australia

Professor Mark Vickers
$4,825 6625029
Liggins Institute | University of Auckland

Attendance and presentation at the 13th World Congress on the Developmental Origins of Health and Disease DOHaD, Buenos Aires, Argentina, 7 - 10 Sep 2025

Dr Marie-Louise Ward
$5,000 6625030
Department of Physiology
University of Auckland

Attendance and presentation as an invited speaker at the 10th International Workshop on Cardiac Mechano-electric Feedback and Arrhythmias, and the 2025 edition of the Novel Optical Techniques in Cardiac Electrophysiology, Freiburg, Germany, 12 -22 Sep 2025

Dr Cervantée Wild
$3,800 6625031
Department of Paediatrics, Child and Youth Health | University of Auckland

Attendance and presentation at the Australian and New Zealand Obesity Society's Conference ANZOS 2025, Perth, Australia, 19 - 22 Oct 2025

Celina Tsui practising tying a tourniquet under pressure at the 2025 Medical Students Association Annual Conference for which she secured AMRF support

From AMRF Fellowship to global impact.

Gavin and Ann Kellaway Medical Research Fellowship recipient A/Prof Amy Chan has been leading a team in developing a revolutionary risk prediction tool for asthma

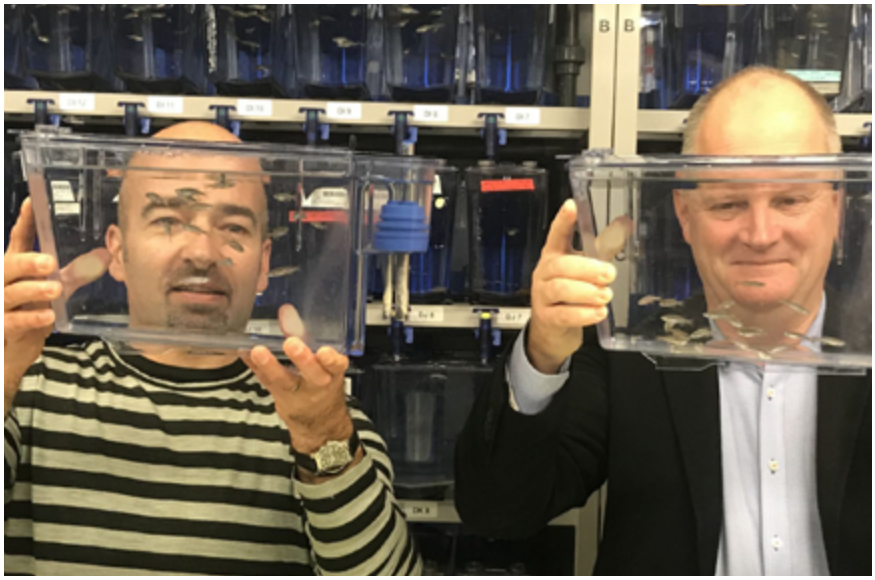
“Some of the most important discoveries begin with a simple question. In this case, it was asking why the immune system performs differently at different times of the day.”

Professor Christopher Hall | AMRF funding recipient

Fighting infections around the clock: Searching for better defences

Professor Christopher Hall
Professor of Immunology | University of Auckland

Every day, our bodies perform countless tasks without us noticing. They heal wounds. They repair tissues. They fight off bacteria and viruses before we ever know they were there. For Professor Chris Hall, one question has long captured his imagination: how does the immune system know when to be ready? The answer, he believes, could help researchers uncover entirely new ways to protect people from serious infections.



Prof Christopher Hall (left) with collaborator A/Prof Guy Warman

AS A PROFESSOR of Immunology at the University of Auckland, Chris has spent much of his career exploring the remarkable behaviour of immune cells. Using the zebrafish, a tiny freshwater fish whose transparent larvae allow researchers to observe immune responses in real time, he has helped pioneer new ways of studying how the body responds to injury, inflammation and infection.

What drives him is the opportunity to see biology in action.

Rather than studying isolated cells in a laboratory dish, Chris' team can watch immune cells move, communicate and respond to threats inside a living organism. Those observations have already helped identify new approaches for treating inflammatory diseases and have even contributed to drugs progressing from the laboratory into clinical testing.

More recently, Chris turned his attention to a challenge that affects people around the world.

Infectious diseases remain one of the most common reasons for hospital admission in New Zealand, particularly for Māori and Pacific communities. At the same time, researchers have known for decades that the body's ability to fight infection changes throughout the day. People who experience disruption to their natural body clock through shift work, irregular hours or jet lag can become more vulnerable to infection. Yet scientists have not fully understood why. Chris wanted to understand what was happening beneath the surface.

Working alongside circadian biology expert Associate Professor Guy Warman and a team of young researchers and technicians, he began investigating whether the immune system contains its own internal timing mechanism.

Their research focused on what scientists call the innate immune system, the body's first line of defence against invading bacteria.

The team's idea was surprisingly simple: What if the immune system could anticipate danger?

Just as people set an alarm clock before an important day, what if immune cells were using a biological timer to prepare themselves for periods when infection risk is greatest?

Using their zebrafish model, the researchers found compelling evidence that this is exactly what happens. Their work showed that an important clock gene helps regulate a powerful antibacterial defence system in the

liver, allowing the body to mount a stronger response during periods of activity when encounters with harmful microbes are more likely.
When that clock mechanism was disrupted, the ability to fight infection weakened.

For Chris, the finding revealed a fascinating partnership between time and immunity.

"The immune system is not simply reacting to threats as they appear," he says. "It is preparing for them. We're beginning to see that immune cells use biological clocks to anticipate periods of greater risk and strengthen their defences accordingly."

The discovery opened the door to even bigger questions.

Could understanding these biological clocks help researchers develop new treatments? Could healthcare providers eventually use timing to improve outcomes for patients? And could people whose natural rhythms are disrupted gain extra protection through therapies designed around the body's internal clock?

These possibilities are part of a growing field known as chronotherapy, which explores how the timing of treatment may influence its effectiveness. Chris' research is helping build the biological foundations needed to make those future advances possible.

Importantly, the research has continued to evolve.

In 2025, Chris and collaborators published findings in *Science Immunology* showing that a light-responsive molecular timer helps optimise the bacteria-killing activity of neutrophils, one of the body's most important infection-fighting immune cells. The study demonstrated how specific clock genes help synchronise stronger antibacterial activity with daytime periods when the risk of infection is highest.

While the science is complex, the underlying goal remains straightforward. Help people stay healthier.

By understanding how the body's natural rhythms influence immunity, researchers hope to identify ways to strengthen the body's defences when they are most needed.

This work also reflects Chris' broader approach to science. Throughout his career, he has focused on combining fundamental discoveries with practical applications. Whether studying infection, inflammation or immune cell behaviour, he is interested in generating knowledge that can ultimately improve health outcomes.

Support from AMRF helped make this work possible.

Funding enabled Chris and his team to pursue a high-risk, high-reward research question, develop specialised zebrafish models, support research staff and continue making progress despite significant disruption caused by the COVID-19 pandemic. The project also contributed to the development of emerging researchers, helping build capability within New Zealand's biomedical research sector.

For Chris, that investment delivers benefits well beyond a single project.

"Research is often a long journey," he says. "Each discovery builds on years of work, collaboration and curiosity. Support for fundamental science gives researchers the freedom to ask questions that may ultimately lead to entirely new ways of improving people's health."

Today, Chris' team continues exploring how immune cells use internal clocks to guide their behaviour. Every new insight brings researchers closer to understanding how the body's ancient defence systems have evolved to protect us.

And in doing so, they are revealing something remarkable.

Even when we are asleep, resting or simply going about our daily lives, our immune system is keeping time, preparing for the challenges ahead and working to keep us well. That quiet vigilance may one day help researchers unlock new ways to fight infections, improve treatments and create healthier futures for New Zealanders.

"If we can understand how the body's natural rhythms influence immunity, we may be able to find new ways to strengthen antibacterial defences when they are most needed."

Professor Christopher Hall

Grants completed | 2025

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

Dr Tim Angeli-Gordon Auckland Bioengineering Institute | University of Auckland
Recipient of Edith C. Coan Research Fellowship to study methods to diagnose digestive disorders

Postdoctoral Fellowship

Edith C. Coan Research Fellowship

EFFECTS OF HEARING ON BALANCE $201,690 | 2 years 1321001

Dr Rachael Taylor
Department of Physiology | University of Auckland

Dr Rachael Taylor

It is well known that our sense of vision plays an important role in balance. Less well understood is the influence of hearing. My fellowship aimed to understand the complex interaction between hearing and balance, and how hearing interventions could be used to enhance balance rehabilitation. In two experiments, we used a force platform to measure balance in different listening conditions. These studies helped us pinpoint the types of sounds and listening situations most likely to affect stability, knowledge which is important for designing future interventions. One study examined moving sounds, showing that on an unstable support surface, low-pitched slow moving sound tended to influence balance. In the other study, we found that some people with hearing loss had greater difficulty when asked to perform a listening task while simultaneously balancing. These individuals tended to prioritise balance at the expense of listening accuracy, suggesting increased balancing effort when multitasking. We also explored whether specific head movements, similar to those used in balance rehabilitation, could enhance spatial hearing in people with hearing loss in one ear. Spatial hearing, which is the ability to locate sounds, is important for our sense of position within our environment, helping us to maintain balance. This preliminary work showed that people could be trained to move their heads at a consistent speed, improving their ability to accurately localise low-frequency sounds. Presentation of this research at a recent Hearing and Balance Research Symposium at University of Auckland, has prompted conversation amongst audiologists and physiotherapists regarding how sound-based strategies, hearing aids and auditory training, may be incorporated in balance rehabilitation. It contributes to the growing interest in holistic, multisensory approaches to care for people with dual hearing and balance difficulties.

Funded by:
Edith C. Coan Trust
perpetual guardian

Helen Goodwin Doctoral Scholarship

AN IMMUNO-THERAPEUTIC APPROACH TO TREATING COGNITIVE DECLINE IN AGING

$131,000 | 3 years 1220007

Dr Conor Nelson
Department of Pharmacology and Clinical Pharmacology | University of Auckland

My PhD research has focused on testing a novel anti-GluN1 antibody therapy to slow disease progression in a mouse model of Huntington's disease (HD), a genetic neurodegenerative condition affecting 1 in 10,000 New Zealanders. This study demonstrated an early therapeutic benefit of these antibodies, with HD mice showing reduced behavioural deficits after receiving anti-GluN1 antibody injections. Furthermore, proteomic changes measured in the striatum indicate that treatment with our antibodies alters the expression of proteins involved in cell structure and intracellular transport, while simultaneously modulating neuronal signalling and promoting cell survival by repairing NMDA receptor dysfunction. As this dysfunction is common in several diseases, this has positive implications for the use of this antibody therapy in other neurodegenerative disorders. Additionally, we've tested whether a single-dose gene therapy method of antibody delivery can recreate previously observed cognition-enhancing effects. The outcome differed to what we expected. Despite confirming that our gene therapy approach could drive antibody production, we didn't observe any improvement in learning and memory. However, because the antibodies produced through this process were slightly different, this lack of effect has allowed us to refine our hypothesis about the mechanism of action of our therapy. As a result, we now have a lead candidate for monoclonal antibody therapy. Next steps for this research are to validate this monoclonal therapy to determine whether it's as effective at modifying neurodegenerative processes as our current anti-GluN1 antibodies. If we're successful, we hope that this therapy will one day advance to a clinical trial.

"I hope we will soon be able to bring this to patients, to improve the quality of life for those living with neurodegenerative disease, both here in New Zealand and abroad."

Dr Conor Nelson

Funded by: **Gooduck Charitable Trust**

Doctoral Scholarship

IDENTIFYING THERAPEUTIC TARGETS AND BIOMARKERS ASSOCIATED WITH DISTINCT ALPHA-SYNUCLEIN POLYMORPHS $131,000 | 3 years 1221004

Dr Kreesan Reddy
Department of Anatomy and Medical Imaging University of Auckland

Dr Kreesan Reddy

Our research focuses on unravelling the complexities of synucleinopathies, a group of neurodegenerative diseases linked by the abnormal build-up of a single protein: α-synuclein. These conditions include Parkinson's Disease, Dementia with Lewy Bodies, and Multiple System Atrophy. Although they share this common hallmark, they present with very different symptoms and patterns of brain pathology, raising the central question of how one protein can give rise to such distinct outcomes. Growing evidence shows that α-synuclein can fold into different shapes, known as "strains," each with unique properties that may help explain this variability. We set out to test whether studying the relationship between these strains and cellular responses could reveal new protein targets for therapy. Using human brain-derived pericytes, cells that play an important role in brain blood vessel health and protein clearance, we combined gene expression profiling, validation in human brain tissue, and functional testing with small-molecule inhibitors. Through this work, we identified four proteins linked to key disease processes, including inflammation, DNA damage responses, protein aggregate formation, and protein aggregate breakdown. High-resolution imaging showed that some of these proteins are recruited directly into disease-specific α-synuclein aggregates in the brain, highlighting their potential role in pathology. By connecting α-synuclein strain biology to functional changes in human brain cells, we have contributed to understanding how these diseases develop, while also identifying promising new targets for future therapies. We hope that continued investigation will bring us closer to developing treatments that can slow or stop disease progression and improve the lives of people living with synucleinopathies.

Dr James Morse

Gavin and Ann Kellaway Medical Research Fellowship

Dr James Morse $17,499 1724002

Department of Anaesthesiology | University of Auckland

The fellowship enabled me to undertake further training in clinical pharmacology and pharmacometrics (the science of using mathematical models to optimise medicine dosing) and to build valuable international collaborations. I attended the Population Approach Group Europe (PAGE) Annual Scientific Meeting, the world's leading conference in this field, where I presented my research and took part in specialist workshops to enhance my technical abilities. I also got to spend time with the University College London Pharmacometrics Group, working on a project investigating the time course of pain and the effects of analgesics in children with mucositis undergoing chemotherapy. It provided valuable insights into different research approaches, strengthened collaborative networks, and offered mentorship from leading international experts. My research focuses on improving medicine use in both children and adults, ensuring each patient receives the right dose to achieve the desired effect while minimising adverse effects. The knowledge and connections gained are helping advance this goal, with the aim of delivering safer, more effective treatments in New Zealand and beyond.

Projects

Dr Benjamin Albert

Funding contribution by:
Room-Simmonds Charitable Trust

perpetual guardian

PARENTAL DIET AND THE OFFSPRING
$179,182 | 2 years 1123001

Dr Benjamin Albert, Prof Wayne Cutfield, Dr José Derraik, Dr Anna Ponnampalam, Dr David Musson, Prof Mark Vickers
Liggins Institute | University of Auckland

We conducted a study in rats, to determine how an unhealthy diet that causes obesity in parent animals affects the health of offspring. This reflects the common situation where a mother or a father has unhealthy weight. Our study was carefully designed to tease out the individual effects of mothers' and fathers' obesity on the offspring, and how they interact, for example if both parents were obese. We found that both parents' diets were important, and the worst outcome was seen where both parents had consumed the obesogenic diet. The mother's obesity had the biggest effect on early life outcomes such as birth weight, but the father's obesity had important effects on the offspring's metabolism when they reached adulthood, so that it increased their fatness and their risk of problems like diabetes, as well as how well their heart functioned. This is both exciting and worrying, as obesity in parents is very common, and currently there is no health promotion advice specifically tailored for men who wish to know how to optimise their health to give their child the best start. A fish oil treatment given to the offspring couldn't reverse the effects of their parents' unhealthy diets. This study emphasises how important the health of fathers is before they have children. Future work will look at how to best improve the father's health in the period before conception, to give the child a better start to life.

TREGS AND SCFAS $174,675 | 2 years 1122015

A/Prof Gergely Toldi, Dr Chris Pook, Prof Frank Bloomfield
Liggins Institute | University of Auckland

Preterm birth rates in Aotearoa are approaching 8% and are not decreasing. Preterm babies suffer lifelong complications provoked by inflammation. Safe and effective anti-inflammatory therapies are an urgent unmet medical need to improve outcomes of this vulnerable patient population. In this project, using blood and stool samples collected from a cohort of 87 neonates, we identified that small molecules called short chain fatty acids butyrate and acetate might be promising therapeutic options to reduce inflammation in term and preterm neonates. These molecules influence a specific immune cell type called regulatory T cells. In the future, they may be provided via direct nutritional supplementation. Prematurity related complications cost approximately $250 million per year in Aotearoa in childhood alone. These findings have strong transformational potential and significant societal impact to fundamentally improve the short- and long-term prognosis of our tiniest patients and bring relief to families and healthcare budgets in Aotearoa and worldwide.

The team working on this project grant with A/Prof Gergely Toldi (middle)

Projects

Members of the Bioinstrumentation Lab research team, including James McKeage (left)

JET INJECTION: SKIN TENSION AND DEFORMATION

$180,000 | 2 years 1123005

Dr James McKeage, Prof Andrew Taberner, Dr Alexander Dixon, Prof Poul Nielsen
Auckland Bioengineering Institute | University of Auckland

Liquid medicines, such as vaccines or insulin, can be delivered through the skin without a needle using 'jet injection'. In this approach, the drug itself is formed into a hair-thin, high-speed jet that can break through the skin and into the underlying tissue. Despite avoiding the burden of sharps waste and needle-phobia jet injection has yet to reduce the use of needles in clinical practice. Jet injection studies have too often reported injection failure and inconsistent delivery volumes to provide health care professionals with the confidence needed in this technology. How the injector contacts or stretches the skin can determine the success and comfort of the injection, however, little is known about the best way to do this to ensure consistent and comfortable delivery. In this project we developed a novel device that precisely controlled the pre-stretch of tissue samples during injections while measuring the volume successfully injected and any movement of the tissue. We found, similarly to previous studies, that the more stretched the tissue is the more consistent and successful the injection is. However, we found very strong evidence that this is not due to the stretch per se but because increased stretch reduces tissue movement when the jet breaks into the tissue. It is avoiding this skin movement, independent of the stretch, that is a key determinant of consistent, successful jet injection. These findings will inform the design of injectors and new techniques that improve the ease and consistency of jet injection - allowing us to realise the broad benefits of needle-free drug delivery.

Funding contribution:
NH Taylor Charitable Trust
perpetual guardian

Projects

Prof Susan Wells

UNLOCKING PRIMARY CARE DATA ON MULTIMORBIDITY TO IMPROVE THE PREDICTION AND MANAGEMENT OF CARDIOVASCULAR RISK $172,757 | 2 years 1123007

Prof Susan Wells, Ms Yeunhyang Catherine Choi, Dr Katrina Poppe
School of Population Health | University of Auckland

Multimorbidity (MM), having two or more long-term conditions, affects one in four New Zealanders and contributes to reduced quality-of-life and life expectancy. MM co-occurs in those at high cardiovascular disease CVD risk, yet our CVD management guidelines provide negligible advice about MM to guide GP-patient decision making. We previously curated a large de-identified dataset of adult patients enrolled in ProCare PHO, linked to national health datasets, and are investigating how well current NZ risk algorithms perform in the presence of MM. However, several conditions including gout, bundle branch block, polycystic ovarian syndrome, endometriosis, migraine, hypertensive disorders of pregnancy and gestational diabetes, which are associated with increased CVD risk were not included in this work. We replicated our methodology to describe the prevalence of these seven conditions in GP and hospital records and investigated their impact on 5-year CVD hospitalisations and deaths. We found that women with a recorded history of gestational diabetes had a 30% extra risk of a CVD event in the next 5 years; previous pre-eclampsia/hypertensive disorder in pregnancy had a 94% extra CVD risk. Gout was associated with an additional 57% increased risk for women and 26% for men. Migraine was associated with increased CVD risk 29% for men only. We found that having MM increased GP prescribing of appropriate cardio-preventive medications, and that if prescribed, over 95% of people with MM picked them up from community pharmacies. This study is incredibly important for clinical practice. For the first time, we have quantified the extent of multiple conditions and noted discrepancies in recording across clinical data sets. We have highlighted the need to include additional long-term conditions into our CVD risk models to improve the accuracy of CVD risk prediction which will lead to changes in national GP guidelines for treatment and follow-up.

Funding contribution by:
Edith Rose Isaacs Estate
AMRF specific use donation heart/cardiac
perpetual guardian

FAIR-ACS $125,835 | 2 years 1121009

Dr Nikki Earle, Prof Rob Doughty, Dr Katrina Poppe, Dr Anna Rolleston, A/Prof Malcolm Legget
School of Medicine | University of Auckland

Females in Aotearoa with Ischemic Heart Disease and Acute Coronary Syndromes (FAIR-ACS) is focused on improving understanding of heart disease in women in New Zealand. Heart disease has been more often studied in men, so this research aims to better represent women, explore sex-specific differences in outcomes after heart attacks, and examine factors unique to women, such as pregnancy-related conditions that could affect heart health. The project set out to enrol 800 women with a first-time heart attack, and by September 2024, we successfully enrolled 794 participants across 10 hospitals in New Zealand. The study includes measurement of cardiac biomarkers, including heart disease-related hormones and genetic factors, to uncover how these may influence women's heart health. Data analysis is underway, and we expect to share early findings in 2025. This research will provide crucial insights to help improve prevention, diagnosis, and treatment of heart disease in women.

Dr Nikki Earle

Projects

A/Prof Mellor (front row, centre) **and her team**

NOVEL TREATMENT FOR DIABETIC HEART DISEASE $172,920 | 2 years 1122001

Dr Kimberley Mellor, Mr Marco Annandale, Prof Lea Delbridge
Department of Physiology | University of Auckland

Researchers are developing a promising new treatment approach for diabetic heart disease, a condition that affects thousands of New Zealanders each year and significantly increases the risk of heart failure. This project focuses on testing a novel inhibitor drug and has now generated compelling pre clinical evidence of its potential. In the first phase of the study, the team successfully identified the optimal dose and delivery method for the inhibitor in mice, confirming that the drug effectively blocks its target enzyme in heart tissue. Building on this foundation, the researchers then examined whether the treatment could improve heart function in diabetes. Remarkably, the inhibitor reversed diastolic dysfunction - an early and key abnormality seen in diabetic heart disease - demonstrating meaningful improvement in cardiac performance. The final stage of the project uncovered how the drug exerts its protective effects. The team showed that the treatment reshapes cardiac metabolism and improves lipid handling, two pathways known to become dysregulated in diabetes. Together, these findings highlight a promising therapeutic avenue and provide a strong scientific basis for future development toward clinical application.

GDM AND SCHOOL AGE OUTCOMES $159,813 2 years 1120019

Prof Jane Alsweiler, Prof Caroline Crowther, Prof Gavin Brown, Dr Christopher McKinlay
Department of Paediatrics: Child and Youth Health | University of Auckland

In this matched cohort study, we investigated whether children exposed in utero to gestational diabetes mellitus (GDM) show differences in neurocognitive and cardiometabolic function at school age compared to matched peers whose mothers did not have GDM. A total of 186 GDM-exposed children were matched by sex, maternal BMI, ethnicity, socioeconomic status, and gestational age to 186 controls. At 6–7 years' corrected age, participants underwent standardised assessments for cognitive function, numeracy skills, body composition, and blood pressure. We found no significant differences in overall cognitive performance between the groups, suggesting that GDM exposure alone does not adversely impact school-age cognition. However, we identified concerning differences in physical health: children exposed to GDM had higher rates of hypertension, and significantly elevated BMI z-scores. This research contributes to the field of developmental and preventive medicine by highlighting that while neurocognitive outcomes may not be strongly affected by prenatal GDM exposure, early signs of cardiometabolic risk are evident. These insights underline the importance of monitoring and supporting the long-term health of children born to mothers with GDM and call for further exploration of targeted early interventions to reduce future chronic disease burden.

Prof Jane Alsweiler

Projects

Prof Cameron Grant

PREVENTION OF WHEEZE-ASSOCIATED HOSPITALISATION IN PRESCHOOLERS $177,984 | 2 years 1122008

Prof Cameron Grant, Prof Katherine Lee, Dr Rachel Schembri, A/Prof Lisa Gold, Prof Peter Sly, Dr Sarah McNab, Prof Peter Vuillermin, Ms Amy Dang, Dr Anita Lala, Dr Angus Goodson, Dr Gloria Dainty, Dr Natalie Martin, Dr Alexandra Wallace, Dr Rebecca Alekzander, Dr Arun Gangakhedkar, Mrs Marisa van Arragon, Dr Simone Wakkins, Dr Owen Sinclair
Department of Paediatrics, Child and Youth Health | University of Auckland

Preschool wheeze is one of the most common reasons young children are admitted to hospital worldwide, yet current prevention methods have limited impact. One prevention strategy with potential is OM 85, an oral medication made from bacterial extracts that helps stimulate the immune system. OM 85 supports the body's defence against viral infections and reduces inflammation in the airways, which is linked to wheezing. Previous studies have shown that OM 85 can reduce wheeze episodes in young children, but larger studies are needed to determine whether it can also prevent hospital admissions. To address this, we are conducting this large randomised controlled trial to assess whether OM 85 can reduce wheeze related hospital admissions in preschool aged children with recurrent wheeze. The study will also examine whether OM 85 reduces ongoing wheeze episodes over time. Enrolment into the trial is nearing completion, with 1,026 children enrolled so far, 94% of the target of 1,088 participants. Recruitment in New Zealand has now finished, with 282 children enrolled, accounting for 26% of the total study sample. New Zealand recruitment took place across multiple hospital sites, including Starship Children's Hospital, Kidz First Children's Hospital, Waitakere Hospital, Waikato Hospital, Te Wao Nui Children's Hospital in Wellington, and Christchurch Hospital. Additional partnerships were formed with Hutt Hospital and Masterton Hospital. The study team has worked closely with a wide range of community and health organisations, including Asthma New Zealand, Whānau Āwhina Plunket, Turuki Healthcare, Te Wānanga o Aotearoa, Green Cross Health, and public libraries and councils across Auckland, Wellington, Christchurch, and Waikato. Children enrolled in the study have experienced significant illness related to preschool wheeze. Data reported to the Independent Data Safety Monitoring Board in September 2025 showed that 80% of participants had already been admitted to hospital one or more times for wheeze before joining the trial.

> "Preschool wheeze is one of the most common reasons young children are admitted to hospital worldwide, yet current prevention methods have limited impact."

Projects

Dr Christopher Lear

BIOMARKERS FOR FOETAL COMPROMISE

$160,051 | 2 years 1122002

Dr Christopher Lear, Prof Laura Bennet, Prof Alistair Gunn, Dr Simerdeep Dhillon
Department of Physiology | University of Auckland

About 70 babies each year in New Zealand will develop brain injury because of oxygen deprivation during birth, causing lifelong disability or even death. Clinicians rely on changes in fetal heart rate to determine the risk of oxygen deprivation, but currently this is very imprecise. In this grant we used a clinically relevant sheep model to investigate the physiology of heart rate decelerations and heart rate variability the natural second-by-second changes in heart rate and how these change with worsening oxygen deprivation. We discovered that heart rate variability is surprisingly only mediated by the parasympathetic nervous system the 'rest-and-digest' system during labour and discovered that a unique breathing pattern generates a specific heart rate variability signature, warning of increased risk of injury. We also showed that the current most promising markers called 'deceleration area' and 'deceleration capacity' are less able to identify at risk babies if they have pre-existing fetal growth restriction. Our team hopes that these advances in our understanding of the physiological origins and diagnostic utility of heart rate changes during labour will improve our ability to prevent devastating brain injuries while also better identifying babies tolerating labour well and reduce the chance of unnecessary interventions.

Funding contribution by:
NR & JH Thomson Charitable Trust

perpetual guardian

HIPPOCAMPAL DEFICITS IN AUTISM SPECTRUM DISORDER

$158,373 | 2 years 1120020

Dr Juliette Cheyne, A/Prof Johanna Montgomery, Dr Kevin Lee, Dr Yewon Jung Department of Physiology, | University of Auckland

The development of head-mounted miniaturised microscopes ('miniscopes') enables brain activity to be recorded in freely moving rodents. By using miniscopes we can directly decipher how brain cell activity underlies behaviour as it happens in the awake behaving animal. Furthermore, we can utilise this technology to understand the mechanisms of behavioural changes in neurological diseases. In this study we examined the cellular mechanisms that underlie behavioural deficits in Autism Spectrum Disorders ASD. Individuals with ASD display a range of behavioural changes including learning difficulties, social deficits, and repetitive behaviours. These behaviours are well replicated in mouse models allowing their cellular underpinnings to be explored. Several of the behaviours that are affected in ASD are mediated by a brain region called the hippocampus. We utilised miniscopes to examine cellular activity in the hippocampus during spatial and social memory tasks and determined whether a dietary zinc supplement, previously shown to prevent ASD behaviours from developing, returns hippocampal activity to normal. The ability to examine brain activity and behaviour simultaneously will advance our understanding of the cellular mechanisms that cause behavioural deficits in ASD. Improved understanding of the mechanism of action of our treatment will aid its translation into clinical trials.

Dr Juliette Cheyne

Funding contribution by:
The Peter and Jenny Vincent Charitable Trust

perpetual guardian

Projects

GONOCOCCUS VACCINES

$145,632 | 2 years 1122004

Prof Thomas Proft, Dr Catherine Jia-Yun Tsai, Dr Fiona Radcliff, Dr Joanna Hicks
Department of Molecular Medicine and Pathology
University of Auckland

Gonorrhoea is a sexually transmitted disease that, if remains untreated, can lead to complications such as infertility. There's an estimated 78-106 million new cases each year worldwide and New Zealand rates were reported as 100 per 100,000 population in 2017. Māori and Pacific People have significantly higher gonorrhoea rates compared to Europeans. The World Health Organisation has declared the development of effective treatments against this bacterium a global priority. We generated five vaccine candidates based on our PilVax platform which uses the rigid scaffold of a bacterial pilus structure to stabilise and multimerise introduced peptides and small proteins on the surface of the food-grade bacterium Lactococcus lactis. Mice immunised with the five vaccine candidates generally generated high antibodies in serum and mucosal sites nose, vagina. To test if these antibodies are functional and can protect against disease, we analysed their ability to prevent attachment of the bacteria to human epithelial cell and found that serum from all five vaccine candidates significantly reduced binding of the bacteria. This suggests that the vaccine candidates might interfere with colonisation and thereby might prevent establishment of gonococcal disease. We're currently also testing the serum samples for their ability to kill bacteria by immune responses that are triggered after antibody binding to the bacterial surface. Our results paved the way for pre-clinical trials using mouse infection models to further test the efficacy of the vaccine candidates to protect animals from gonococcal disease. If successful, this might lead to future clinical trials. An effective vaccine against this bacterium would not only prevent gonorrhoea but also limit the spread of antimicrobial resistant strains.

Pictured above from left to right: **Prof Thomas Proft, Dr Catherine Tsai, Mr Mejo Korah**

PAEDIATRIC PALLIATIVE CARE EDUCATION AOTEAROA

$109,826 | 2 years 1122005

Dr Gemma Aburn, Dr Ross Drake, Dr Deborah Raphael, Dr Tess Moeke-Maxwell
School of Nursing | University of Auckland

This project enabled the development of a national Paediatric Palliative Care education programme that is culturally sensitive and specifically designed for supporting development of knowledge and skills in clinicians caring for children with palliative care needs across Aotearoa. Alongside this we sought to identify health professionals' needs at every step of programme development with a three phase mixed methods research project. Through this research we identified that there are significant gaps in Paediatric Palliative Care knowledge and skills of health professionals working in regional centres across New Zealand. Furthermore, we identified that the education programme increased clinician confidence in caring for children with serious illness and palliative care needs, improved clinician knowledge and subsequently has had an impact on care of children in regional centres. This project has also seen the development of a Paediatric Palliative Care specific Māori model of health – He Whare Kaiao, which is based upon the well-known Te Whare Tapa Whā framework. This was identified as valuable to health professionals and needed to recognise the complex and diverse needs of children and whānau. He Whare Kaiao was developed with input from whānau consumers of paediatric palliative care services, kaumātua and health professionals working in the field.

The Te Ārai Children's Palliative Care research team: (from left to right) **Dr Deborah Raphael, Prof Merryn Gott, Dr Gemma Aburn, Dr Ross Drake, Dr Tess Moeke-Maxwell**

Funding contribution by:
Room-Simmonds Charitable Trust
perpetual guardian

Projects

Prof Sue Stott

IDENTIFYING IMPAIRED INFANT MUSCLE GROWTH

$154,878 | 2 years 1118015, CRF-1118015 $9,222

Prof Susan Stott, A/Prof Alicia Spittle, Dr Geoffrey Handsfield, Dr Sian Williams, Dr Justin Fernandez, Dr Seyed Ali Mirjalili, A/Prof Malcolm Battin
Department of Surgery | University of Auckland

While the link between pre-term birth, cardiovascular dysfunction, hypertension, and glucose intolerance in adulthood is well established, we're only just starting to recognise the impact of pre-term birth on the growth of muscles in childhood. Two reviews have recently highlighted the adverse impact of preterm birth, or low birth weight, on subsequent muscle strength in child- and adulthood, showing reduced levels of endurance and strength that appear to persist into adulthood. However, prior to this study, there was very little information about muscle growth in infants admitted to the neonatal intensive care unit, both premature and term infants. We used three-dimensional ultrasound to look at calf muscle growth in infants discharged after an admission to the neonatal intensive care unit (NICU) compared to term babies born in the community. We scanned the three individual muscles of the calf at 3-, 6-, and 12-months of corrected age i.e. correcting for their early birth as well as tracked the infant's weight, height and achievement of developmental milestones. We found the NICU group of infants matched their term counterparts' weight and length at 3-months of term-corrected age and continued to grow at an equivalent rate. However, in comparison with term infants, calf muscle growth was smaller in the NICU group, with the biggest differences seen starting at 6-months of age and resulting in a 25% reduction in muscle volume at one year of age. Our study provides the first evidence that NICU admission is associated with reduction in muscle growth, at 12-months corrected age, in the absence of any reduction in infant growth or developmental conditions. Further review is needed as the children grow but this finding has potential long-term implications for alterations in muscle strength and fitness into adulthood, following premature birth and NICU admission.

OPTIMISING MENINGIOMA PROGNOSTICATION

$80,707 | 2 years 2122013

Dr Clinton Turner, Mr Jason Correia, Prof Mike Dragunow
Anatomical Pathology | Te Whatu Ora Te Toka Tumai Auckland

Meningiomas are the most primary brain tumour in adults. While usually non-malignant, meningiomas frequently recur and can cause significant disability or even death through uncontrolled growth or complications such as stroke. This study investigated a three year group of patients undergoing meningioma surgery at Auckland City Hospital. It compared the currently used method at Auckland Hospital for assessing an individual's risk of meningioma recurrence with two other methods: a proposed 'Auckland Meningioma Score' and the recently published 'Integrated Molecular-Morphologic Meningioma Classification.' We found the Integrated Molecular Morphologic Meningioma Classification more accurately predicted those patients at high and low risk of meningioma recurrence up to three years after their operation compared to the current method. The 'Auckland Meningioma Score' was good at predicting high risk patients, but it didn't perform as well in determining which otherwise low risk patients were likely to suffer a meningioma recurrence. The findings of this study support the role of the 'Integrated Molecular-Morphologic Meningioma Classification' in the management of patients and provide important context for how it is best used for patient management.

Dr Clinton Turner

Funded by: **Anonymous**

Projects

A/Prof Joanne Davidson (third from left) **with her team**

Co-funded with Neurological Foundation of New Zealand

Neurological Foundation
A pathway to hope

EXENDIN-4 AFTER HYPOTHERMIA

$49,500 | 2 years 1122010

A/Prof Joanne Davidson, Dr Kelly Zhou
Department of Physiology | University of Auckland

In New Zealand, 70 babies a year develop brain injury due to the loss of oxygen or blood supply around the time of birth. This can lead to death or lifelong disability. The only treatment available for these babies is brain cooling, but nearly half of the babies that are treated will still develop brain injury. Treatments that can be used alongside brain cooling are urgently needed to improve the outcome for these babies. We've shown there is unresolved inflammation in the brain, even after treatment with hypothermia. This inflammation likely contributes to brain injury and disability. We investigated whether targeting this inflammation with exendin-4 a drug that has anti-inflammatory effects, after treatment with brain cooling further reduced brain injury and inflammation. We did not find better recovery of brain activity, when exendin-4 was given after hypothermia following oxygen deprivation compared with hypothermia alone. Our research suggests that exendin-4 given after therapeutic hypothermia may not reduce brain damage and disability in babies that have experienced loss of oxygen before or during birth.

Sir Harcourt Caughey Award

Prof Andrew Taberner $15,000 1725002

Auckland Bioengineering Institute | University of Auckland

'Ischemic heart disease', resulting from an inadequate supply of oxygen to the heart, is among the most prevalent causes of death in New Zealand. The high level of mortality seen with ischemic heart disease is largely due to deadly disturbances of the heart's electrical activity, known as 'arrhythmias'. The causes of these arrhythmias are complex, with one important contributor being stretch of heart muscle due to uneven changes in contraction. How this stretch leads to arrhythmias, however, is extremely difficult to study with current technologies. To understand the relationship between arrhythmias and stretch requires the development of new experimental techniques. By working with Prof T Alexander Quinn (Department of Physiology & Biophysics, Dalhousie University, Canada) during his visit to the Bioinstrumentation Laboratory at the Auckland Bioengineering Institute, we were able to develop a highly specialised device that allows for the precise, simultaneous local measurement of the mechanical and electrical properties of heart muscle samples from human and animals, during localised manipulation of contraction and muscle stretch. This new ability to mimic disease conditions, while measuring its effects on heart function, is a significant step forward for studying the importance of stretch to arrhythmias in ischemic heart disease. This exciting advancement is now allowing us to determine how stretch of heart muscle that occurs during ischemic heart disease may be targeted for the development of new medical treatments to prevent deadly arrhythmias.

Cardiac Instrumentation Research Team, with Prof Quinn (from left to right): **Chamal Kohombakadawala, Dr Julia Musgrave, Prof Andrew Taberner, Prof Alex Quinn, Dr June-Chiew Han, Dr Toan Pham**

Sir Harcourt Caughey Award

Visit of Prof Raina Fichorova to the University of Auckland and Bi-Directional Research Exchange

$18,656 1724001

Dr Augusto Simoes-Barbosa
School of Biological Sciences | University of Auckland

The Sir Harcourt Caughey Award supported a 10-day visit by Professor Raina Fichorova, an internationally recognised expert in women's reproductive and genital tract biology at Harvard Medical School. Prof Fichorova delivered a cross faculty lecture within the School of Biological Sciences seminar series, drawing researchers from biology, medicine, and public health. She also presented the inaugural plenary at the International Conference of Anaerobic Protists (ICAP 2024), the first time it's been held in New Zealand. With around 200 international attendees, ICAP significantly enhanced New Zealand's visibility in protozoology and parasitology, areas in which the country aims to build capability. During her visit, she also worked with Dr Simoes-Barbosa and his team, laying the groundwork for ongoing collaboration. Immediately after the conference, Dr Simoes-Barbosa visited her lab at Harvard, where supplementary University of Auckland funding enabled an extended two month research period for hands-on training in Prof Fichorova's ex vivo vaginal biome model, supporting the establishment of this system in Auckland. Dr Simoes-Barbosa also secured a Catalyst Seeding Fund award to continue joint research on infections, microbiome alterations, and cervical cancer. This collaboration strengthens NZ's research capacity in women's health, supports emerging scientists, and positions local researchers within a global network advancing vaginal microbiome–infection interaction research.

Left to right: **Prof Fichorova and Dr Simoes-Barbosa**

Echo Zone Rotorua $13,983 1719004

Prof Frank Bloomfield
Liggins Institute | University of Auckland

First granted in 2019, this award was extended several times due to COVID 19 that prevented Prof Peter Bergsten from travelling here. We appreciate the flexibility that enabled his visit to finally proceed in September 2024. Prof Bergsten is a leading researcher in Sweden's national Ending Childhood Obesity (ECHO) initiative and a Professor at Uppsala University, integrating cellular mechanisms with clinical research to understand and prevent childhood obesity and type 2 diabetes. His work centres on ECHO zones - community-based environments that combine societal data, individual health markers, and personalised interventions to promote healthy development. His initial visit to the Liggins Institute in 2019 explored the potential for a New Zealand ECHO zone within a Horizon Europe collaboration. Although that proposal was not funded, New Zealand's new status as a full Horizon Europe partner has reopened opportunities for joint research. The 2024 visit focused on defining markers of health, identifying early deviations from healthy trajectories, and developing interventions to prevent long term adverse outcomes. Prof Bergsten met with researchers from the Liggins Institute, Koi Tū, the School of Population Health, and Andrew Sporle (Inzyte), Māori National Contact Point for Horizon Europe. These discussions strengthened collaborative links and highlighted shared priorities in childhood health research. The visit concluded with a well attended seminar, Ending Childhood Obesity (ECHO) Zone – Maintaining Children Healthy, Preventing Obesity and Treating Obesity in Children, generating strong interest in future collaboration.

Pictured above**: Dr Yvonne Anderson with Prof Peter Bergsten**

Projects

Prof Jennifer Weller

Funding contribution by:
Room-Simmonds Charitable Trust

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USING IN-SITU SIMULATION TO RESOLVE THREATS TO PATIENT SAFETY $46,000 | 2 years 1121017

Prof Jennifer Weller, Dr Carlos Campos, Dr Jennifer Long, Ms Kaylene Henderson, Dr Andrew MacCormick, Prof Alan Merry
Centre for Medical and Health Sciences Education | University of Auckland

We set out to examine how safety threats identified during in situ simulation courses are resolved in hospitals across Aotearoa New Zealand. Our mixed-methods study involved tracking 278 safety threats discovered through 20 simulation courses, assessing their status three months post-course, and conducting interviews with hospital simulation leads. We found that only 28% of threats were resolved within this timeframe, with equipment, environment, and task-related issues being more likely to be addressed than complex teamwork or organisational concerns. Notably, smaller hospitals with flatter hierarchies saw higher resolution rates. Through qualitative interviews, we learned that threats clinicians could control directly were fixed more quickly, while those needing broad collaboration or structural change often remained unresolved. Limited clinician authority, time pressures, and lack of institutional support were common barriers. Our research highlights that to turn simulation insights into genuine safety improvements, hospitals must empower staff, strengthen governance, and foster cross-departmental collaboration. Most safety threats remain unaddressed after three months, especially in larger hospitals or when the issues are systemic. Our findings call for greater organisational commitment to translating safety discoveries into real-world change.

HOUSEHOLD TRANSMISSION OF BACTERIAL RESISTANCE $145,078 | 2 years 1118020, CRF-1118020 ($9,117)

Prof Catherine Byrnes, Dr Hamish McCay, Dr Catherine Bremner, Dr Susan Morpeth, Dr Adrian Trenholme, Dr Rachel Webb, Dr Emma Best
Department of Paediatrics, Child and Youth Health | University of Auckland

Our aim was to determine if Pharmac approved funding for a 2-year course of prolonged oral antibiotic azithromycin for children with lung scarring to reduce respiratory infections caused problems. This was mainly whether the child developed bacterial antibiotic resistance and whether these resistant bacteria were passed on to other children in the household. This could reduce effectiveness of antibiotics for future infections. We enrolled 4 families, but the study was then impacted by the pandemic lockdowns in 2020 and 2021. It meant we could not visit households or undertake planned outcome measures of nasal and throat swabs, and lung function. These procedures were recognised to generate aerosols which may infect others within the room. Healthcare teams were also concerned that acute COVID-19 infection would lead to worse illness in those with chronic respiratory disease and prioritised all those eligible for prolonged azithromycin to commence treatment when we could not do baseline and initial visits. Families were wary of having any respiratory swabs and of coming to hospital. Although we still consider this an important future study, we were not getting the uptake needed to provide an answer to this research and clinical question.

Prof Catherine Byrnes

Funded by:
AC Horton Estate

AMRF Support of the 2024 Aotearoa Clinical Trials Te Whatu Ora Counties Manukau Research Week

Ann Anson $1,000 6724007

Neurology | Te Whatu Ora Counties Manukau

It was an honour to receive the Auckland Medical Research Foundation's Best Student/Emerging Research Award and its associated $1000 grant, for the study, 'Demographic, Ethnic and Imaging Patterns in Moyamoya Disease', presented at Aotearoa Clinical Trials Research Week. I worked on this study with my supervisor, Dr Karim Mahawish at Middlemore Hospital, investigating the characterisation of Moyamoya – a rare cerebrovascular disease – in the South Auckland population. Following this award, we expanded the study to involve the whole Auckland population – using the grant funding, I was able to travel overseas and share our research via an oral presentation and a poster presentation at the Australian and New Zealand Stroke Organisation Conference, hosted in Tasmania, Australia on 4 Sep 2025. This was a novel exploration of how the rare cerebrovascular angiopathy impacts New Zealanders in the Auckland region, which informed areas of future improvement in the clinical management of patients with Moyamoya angiopathy, as well as discovered current health inequities in the ethnic distribution of the condition – which more often affected Māori and Pacific communities. Being able to disseminate this novel research on the Australasian stage was not possible without the kind and generous funding of the AMRF – I am incredibly grateful for the opportunity provided, and hope that our efforts meaningfully contribute to improving clinical management and support for Moyamoya patients.

Ann Anson

Dr Alice McDouall

HealtheX Emerging Researcher Awards

Alice McDouall $2,000 6722002

Department of Physiology | University of Auckland

Through the generous support of the AMRF, I attended the 2025 Fetal and Neonatal Physiological Society (FNPS) meeting, held on Rottnest Island, Western Australia. It's one of the most important international meetings for perinatal researchers and clinicians. At this conference, I was selected to present my recent research investigating whether hypothermia is an effective and safe treatment for brain injury due to mild oxygen deprivation. This work was of particular interest, as there are currently no approved treatments for infants who have brain injury due to mild oxygen deprivation. I received multiple questions after my presentation, gained valuable feedback and had several in-depth conversations with clinicians that will lead to collaborations in the future. As part of the conference, I also attended an Early Career Researcher (ECR) workshop held in Perth following the main meeting. This workshop featured insightful and engaging presentations which offered practical guidance and strategic perspectives on how to develop into a world class researcher in perinatal physiology. Attending both the FNPS meeting and the ECR workshop will have lasting benefits for my future career as I work towards becoming an independent, internationally recognised researcher.

Funded by:
Wellington Sisters

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“This research is about listening to the experiences of clinicians, children and whānau, then using what we learn to improve care. When we understand what people need, we can create services that are more responsive, more equitable and ultimately more meaningful.”

Dr Gemma Aburn | AMRF funding recipient

Seeing the child first: A vision for paediatric palliative care in Aotearoa

Dr Gemma Aburn Senior Lecturer | University of Auckland
Children's Community Nurse Specialist | Waitematā District, Te Whatu Ora Health New Zealand

When Dr Gemma Aburn talks about paediatric palliative care, she does not begin with illness. She begins with children. She begins with pēpi, tamariki and rangatahi who love music, laugh with their siblings, argue about bedtime, dream about the future, and deserve the opportunity to live as fully as possible, regardless of the challenges they face.
That simple but powerful belief has shaped her career as both a clinician working as a Paediatric Palliative Care Nurse Specialist at Starship, and more recently a Children's Community Nurse Specialist in the Waitākere area, and as a researcher and educator at the University of Auckland.

Dr Gemma Aburn with AJ, whose whānau are lived experience experts in the research team

FOR MANY YEARS, Gemma witnessed a reality that troubled her. The quality of paediatric palliative care available to children across Aotearoa varied and depended on where they lived. While specialist support existed, clinicians in regional centres had limited access to formal training in paediatric palliative care. Yet these healthcare professionals were caring for children and supporting whānau through some of the most difficult moments of their lives.

Rather than accepting this inequity, Gemma asked an important question: How can we ensure that every child and whānau receives compassionate, culturally safe, high-quality care, no matter where they live?

With support from the AMRF, she set out to find an answer.

Working alongside an experienced team of researchers and clinicians, including Dr Tess Moeke-Maxwell, Dr Ross Drake, Dr Deborah Raphael and Professor Merryn Gott, Gemma led the development of New Zealand's first formal national paediatric palliative care education programme.

The programme was designed specifically for Aotearoa and adapted from the internationally respected Education in Palliative and End-of-Life Care for Pediatrics (EPEC-Pediatrics) curriculum. But this was never intended to be a simple copy-and-paste exercise.

Gemma knew that meaningful education needed to reflect the realities of New Zealand families and communities. It needed to recognise the importance of culture, relationships and whānau. Most importantly, it needed to support clinicians caring for both Māori and non-Māori children in ways that were respectful, relevant and grounded in local knowledge.

The team took their workshops into regional communities, including Wellington, Christchurch and Northland. Clinicians from a wide range of disciplines gathered to learn, share experiences and build confidence in caring for children with serious illness. Alongside the education, Gemma conducted research to better understand what healthcare professionals needed in order to provide excellent care.

What they found was both encouraging and revealing.

Healthcare professionals were eager to learn and committed to supporting children and families. However, significant gaps existed in knowledge, particularly around communication, relational aspects of care, tikanga Māori and symptom management. The education programme helped address these gaps, and participants consistently reported greater confidence and practical learning that could be immediately applied in clinical care. In fact, every participant was able to identify learning they could take back into their practice.

For Gemma, this confirmed something she had long suspected. The challenge was never a lack of commitment from clinicians. It was a lack of access to the right support and education.

Thanks to the programme, hundreds of healthcare professionals have now received paediatric palliative care training tailored to the New Zealand context. More importantly, children and whānau stand to benefit from healthier systems, more confident clinicians and stronger local support networks

One of the most significant outcomes of the project emerged from close collaboration with whānau, health professionals and kaumātua.

In 2025, Gemma's work reached an important milestone with the academic publication of Te Whare Kaiao, an Indigenous-informed paediatric palliative care framework developed in partnership with health professionals, whānau with lived experience, and Te Ārai Kāhui kaumātua.

The framework reframes paediatric palliative care from being synonymous with end-of-life to one centred on helping children live well and reach their full potential for the time they have. The 2025 publication highlighted the need for culturally grounded, whānau-centred approaches to care and provided a practical framework to guide clinical services, education and future research across Aotearoa New Zealand.

Alongside this work, Gemma continued expanding New Zealand's first formal paediatric palliative care education programme into a University of Auckland short course, helping equip clinicians throughout the country with the knowledge and confidence to provide high-quality care for children with serious illness and their families. Together, these achievements are helping strengthen paediatric palliative care services and ensure that the voices and experiences of whānau are central to how care is designed and delivered.

Importantly, Te Whare Kaiao challenges common misconceptions about palliative care.

Rather than focusing solely on end-of-life care, it encourages health professionals to think about how children can live well, reach their potential and experience meaningful childhoods for as long as possible.

That philosophy is perhaps best captured in the story of AJ, a 4 year old Auckland boy living with palliative care needs. In describing the inspiration behind Te Whare Kaiao, Gemma has spoken about the importance of seeing the child before the diagnosis. AJ's love of music, his determination and his personality are central to who he is. His illness does not define him. His humanity does.

This perspective sits at the heart of Gemma's work.

It is why she continues to advocate for children, families and healthcare professionals. It is why she believes education matters.

Reflecting on her journey, Gemma describes the paediatric palliative care education project as her first postdoctoral study. The experience not only strengthened national education and clinical practice but also laid the groundwork for future research focused on achieving equitable access to care for all children and families. The team that conducted the education project continue to work together, and have just been awarded an HRC Project grant to explore whānau and family experiences of caring for a child with palliative care needs in Aotearoa. This research seeks to ensure a strong whānau voice in the implementation of a new national service for children's palliative care.

At its core, Gemma's story is one of partnership, between researchers and clinicians. Partnership between health services and communities. And partnership with whānau whose experience, knowledge and resilience continue to guide the way forward.

"Every child deserves to be seen first as a child. And every whānau deserves care that honours who they are, where they live, and what matters most to them."

Dr Gemma Aburn

Financial highlights | 2025

$5.1m

RESEARCH FUNDING | 2025

$105.7m

TOTAL RESEARCH FUNDING | SINCE 1955

Financial Performance

	Note	2025 $	2024 $
Revenue			
Donations/Research Income		2,984,208	1,846,900
External Funding of Operational Expenses	1	664,141	610,286
AMRF 70th Anniversary Sponsorship Income		125,000	50,000
Other Comprehensive Income		1,231,919	1,877,793
Investment Income (Net Return)		10,122,776	11,001,089
Total Revenue		**15,128,044**	**15,386,068**
Expenditure			
AMRF 70th Anniversary Expenses		290,638	-
Operational Expenses	1	664,141	610,286
Non-Operational Expenses		(3,267)	12,621
Net Research Grant Expenses	2	5,087,652	3,864,345
Total Expenses		**6,039,164**	**4,487,252**
Net Surplus		**9,088,880**	**10,898,816**
Equity		**91,804,119**	**82,715,239**

Notes to Financial Report

1. **Operational Expenses**
   AMRF is grateful to the Harry, Hector, Douglas, and TB Goodfellow Funds for the ongoing funding of operational expenses.

2. **Net Research Grant Expenses**

Project Grants	2,754,920	15
Career Advancement Fellowship	1,107,050	2
Douglas Goodfellow Medical Research Fellowship	264,500	1
Doctoral Scholarship	319,000	2
First Fellowship	259,776	1
Travel Grants	127,274	30
Other Grants:		
UoA / AMRF Senior Research Fellowship	125,000	1
Gavin & Ann Kellaway Travelling Fellowship	64,948	3
Kelliher Charitable Trust Emerging Researcher Award	30,000	1
Sir Harcourt Caughey Award	15,000	1
Research Network Fund	2,085	
Other Awards	23,850	11
Total Research Grants Awarded	**5,093,403**	**68**
Less Grants Allocated But Not Required	(5,751)	
Net Research Grant Expenses	**5,087,652**	

The summary financial highlights above have been extracted from the Audited Financial Statements which can be obtained by contacting the Foundation's office, or via Charities Services www.charities.govt.nz

Special acknowledgements

We are incredibly thankful to all the individuals, trusts, and organisations listed who have given so generously to support the progress of medical discoveries and advancements throughout this year.

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AMRF thanks BlueStar Group for more than 10 years of pro bono print of the AMRF annual report and newsletters.

"Research gives us the opportunity to move beyond identifying problems and into creating solutions. The support behind this work has helped us build knowledge, strengthen clinical practice, and improve care for children and whānau throughout Aotearoa New Zealand."

Dr Gemma Aburn | AMRF funding recipient

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Tel +64 9 923 1701
amrf@medicalresearch.org.nz

PO Box 110138 Auckland Hospital
Auckland 1148 Aotearoa New Zealand

www.medicalresearch.org.nz
@medresearchnz