Te Niwha
Infectious Diseases
Research Platform

Preparing and protecting New Zealand through research:

Outcomes from Te Niwha Infectious Diseases Research Platform, 2022–2026

The Infectious Diseases Research Platform, Te Niwha, is co-hosted by the New Zealand Institute for Public Health and Forensic Science Limited (PHF Science) and the University of Otago. PHF Science, formerly the Institute of Environmental Science and Research Limited (ESR), was renamed on 1 July 2025.

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Whakataki
Foreword

Sir Ashley Bloomfield and Dr Martin Gagnon

E ngā mana, e ngā reo, e ngā karangaranga maha o te motu – tēnā koutou katoa.

Te Niwha was established with a clear and urgent purpose: to strengthen Aotearoa New Zealand's ability to understand, prepare for, and respond to infectious diseases by drawing upon the collective strengths of our researchers, our communities, our partners, and our public health systems. Through this programme, we have witnessed what is possible when diverse knowledge systems, disciplines, and worldviews are bound together in unity.

Central to this mahi has been the guiding wisdom of Kiingi Taawhiao and his tongikura:

"Kia niwha te ngaakau ki te whakauu ki ngaa mahi atawhai i te iwi."

This tongikura encourages us to *be brave and immovable to do what is best for the people.* It reminds us that research is not an abstract pursuit but an expression of manaakitanga, responsibility, and collective protection. Te Niwha has embodied this principle by ensuring that the research undertaken is not only scientifically robust but also grounded in equity, cultural integrity, and the wellbeing of all communities.

As you move through these pages, you will see the scientific advances, the partnerships formed, and the innovative approaches developed through Te Niwha. Equally important, you will see the values that have shaped this work: kotahitanga, manaakitanga, rangatiratanga, and a steadfast commitment to protecting our most vulnerable. These values reflect the enduring relevance of Kiingi Taawhiao's words and the responsibility we hold to uplift and safeguard our people.

Although the first phase of funding comes to a formal close, the mahi does not end here. Just as infectious diseases continue to evolve, so too must our preparedness, our research capability, and our partnerships. The knowledge, relationships, and capacity built through Te Niwha remain alive and strong. They form a durable foundation from which further research, innovation, and culturally centred approaches will continue to grow.

As we look forward, we do so with confidence that collaboration nurtured through Te Niwha will endure. Our shared commitment to the wellbeing of Aotearoa, grounded in values and scientific excellence, will continue to drive this work into the next phase. May the insights and stories held within continue to guide, inspire, and strengthen those to remain brave and immovable for the people of Aotearoa.

Nō reira, tēnā koutou, tēnā koutou, tēnā tātou katoa.

Ko wai a Te Niwha
About Te Niwha

Te Niwha was established in 2022 as Aotearoa New Zealand's national infectious diseases research platform, created to strengthen the country's preparedness for current and emerging health threats. Co-hosted by PHF Science and the University of Otago, the Platform has supported over 95 research projects and connected over 300 researchers across the nation.

Emerging from the lessons of the COVID-19 pandemic, Te Niwha was designed to ensure stronger links between scientific knowledge and practical action. With a three-year investment of $36 million, the Platform expanded New Zealand's capability in the prevention, control and management of infectious diseases, recognising that public confidence depends on a trusted, coordinated and effective scientific response.

Community involvement has been central to Te Niwha's approach. Research has been developed in partnership with iwi, Māori and Pacific communities, health providers, service organisations and local leaders to ensure that outcomes are relevant, accessible and grounded in real-world needs. This work acknowledges that different communities face different risks, and that culturally informed approaches are essential to achieving equitable and effective results.

Te Niwha also contributes to international research efforts addressing global challenges such as antimicrobial resistance, childhood respiratory disease and climate-related health risks. Through participation, New Zealand researchers are part of global networks working to find better, faster and more reliable solutions to major health concerns.

Supporting future capability is a further focus of the Platform. Through scholarships, fellowships and leadership development opportunities, Te Niwha is helping grow the next generation of scientists and strengthening the national research workforce.

This report outlines the significant progress and impact achieved through the Platform's first phase of investment. The work completed has strengthened the ability of our researchers to respond effectively to future infectious disease threats in Aotearoa.

The commitment to this work continues. In late 2025, the Government announced a further $75 million investment to extend research over seven and a half years. PHF Science will host the next phase of the Platform, focused on deepening national preparedness, coordinating research efforts and ensuring that Aotearoa continues to benefit from world-class scientific capability.

As the work evolves, the next phase of infectious disease (ID) funding will build on the foundation that is committed to strong partnerships, clear communication and research that delivers meaningful benefits for all communities. This report provides a brief overview of current projects. Further information is available on the Te Niwha website and through PHF Science's social media channels.

Kohinga Rangahau
Research Portfolio

The Te Niwha research portfolio brings together a broad range of investments including Research Projects, Strategic Projects, Seeding Projects, and People Leadership. Collectively, they advance the Platform's four research priority themes.

Each project type plays a distinct yet complementary role:

Priority Area Research generates the scientific evidence that deepens understanding of infectious diseases.

Strategic Projects strengthen national coordination and ensure research insights can be translated into action.

Seeding Projects encourage the exploration of new ideas and emerging concepts.

People Leadership builds capability in communities and builds the pipeline of the next generation of experts.

Together, these initiatives reinforce and accelerate progress across the priority themes of Surveillance, Prevention, Diagnostics, Therapeutics and Te Ao Māori, creating a cohesive, future-focused research ecosystem that strengthens Aotearoa New Zealand's readiness and resilience that operate across biomedical, public health, social, and community-based research, integrating multidisciplinary perspectives and cross-institutional collaboration.

Te Ingoa o Te Niwha
Our Name

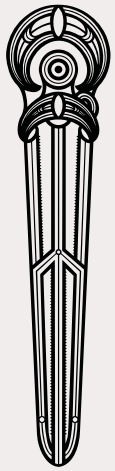
Our critical research platform needed a strong name – one that reflected our intent, our current environment and our history.

We looked to iwi leader, Raahui Papa, for guidance as our name had a heavy load to carry. In response Raahui gifted Te Niwha, derived from the tongikura of the second Māori king, Kiingi Taawhiao. In response to pandemics and challenges of his time, Kiingi Taawhiao stated:

Kia niwha te ngaakau ki te whakauu ki ngaa mahi atawhai i te iwi
Be brave and immovable to do the best for the people.

The name Te Niwha encompasses our vision, mission, values and what we must collectively achieve to ensure that Aotearoa New Zealand is prepared and able to respond to emerging infectious disease threats.

Te Tohu o Te Niwha
Our Tohu



Our tohu (symbol) was designed by Tuukaroto Mahuta – an independent graphic designer from Ngaati Mahuta, Waikato.

The concept of the Te Niwha tohu is expressed visually in the form of a ngira, (needle) influenced by the renowned tongikura of the first Māori king, Kiingi Pootatau Te Wherowhero.

"Kotahi te koowhao o te ngira e kuhuna ai te miro maa, te miro pango, te miro whero".
There is but one eye of the needle, through which white, black and red threads must pass.

It symbolises our mission: to build world-class research capability for Aotearoa New Zealand's response to current, ongoing and emerging infectious disease threats and for pandemic preparedness.

The design concept of the ngira occurs across three distinct areas.

At the top there is a manaia, which symbolises kaitiakitanga. Through the middle sit the raarangi haehae/guidelines. They symbolise the threads that eventually connect. The niwha/notches replicate a rākau whakapapa/genealogy staff.

The concept of the ngira is the cure for infectious diseases. The needle binds people together under the banner of kotahitanga (unity).

Te Kawenata o Te Niwha
Our Charter

Te Kawenata o Te Niwha sets out the guiding principles that underpin all aspects of work funded by Te Niwha.

It provides a shared framework for Te Niwha and its research partners, ensuring that activities reflect our collective commitments. Te Kawenata o Te Niwha establishes expectations for excellence in science, cultural integrity, and partnership, embedding Te Tiriti o Waitangi principles at the heart of decision-making. It promotes accountability, collaboration, and equity, so that research not only advances knowledge but also strengthens relationships and delivers benefits for Aotearoa New Zealand.

Te Niwha

Te Kawenata o Te Niwha

Te Niwha Charter

Te Whakakitenga | Vision

Aotearoa New Zealand's response to current, ongoing and emerging infectious disease threats is characterised domestically and internationally as a strong, prepared and unified network.

Te Ahunga | Mission

To ensure Aotearoa New Zealand has world-class research capability to support our preparedness for current and future infectious disease challenges.

Te Tuatahi | Article One

Kāwanatanga | Governorship

Obligation to protect Māori rights

- Representation & kaitiakitanga
- Structural mechanisms
- Decision-making partnership

Te Tuarua | Article Two

Tino Rangatiratanga | Self-Determination

Māori exercising authority over their affairs

- Engaged, involved
- Capacity & capability building
- Design & implementation

Te Tuatoru | Article Three

Ōritetanga | Equity

Protection and rights

- Equitable outcomes
- Tikanga & kawa
- Mana enhancement & due regard

A tātou Mātāpono | Our Principles

	Tiakitanga | Accountability	Hononga | Relationships	Tūhonotanga | Partnerships	Rangatiratanga | Leadership
	We are accountable to those involved in or affected by the conduct of our research.	**Our connection to each other, through shared work and experience, provides a sense of belonging.**	**We commit to healthy relationships that are transparent, positively impactful and honourable.**	**We bring people together, encouraging participation, and developing future leaders.**
Ngā Tikanga | Our Values				
Kia pono ai **Integrity**	Actively strive for research excellence, demonstrate the highest standards of behaviour and foster a culture of integrity.	Understand the impact of your role and relationship within the research ecosystem.	Partner with tangata tiriti, tangata whenua, where we undertake rangahau for whom there are reasonably foreseeable direct impacts.	Act with honesty and transparency. Disclose and manage conflicts of interest. Acknowledge those who have contributed and acknowledge relevant work by others.
Aroha **Respect & compassion**	Understand and implement all ethical, tikanga, kawa, and regulatory requirements and standards.	Reach into Mana Whenua and communities when undertaking rangahau to recognise their mana and respect their interests, aspirations and priorities.	Exhibit respect for individuals and communities. Nurture cultural confidence through an appreciation of diversity of thought and values.	Reflect on the consequences of research for communities. Disseminate results and findings and feedback findings to communities.
Mahi tahi **Collaboration**	Behave with openness, honesty, professionalism, responsibility and integrity to safeguard the health, safety, wellbeing and rights of communities.	Actively seek collaboration with partners across different disciplines, organisations, and diverse communities.	Engage in bi-directional learning to advance and enhance the benefit of collaborations	Ensure partnerships contribute to building capacity by supporting the development of future research leaders.
Kotahitanga **Unity**	Use appropriate methodologies that are collaboratively designed and collaboratively delivered with research partners.	Acknowledge the expertise and disciplines of research partners and communities.	Seek to understand, learn and appreciate the aspirations of all partners.	Lead and Influence to ensure the health and wellbeing of our communities are supported by everyone.

Rārangi Take
Contents

PRIORITY AREA RESEARCH

Hopukina Diagnostics

Diagnostics research is centred on improving the speed, accuracy and accessibility of tools that detect infectious diseases.

This theme supports the development and validation of testing methods ranging from rapid point-of-care tools to advanced molecular diagnostics. Projects aim to shorten the time between symptom onset and confirmation, guide appropriate treatment, support infection control, and reduce the spread of disease. By ensuring clinicians, laboratories and communities have access to effective diagnostic options, this theme enhances national readiness and supports better health outcomes.

Bringing Disease Testing to Communities

Reducing health gaps through community-centred care.

Why this matters

- Māori experience lower life expectancy and higher rates of chronic disease.
- New Zealand patterns of mortality are systematically higher for Māori than non-Māori across multiple diseases.
- Māori are less likely to participate in screening programmes and more likely to contract disease.
- Known barriers to healthcare include cost and access to healthcare services.

Helping communities take ownership of their health and environment by bringing infectious disease testing capability to a place and time that works for them.

Better informed – the people-centric POU (point of use) testing model provides better community access to healthcare.

Healthier – people are empowered to take agency for their own health and in community settings where they feel more comfortable, resulting in earlier diagnosis and better outcomes.

More equitable – decreased morbidity and mortality rates for Māori.

Trust and confidence – stronger relationships between communities and their health providers.

Rapid POU diagnostics are going to change the paradigm of laboratory testing for infectious diseases.

Community-centered care helps reduce health gaps based on income, ethnicity, or location, as it serves people that find it hard to engage with healthcare systems. By providing diagnostic testing in the community, we can improve access to health services, support people to engage with their community healthcare providers, enabling better health outcomes for our most vulnerable.

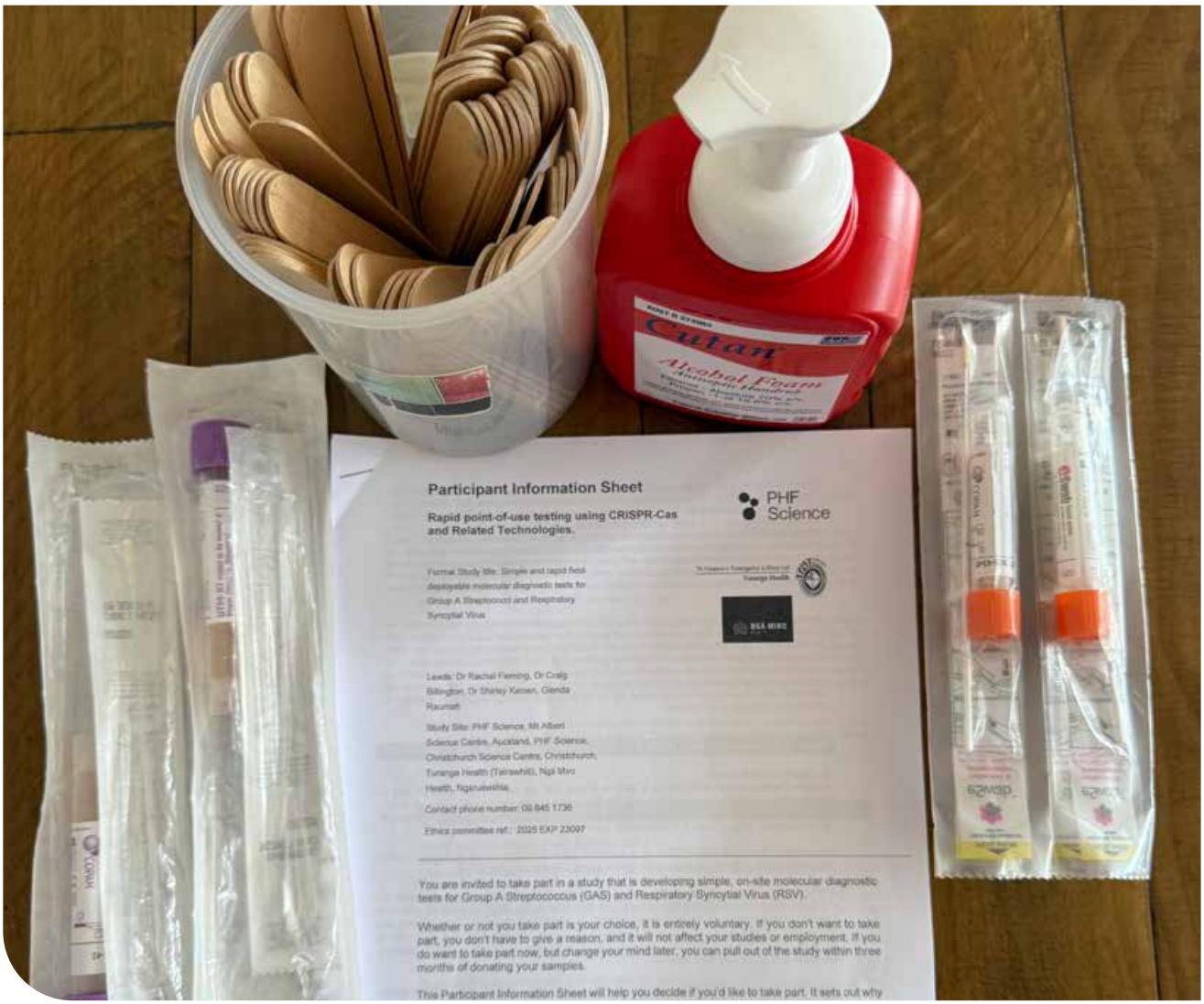
We worked with Turanga Health (Tairawhiti) and Ngā Miro Health (Waikato) to identify what POU testing is most important to their communities. Group A Streptococcus (GAS) was identified as a high priority. GAS is the cause of acute rheumatic fever, that can lead to rheumatic heart disease, which is more prevalent in Māori communities. Developing a GAS POU test will enable earlier disease detection and better outcomes for Māori.

We have developed a POU assay to detect GAS in throat swab samples in less than an hour. Using simple equipment and recording results via a phone app make this approach practical for community use. The next stage is to continue to work with our community partners to validate the POU assay workflow and develop best practices for its use.

Project team: Dr Craig Billington, Dr Rachel Fleming, Courtney Lynch, Lauren Baker, Olivia Small, Dr Erasmus Smit, Heidi Baker, Richard Dean, Lief Keown , Elisabeth Moore, Karmun Chooi, Shirley Keown, Glenda Raumati.

Research partners: PHF Science, Turanga Health, Ngā Miro Health.

Research funding: $800,000.



Readying New Zealand for Avian Influenza Virus

The rapid global spread of highly pathogenic avian influenza (HPAI) virus H5N1 and the high-cost impact of an incursion on humans, wildlife and agriculture has placed New Zealand on high alert. Work is now under way to ensure the country is prepared for when it reaches our shores.

Why this matters

- Avian influenza virus spreads quickly, and **can jump to non-avian hosts, including humans.**
- It has **inevitable impacts** on wildlife, livestock industries (particularly poultry and dairy), and **potentially human health.**
- Oceania is the **only continent yet to detect H5N1.**
- Host expansion and geographical spread of avian influenza virus H5N1 now puts **New Zealand at significant risk.**

Pathway to solution

- **Enhanced nationwide avian influenza virus surveillance** to detect incursion early
- New and effective **environmental monitoring methods**
- **Deeper understanding** of the risk, likelihood and nature of an incursion

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We are acting now, developing better nation-wide monitoring of our endemic avian viruses and earlier detection of exotic incursions. New Zealand must be bird-flu ready and richer information in near real time is the first step to protecting our people, animals and industries.

– Professor Jemma Geoghegan

HPAI H5N1 is spreading rapidly worldwide, even reaching Antarctica, and represents a major pandemic threat to New Zealand. This study is at the front line of our defence – building knowledge that will help us prepare for the inevitable introduction of avian influenza virus and its profound impacts on wildlife, agriculture and, potentially, human health.

Collaborating with the Department of Conservation (DOC) and Ministry for Primary Industries (MPI), researchers used an innovative combination of genomics technologies to investigate the transmission networks and evolution of avian influenza virus strains already present in Aotearoa. The project demonstrated the use of large-scale environmental sampling for disease surveillance and quantified the disease risk of avian viruses to public health.

Using metagenomics, molecular epidemiology and environmental DNA (eDNA), the team detected viruses present in the wild aquatic bird population between 2023 and 2025. Oral and cloacal samples were collected from over 2,000 birds across more than 40 species. Sampling took place throughout New Zealand and, for the first time, included offshore islands and subantarctic territories. Viruses were detected using metatranscriptomic sequencing. No HPAI virus was found, but low pathogenic avian influenza (LPAI) virus H1N9 was detected in cloacal samples taken from Red Knots in the Firth of Thames – an internationally important coastal wetland. By analysing all the avian viruses in New Zealand's aquatic birds, this project has shown how globally connected they are and what ecological factors shape the type of viruses carried. It is only a matter of time before avian influenza virus hits Aotearoa.

Highly pathogenic avian influenza virus is coming. This project is boosting New Zealand's knowledge and systems to prepare the nation for an inevitable incursion of the highly pathogenic virus.

We know the extent of our endemic avian disease burden, having used an innovative combination of genomic technologies to track the transmission dynamics, evolution, and prevalence of avian viruses in New Zealand.

We have demonstrated scalable environmental monitoring techniques making disease surveillance more accessible and easier to undertake.

We have ongoing surveillance in more sites across New Zealand to enable early detection of viruses on our shores.

We are building capability and capacity for future research, training students in new genetic technologies and improving our potential to detect, respond to and recover from future pandemics.

Lead researchers: Professor Jemma Geoghegan, Dr Stephanie Waller, Dr David Winter.

Research partners: University of Otago, Department of Conservation.

Research funding: $1,227,612.

Mahi Tahi: Decreasing Transmission and Improving Diagnosis of Tuberculosis to Reduce Health Inequities

Collaborative effort is bringing internationally recognised experts together to advance the control and elimination of tuberculosis (TB) in Aotearoa New Zealand.

Why this matters

- **Tuberculosis (TB) remains one of the most serious global infectious threats**, killing more people annually than any other single-cause infectious agent.
- **300 cases are diagnosed in New Zealand** on average annually.
- The disease **disproportionately affects Māori and Pasifika ethnicities.**
- The majority of New Zealand cases are people born outside of New Zealand.
- Of the New Zealand-born cases, **Māori are over five times more likely to contract TB** than New Zealand Europeans.

Pathway to solution

- Integrating **economic and social network analyses** to inform appropriate public health measures to eliminate TB
- **Improving diagnostics and antimicrobial resistant *M. tuberculosis* surveillance in the Pacific** and understanding links to Aotearoa New Zealand
- **Improving measurements of protective immunity to infection** with *M. tuberculosis* that will aid in vaccine efficacy testing
- **Developing an artificial intelligence framework** to combat antimicrobial resistance

Four streams of research are tackling tuberculosis – a significant infectious disease with disproportionate impacts for Māori.

This collaborative programme has brought together internationally recognised TB research leaders in Aotearoa to focus on TB diagnosis and prevention, through public health measures, vaccination and improving treatment options for antimicrobial resistant organisms.

Four University of Otago and University of Auckland TB research teams with expertise in microbiology, immunology, bioinformatics, diagnostics, surveillance, public health and social science, led four separate yet closely connected projects with the united aim of reducing New Zealand's significant TB burden.

Stream A:

TB transmission and economic analysis – specific expansion of collaboration for research to inform tuberculosis elimination for Māori

Co-designing a Māori model of care, using Kaupapa Māori methods to enable a more appropriate public health response to control and eliminate TB from Aotearoa New Zealand.

Mapping the correlations between TB and latent TB cases to provide a more complete picture of the dynamics, networks and connectivity of TB spread within a social structure; and applying a culturally appropriate economic analysis of the TB elimination approach that could inform policy decisions for wider rollout to other regions of New Zealand.

This project is a partnership based on meaningful engagement towards shared outcomes and capability development. The collaboration between TB researchers and local Māori researchers is guided by Iwi, whānau and community partners to ensure the research reflects whānau needs and is led by the people it impacts most. Recruitment of participants for a whānau hauora assessment and social network analysis is ongoing. The model of care will be further developed in 2026.

Project leads: Dr Sue McAllister, Associate Professor Matthew Roskruge, Dr Nina Scott, Professor Philip Hill.

Stream B:

TB diagnostics and surveillance in Pacific peoples in the Pacific and Aotearoa New Zealand

Together with the University of Otago researchers and the Communicable Diseases Research Centre (CDRC) at Fiji National University and Fiji National TB Reference Laboratory, this study is exploring TB transmission in the Pacific and how this is linked to TB cases in Māori and Pasifika communities in Aotearoa; diagnosing drug-resistance patterns and lineages of *M. tuberculosis* in Aotearoa and the Pacific; and developing real time genotypic resistance testing of *M. tuberculosis.*

A multisectoral transdisciplinary research response with strong links to clinical care can provide high-quality research that can be used to change clinical practice and develop skills and capacity at both local and regional levels. Building Fiji National TB laboratory genomics capacity through this project has enabled better TB surveillance and diagnosis in the Pacific Region. This study has built technical capacity and empowered the next generation of Pasifika researchers and leaders. In supporting two Pacific Masters students to apply a With-Pacific-for-Pacific-by-Pacific approach, we are helping create sustainable capacity within the wider Pacific region while linking these skills and research to disease impacts in New Zealand.

Project leads: Associate Professor Htin Lin Aung, Professor James Ussher.

Project partners: Fiji National TB Reference Laboratory, Communicable Diseases Research Centre (CDRC) at Fiji National University.

Stream C:

Signatures of vaccine-induced protection against TB: A bench-to-bedside approach

This project takes a bench-to-bedside approach to inform the development and testing of new, improved vaccines to prevent TB.

There is one licensed vaccine widely used to prevent TB called the Bacillus Calmette-Guérin (BCG). This project correlates the BCG vaccination-induced changes to the gene expression in the lung with changes to gene expression in the peripheral blood to identify markers of immune protection that can be easily measured in the clinic. Correlates of mucosal protection against TB infection identified in the blood are necessary for future vaccine development and evaluation. This work provides the foundational knowledge required to begin developing platforms to assess vaccine responses against infectious diseases of importance to New Zealand, such as TB, through improving protective outcomes for BCG vaccination. Long term, the skills, tools, international networks and expertise built through this project, particularly being able to implement these at Biohazard Level III, can be applied and translated to other infectious diseases, contributing to preparedness for emerging infectious disease threat.

Project lead: Associate Professor Jo Kirman, Dr Gergely Toldi, Naomi Daniels, Riya Shajumon.

Project partners: Associate Professor Marcela Henao-Tamayo (Colorado State University, CO, USA).

Stream D:

Developing an Artificial Intelligence framework to combat antimicrobial resistance

Becoming drug-resistant can create vulnerabilities in *M. tuberculosis*. Targeting these vulnerable pathways with drugs could drastically improve treatment outcomes and prevent the evolution of drug-resistance. This project is investigating how genes, proteins and metabolites are differentially regulated across clinical isolates of *M. tuberculosis* with the aim of identifying therapeutic vulnerabilities.

This research (i) identified collateral vulnerabilities that are conserved in a wide range of phenotypically and genetically diverse drug-resistant strains and (ii) demonstrated that strain-specific collateral vulnerabilities are conserved in drug-resistant clinical isolates. These collateral vulnerabilities influence the evolution of drug-resistant strains as they seek to overcome these impaired pathways. This represents a paradigm shift in our understanding of drug resistance in *M. tuberculosis* and is having genuine impacts on how we design future treatment strategies.

Project lead: Associate Professor Matthew McNeil, Dr Xinyue Wang.

Research funding: $1,149,922.

Simplifying Infectious Disease Diagnosis

Creating simple blood and urine tests to detect infections using microbial DNA.

Why this matters

- Infectious diseases are traditionally diagnosed by culturing the microorganism causing disease, which takes time.
- Diagnosis can be difficult to achieve due to the inability of obtaining a suitable sample and the failure to reliably grow the organism in a laboratory environment.
- The use of quantitative polymerase chain reaction (qPCR) is becoming more widespread in diagnostic laboratories and can offer a platform to diagnose infectious disease quickly and accurately.

Developing non-invasive platforms to achieve fast, accurate diagnosis of otherwise hard to diagnose infectious diseases.

Improved infection diagnosis – with new platforms that allow faster diagnosis, enable earlier treatment and better antimicrobial stewardship.

Better for tamariki – non-invasive diagnosis is especially beneficial for diagnosing infectious disease in young patients.

Reduced cost – identifying infections early reduces hospitalisations and invasive procedures,

Improved health outcomes – faster diagnosis enables earlier treatment, preventing complications and limiting disease transmission. Early diagnosis reduces use of broad-spectrum antibiotics and potential to develop and spread antimicrobial resistant organisms.

When microorganisms invade the body, they release fragments of their own cell-free DNA, which can be found in the blood and urine of patients. This project aimed to determine if two assays (one for blood and one for urine) can detect the microorganism DNA released during infection using quantitative polymerase chain reaction (qPCR). Since blood and urine are routinely obtained from patients during a hospital stay, they are ideal samples for diagnosing infectious diseases.

The project used two different methods to detect microbial DNA in patient blood and urine. One approach uses magnetic beads coated with special DNA probes to capture pathogen DNA for detection by qPCR. The other uses CRISPR technology to detect microbial DNA in patient samples after qPCR amplification.

The initial application of both assays was for the detection of *Legionella* bacteria, which causes Legionnaires' disease, a type of pneumonia. Both tests were found to be accurate and highly sensitive, detecting *Legionella* down to low levels.

Future direction for the CRISPR-Cas assay is to remove the qPCR step by using circular DNA – reducing equipment costs, simplifying workflows and reducing the need for laboratory staff. This would then enable the trial of this assay as a point-of-care test in rural and remote communities.

Project team: Dr Amy Scott-Thomas, Professor Stephen Chambers.

Research funding: $1,076,707.

PRIORITY AREA RESEARCH

Kaupare Atu Prevention

Focuses on reducing the likelihood and impact of infectious diseases before they spread.

Research in this area examines risk factors, protective behaviours, environmental influences, and public health strategies that help minimise transmission in diverse settings. Projects may explore vaccine uptake, community education, built environment design, or interventions tailored to specific groups. By identifying what works to stop infections early, the Prevention theme strengthens resilience and equips Aotearoa with tools to maintain wellbeing across communities.

Making Injections Kinder for our Kids

Subcutaneous injections of penicillin (SCIP) are less painful and required less often, vastly improving the treatment experience for young rheumatic fever patients.

Why this matters

- An estimated **60% of acute rheumatic fever (ARF) cases progress to rheumatic heart disease (RHD),** which can cause severe heart damage, complications, and death.
- Rheumatic fever patients endure **painful monthly injections, required for a minimum of 10 years** to prevent the development of heart disease.
- We urgently need a **more effective and acceptable way** to prevent ARF from progressing to RHD.

Pathway to solution

- **Improving the patient experience** by reducing the pain impact of penicillin delivery and offering sustained doses that last longer
- **Providing capability and capacity** – training clinical staff to deliver SCIP nationwide

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Patients’ lives are hard enough, without imposing unnecessary and painful interventions. SCIP is literally life-changing for young people already suffering so much.

– Dr Julie Bennett

Using a rangatahi Māori and Pacific patient and whānau-centred model of care, this project enhances the rheumatic fever patient’s experience and improves long-term health outcomes.

Rheumatic fever remains a major cause of serious illness and premature death among Māori and Pacific children in Aotearoa New Zealand. Each year, about 200 children are newly diagnosed, and around 2,000 are already enduring painful monthly penicillin injections for at least 10 years to prevent heart failure and early death. Delivered only once every 10 weeks, subcutaneous injections offer patients with acute rheumatic fever longer-lasting protection against Strep A infections and disease progression, and they are less painful than the standard, monthly intramuscular injections.

A previous Wellington region trial, funded by Cure Kids, has now been expanded into Waikato, Dunedin, Oamaru, Christchurch and Manawatū. The rangatahi Māori and Pacific-centred service model includes community-based delivery, dedicated kaimahi support, cultural safety training, and tailored resources. Research nurses are training Community Nurses to deliver SCIP, ensuring treatment sustainability once the project is completed. Whānau Navigators in the Waikato region are evaluating the model of care, which is being offered to all patients in the Waikato region on secondary prophylaxis.

In this clinical trial, over 400 SCIP doses have been administered to 100 patients. Not surprisingly, findings show that recipients overwhelmingly prefer SCIP, which, if approved for national implementation, could improve the lives of around 2,000 individuals.

SCIP offers a safe, effective, and culturally responsive alternative to monthly injections and a vastly improved quality of life for Māori and Pacific young people with ARF/RHD.

Reduced treatment burden – less painful, more convenient treatment interventions for ARF/RHD patients.

Improved trust and confidence – stronger relationships between patients, families, and healthcare providers. The rangatahi Māori and Pacific whānau-centred model has enabled culturally responsive care and greater patient engagement.

Life changing – SCIP improves health outcomes and is more equitable for Māori and Pacific communities. The patient-centred model could guide delivery of other infectious disease treatments in underserved populations.

Economical and influential – economic modelling shows the potential healthcare savings. The research has strong potential to influence national and international policy.

Lead researchers: Dr Julie Bennett, Dr Anneka Anderson.

Funding partners: Cure Kids, Te Whatu Ora, Telethon Kids, Awanui Labs.

Research funding: $1,571,986.

COVID-19 Needle Length Study

Investigating whether intramuscular delivery of COVID-19 vaccines is essential to achieve full therapeutic effect, and whether inadvertent subcutaneous might increase reactogenicity.

Why this matters

- COVID-19 vaccines are intended for injection into the deltoid muscle in the arm. However, previous research identified standard 25mm needles are inadequate to ensure intramuscular injection in up to 45% of adults with obesity.
- Currently, vaccination guidelines provide non-specific advice about needle selection, and only 2% of COVID-19 vaccinations in Aotearoa are being delivered with a longer 38mm needle.
- A significant population in Aotearoa are inadvertently receiving their COVID-19 vaccines into the subcutaneous tissue.
- For some vaccines, subcutaneous administration can increase the risk of injection site reactions and reduce immune response.
- It is not known if delivery location for COVID-19 vaccines influences the immune response or the severity of adverse reactions following vaccination.

Understanding needle length influence on vaccine-induced immune response and side effects.

Improved vaccination practice – helping shape guidelines to ensure vaccines are delivered in a method that is safe and effective for all body types, improving health outcomes.

Developing pharmacist research capability – ensuring the network of embedded community pharmacy research hubs can rapidly and efficiently respond when a new infectious disease threat emerges.

Developing leadership through student involvement, ensuring a skilled, diverse future research workforce equipped to respond to infectious disease challenges.

Ensuring vaccines are delivered effectively is crucial for public health. This study explored needle length influence on vaccine-induced immune response and side effects.

The research was developed in collaboration with Māori health providers, including Mareroa Marae Health Clinic, to ensure the study reflects the needs and aspirations of Māori communities who face higher rates of obesity and are disproportionately affected by vaccine-preventable illnesses.

The randomised controlled trial compared immunogenicity and reactogenicity of subcutaneous versus intramuscular injection of the COVID-19 vaccine. In total, 400 adults were recruited from community vaccinating pharmacies in Aotearoa to receive a booster dose of the Pfizer COVID-19 booster by intramuscular (IM) or subcutaneous (SC) injection via a 12.7mm or 38mm needle. Participants were followed up over 15 weeks. The reactogenicity data will be analysed early in 2026 and immunogenicity data will be complete following validation.

This project boosts research capability for infectious diseases by building trusted partnerships with pharmacies, expanding Aotearoa New Zealand's capacity to conduct high-quality research in the community.

Project team: Dr Gabby Shortt, Melemafi Porter, Professor Richard Beasley, Adjunct Professor Alex Semprini, Nick Shortt, Kyley Kerse, Dr Tom Hills, Simon Phillips, Dr Erasmus Smit, Sarah Burge, Associate Professor Lesley Gray, Professor Mark Weatherall.

Research partners: PRN community pharmacies across Aotearoa, Pacific Health Services Hutt Valley, Mareroa Marae Health Clinic, Awanui Labs, Pathlab, Medlab Central.

Research funding: $649,635.

Safer Drinking Water for Ngāi Tahu

Enabling Ngāi Tahu community leaders to self-manage their drinking water systems and improve the safety of drinking water on marae.

Why this matters	Pathway to solution
• Tens of thousands of New Zealanders suffer **Acute gastrointestinal disease (AGI)** caused by contaminated drinking water every year. • People drinking from **small volume supplies are most at risk**. • Small water suppliers, including on marae, **may not know the contamination state** of their supply.	• Improved understanding of the national burden of disease attributable to drinking water • More effective audit and surveillance processes and practices for water systems • Better management and improved safety of small supply drinking water systems

A Māori-led audit and surveillance programme is supporting rūnanga in the Ngāi Tahu takiwā to achieve safer drinking water systems for marae.

The project aimed to establish a Māori-led drinking water monitoring programme and utilise a suite of monitoring tools to test source water risk and water treatment efficacy. A bespoke online training course was developed for Māngai Wai Māori – community leaders championing water safety. Supported by Water New Zealand, the training provides guidance on sample collection, storage, transport, result interpretation and interventions for drinking water supplies. Advanced sampling techniques (qPCR and metagenomics) were used to identify health risks and guide effective interventions.

“

Working with rūnanga has shown how important water safety and security is to New Zealanders. We know another 15% of the population are vulnerable to drinking water contamination. Our solutions can help people protect small supply drinking water and reduce their risk of disease.

– Associate Professor Tim Chambers

In total, 27 people were trained, 19 as Māngai Wai Māori representing 16 rūnanga within the Ngāi Tahu takiwā. Armed with new knowledge, systems and skills, rūnanga can now test their drinking water supplies and quickly address enteric disease and chemical risks. Six water quality issues were identified and addressed as a result of the programme.

By integrating advanced sampling techniques in a rigorous community-based testing programme, and providing specialist support and guidance, this project has helped Ngāi Tahu improve its drinking water quality. Extending this programme to other small water source providers in New Zealand would improve drinking water safety for the many New Zealanders relying on small-scale supplies.

The project is also undertaking a national assessment of the potential burden of disease attributable to drinking water. So far, it has observed higher risk of enteric disease among those people relying on their own domestic, self-supplied water supply. Also at risk are people relying on public supplies that are contaminated by *E.Coli*, have insufficient microbial testing, and those reliant on sources impacted by agricultural intensification or prone to high rainfall events.

A national audit of drinking water pipes suggests the infrastructure deficit is worse than previously estimated. The project compiled data on 57,000 kilometres of New Zealand's council-owned drinking water pipes. The baseline quality of the national water infrastructure was found to be low, with almost a third of the pipes estimated to be in poor, or very poor, condition. This highlights the urgent need for a standardised methodology for infrastructure condition assessments and maintaining the associated data across the country.

The project is now developing a model to integrate its findings and quantify the national burden of disease.

Additional funding from the MBIE Endeavour Research Programme will extend the Ngāi Tahu testing programme for four more years.

Removing systemic barriers to help the Ngāi Tahu takiwā improve the quality of its community drinking water.

Building capability – rūnanga have the skills and knowledge they need to take agency for drinking water safety.

Improved health outcomes – reduced incidence of disease with safer water supplies.

Strengthened relationships – building trust and cementing strong partnerships between communities, researchers and regulators. These robust connections play a pivotal role in pandemic preparedness and response.

Lead researchers: Associate Professor Tim Chambers, Connor Redmile, Dr Donna Sutherland.

Research partners: Te Kura Taka Pini and Ngāi Tahu takiwā Taumata Arowai, Water New Zealand.

Research personnel: Dr Hana Royal, Anne Glackin, Professor Simon Hales, Dr Anja Mizdrak, Professor Michael Baker, Dr Lucas Marek, Dr Alice Kim, Marlo Puente Sierra, Dr Farnaz Pourzand, Izzy Busby.

Research funding: $1,687,190.

He Korowai Manaakitanga: A Kaupapa Māori Perspective on Infectious Disease Surveillance

A novel approach to infectious disease (ID) surveillance for Aotearoa, meeting the needs of Māori communities and leveraging the strengths of kaupapa Māori health and social service providers.

Why this matters

- The current ID surveillance system is not fit for purpose for whānau Māori. Māori have much higher morbidity and mortality rates from a range of infectious diseases, and these health inequities have damaging social and economic consequences.
- Whānau are disengaged from mainstream health systems. It is critical our preparedness capability, as well as our data collection and its use, are aligned with community priorities and reflects the unique health, social, economic, and cultural needs of whānau.
- Kaupapa Māori providers need improved access to data to enhance ID prevention and control.
- Te Ao Māori systems of manaakitanga can enhance ID surveillance systems.

Integrating biomedical and public health principles with mātauranga Māori to develop ID surveillance systems that meet the specific needs of Māori communities.

Improved communication – aligned ID surveillance system, kaupapa Māori service providers and whānau.

Improving health outcomes – reducing health inequities.

Enhanced community wellbeing, with deeper understanding and stronger ID preparedness.

The project collaborated with the Whānau Ora Commissioning Agency to engage with kaupapa Māori health and social service providers and whānau Māori. It is working with two other Te Niwha research projects.

Our ID surveillance systems must engage and enable kaupapa Māori providers and support the improved health and wellbeing of Māori communities. This project held focus group sessions and interviews with providers and whānau to understand their engagement with the ID surveillance system and what they need to protect their communities. Public health experts were asked how the current ID surveillance system works and how they engage with Māori communities. Using qualitative analysis, this information informs a kaupapa Māori framework, based on manaakitanga, for ID preparedness and response and offers recommendations for change. The project highlights Te Ao Māori systems of 'surveillance' which can enhance health data. Our systems must be more flexible and decentralised to improve data collection, collation and use and ensure Kaupapa Māori providers receive the data they need.

Project team: Hector Kaiwai (Ngāti Porou, Ngāti Maniapoto, Tūhoe), Lynda Paniora (Te Roroa), Dr Tia Dawes (Ngāpuhi/Ngāti Kahungunu), Dr Katrina Ford (Ngāti Pākehā), Noella Taiapa (Ngāti Porou, Rongawhakaata, Te Whānau-a-Apanui), Témi Allison; Sarah Pirikahu (Ngā Rauru).

Research partners: Whānau Ora Commissioning Agency.

Research funding: $500,000.

Modelling Infectious Disease Impacts

Supporting public health decision-makers to develop policies that mitigate disease impact and improve outcomes for disadvantaged populations.

Why this matters

- The COVID-19 pandemic demonstrated the value of mathematical models for informing policy decisions and the public health response to infectious disease threats.
- A major flaw in many models is that they either overlook or poorly characterise differences in disease dynamics and impact between population subgroups.
- In New Zealand, Māori and Pacific populations have disproportionately worse health outcomes from infectious diseases and pandemics, but current models cannot fully account for the disparity in infectious disease vulnerability in these populations.

Enhancing our preparedness for future pandemics by enabling impact assessment with a focus on equity – mitigating the disproportionate impact of infectious disease on vulnerable populations.

National collaboration to advance infectious disease modelling and healthcare data analytics.

Improved and more equitable health and wellbeing outcomes from future infectious disease outbreaks.

Swift, effective decision-making – enabling a more nuanced public health policy response.

This project is developing a new mathematical infectious disease model for Aotearoa. Calibrated to ethnicity-specific data for COVID-19, it will capture differential dynamics of disease transmission within and between population subgroups. Advanced modelling will address a key shortcoming in the model-based evidence that supported the New Zealand government's decision-making during the COVID-19 pandemic, by answering questions about the likely size of the disease burden in different ethnicities under different scenarios, and illustrating how this might be reduced with alternative control measures or policy options.

Having access to improved modelling during pandemic events will enable more effective public health decision-making and policy setting. The results of this research could be used to provide a set of quantitative scenarios for potential future pandemic threats, supporting pandemic preparedness, planning and real-time decision-making. Ultimately, this research will help improve health and wellbeing and reduce the impact of future infectious disease threats on disadvantaged groups.

Pandemic preparedness is not a "once and done" thing. Designing models and training people to develop, run and interpret them needs continued investment so we are ready when the next pandemic hits.

Project team: Professor Michael Plank, Dr Samik Datta, Andrew Sporle.

Research funding: $364,128.

PRIORITY AREA RESEARCH

Kia Mataara Surveillance

Surveillance strengthens Aotearoa New Zealand's ability to detect, monitor and understand infectious diseases as they emerge and evolve.

Projects within this theme improve early warning systems, environmental monitoring, genomic surveillance and data integration tools that help identify changes in disease patterns quickly and accurately. By building a clearer picture of what is circulating, where, and in whom, Surveillance research supports timely decisions and enables health agencies and communities to respond before outbreaks escalate. This theme provides the essential foundation for national preparedness.

Stronger ID Surveillance Systems

To effectively detect and respond to the threat of current and emerging infectious diseases, New Zealand needs world-class surveillance systems.

Why this matters

- Infectious diseases (IDs) remain the main cause of acute hospitalisation in Aotearoa New Zealand and an important cause of premature death and disability.
- IDs are a major area of inequity with rates that are generally 2–3 times higher for Māori and Pacific peoples.
- IDs are also highly disruptive and costly because of their ability to cause outbreaks, epidemics, and pandemics, as demonstrated by COVID-19 and influenza pandemics.
- To respond swiftly and effectively to important ID threats and keep New Zealanders safe, we need world-class surveillance systems to guide prevention and control actions.

Surveillance is the lifeblood or mauri of effective public health action. New Zealand developed a new generation of world-class surveillance systems in response to COVID-19. We can apply that knowledge to surveillance of all IDs and create a stronger, safer Aotearoa – better able to prevent, detect and fend off threatening infectious diseases.

Better prepared – integrated surveillance systems, aligned service providers, and clear end-user requirements.

Healthier – improved prevention of current ID threats and greater health security against new ones.

More equitable – lower morbidity and mortality rates for Māori and Pacific population.

Stronger economy – more timely, efficient and less disruptive management of outbreaks and pandemics.

New Zealand needs a world-class surveillance system to support the most effective response to important ID threats. By assessing current capability, and identifying opportunities for improvement, we can plan systems change that will keep New Zealanders safer.

The team first carried out a stocktake of our extensive national ID surveillance systems and described these systems using a systematic surveillance sector review (SSR) framework.

The SSR identified 125 surveillance systems across 13 infectious disease categories operating in 2025. This was a marked increase on the 91 systems operating in 2010. Nine new systems were added in response to COVID-19 (though three have now been discontinued as no longer needed).

Operators of 24 systems were interviewed to validate the system descriptions. They identified many areas for improvement, including the need to improve system-level leadership, integration, and evaluation.

The next phase of this project, subject to resources, will be to complete the SSR. These remaining steps include assessing the systems according to end-user needs, system performance, a full gap analysis, and prioritisation of system development needs. Completing this review will provide a robust base for system development to better support current and emerging ID prevention and control needs.

Project team: Prof Michael Baker, Assoc Prof Amanda Kvalsvig, Dr Celia Hume, Dr Sarah Pirikahu, Dr Nelly Renta.

Research partners: Ministry of Health, Te Whatu Ora/Health New Zealand.

Research funding: $350,000.

Improved Leprosy Treatment in the Pacific

Understanding the impact of a mass chemoprophylaxis programme on leprosy drug resistance in Kiribati and supporting our neighbours to combat the epidemic.

Why this matters

- Kiribati has one of the highest rates of leprosy in the world and it is spreading to Aotearoa New Zealand as people migrate.
- There is a strong global focus on reducing drug resistance in human pathogens.
- In 2021, a population-wide mass leprosy and tuberculosis screening and rifampicin-based prophylaxis programme started in Kiribati. Such large-scale use of rifampicin has the potential to induce resistance in endemic *Mycobacterium leprae* strains.
- Severe adverse reactions to leprosy medications can cause patients to stop treatment, exacerbate antibiotic resistance and lead to irreversible patient harm and stigma.
- Deficiency of the glucose-6-phosphate dehydrogenase (G6PD) enzyme and the HLA:B13*01 allele are heritable traits that cause susceptibility to adverse reactions to dapsone – a key component of leprosy treatment. The prevalence of G6PD deficiency and the HLA:B13*01 allele in Kiribati are unknown.
- Kiribati needs a cheaper, bedside molecular test for leprosy.

This work is accelerating leprosy elimination efforts in Kiribati.

Improved understanding of drug resistance risks and impacts, and of the local pathways of transmission.

Improved treatment response through reduced treatment defaults.

Improved capability and capacity through knowledge sharing, advancing technology and developing skillsets.

This project conducted Deeplex sequencing on catalogued biopsy samples and tested prospectively acquired samples, taken from patients with presumptive leprosy, to understand the impact of the mass rifampicin prophylaxis programme on drug resistance patterns. Robust evidence of the prevalence of drug resistance can guide national treatment policy, and better shape patient treatment decisions. No rifampicin resistance in *M. leprae* isolates has been detected, indicating that mass chemoprophylaxis is likely to be a safe means of leprosy control.

The team measured the prevalence of G6PD deficiency and the HLA:B13*01 allele, predisposing factors for dapsone reactions. Both were very rare in Kiribati, unlike many countries in Southeast Asia, so pretreatment screening is not warranted. As a result, the clinical team can safely focus on good quality management of reactions to leprosy infection, rather than its treatment.

The project made strong progress in development of a cheap, bedside molecular test for leprosy using CRISPR-cas technology. Optimised further, this could provide fast, cost-effective testing for leprosy in Kiribati.

Project team: Dr Nicholas Douglas, Professor Stephen Chambers, Dr Patrick Campbell, Dr Nabura Ioteba, Dr Taulanga Naniseni, Erei Rimon, Professor Martin Kennedy, Allison Miller, Elizabeth Chernysheva.

Research partners: National Leprosy Unit of Kiribati, Pacific Leprosy Foundation, Kiribati Ministry of Health & Medical Services.

Research funding: $199,336.

Para Hopuhopu: More Effective Wastewater Testing

Wastewater testing at airports and individual buildings is now part of the infectious disease surveillance toolbox for future pandemic responses.

Why this matters

- Wastewater testing plays an important role in surveillance of current and emerging disease threats, enabling swift, unbiased and non-invasive detection of disease.
- Aircraft testing provides the opportunity to identify new disease threats crossing our borders.
- Being able to test buildings such as hospitals, workplaces or aged residential care facilities for the presence or absence of a disease can allow local decisions to protect the health of the users of those facilities.

Appropriate, effective wastewater analysis methodologies for small-scale settings better prepares our vulnerable communities to respond to disease threats.

Shared knowledge – ethical, social, technical and practical risks and benefits of small-scale WBE are understood.

Global collaboration – New Zealand is partnering in the global effort supporting WBE at the border.

Pandemic preparedness – effective methodology for small-scale WBE is established, preparing communities to better respond to the threat of infectious disease.

Inclusive, equitable response – all our communities are supported, with effective WBE testing now possible anywhere in New Zealand at any scale.

Wastewater-based epidemiology (WBE) was adopted in New Zealand in 2020 to help manage COVID-19. This project extends WBE to detect other pathogens and localises it to individual buildings and aircraft at the border, developing effective methodology to test small populations and close-to-source sites.

Researchers engaged with Te Kei o te Waka o Tainui to understand views of local iwi regarding wastewater analysis. During wānanga key issues identified included the need to build trust, and the need for consent, sharing of knowledge, Māori health communicators, and appropriate tikanga. When wastewater is tested it becomes knowledge that should be treated as if that knowledge has been gained directly from the community. Methodology for sampling individual aircraft and collecting wastewater from the airport precinct was established. The results show WBE can be used to effectively detect a wide range of bacteria, protozoa, viruses and fungi of significance when conducted in small-scale settings. This research improves New Zealand's ability to respond to emerging pandemic and infectious disease threats in an inclusive and equitable manner.

Project team: Dr Brent Gilpin, Dr Joanne Chapman, Professor Marama Muru-Lanning, Maria Hepi, Dr Carla Eaton, Dr Keri Mills, Maxine Graham, Sally Reid, Lynn Lewis-Bevan.

Research partners: University of Auckland, Waikato-Tainui College for Research and Development, Te Kei o te Waka o Tainui.

Research funding: $1,203,371.

Detecting Viruses in Pharmacies

Exploring the feasibility of pharmacies participating in the surveillance of influenza-like illnesses circulating in the community.

Why this matters

- Right across the world, in the wake of COVID-19, countries are focusing on preparing for pandemics.
- To detect viruses that are active in the community, New Zealand relies on General Practice (GP) clinics and hospitals. These services are quickly overwhelmed in an outbreak – as we saw with the COVID-19 outbreak.
- For a raft of reasons, not all New Zealanders engage with a GP. Establishing alternative pathways to detection spreads a net to identify illnesses that would otherwise go undetected.

Exploring extending viral surveillance of influenza-like illness (ILI) through community pharmacies, to enhance public health response and better support sick New Zealanders.

Improved, more equitable support – enabling the surveillance of a disadvantaged population.

Richer data for better planning – potential to inform local and national preventative measures when integrated with other surveillance systems.

Developing capability – to respond in future pandemics.

Infection threats detected sooner – more opportunities to implement mitigation responses and reduce the burden on the public health system.

Between April 2024 and October 2025, the MRINZ Pharmacy Research Network (PRN) enrolled people presenting to pharmacies with a new onset cough and fever, obtaining nasopharyngeal swabs for testing by PHF Science. This work supplements national surveillance data, by obtaining samples from a population that has not accessed GP or secondary services because of their respiratory infection. Pharmacy-based consultation offers direct advice to patients about symptom management and infection control measures.

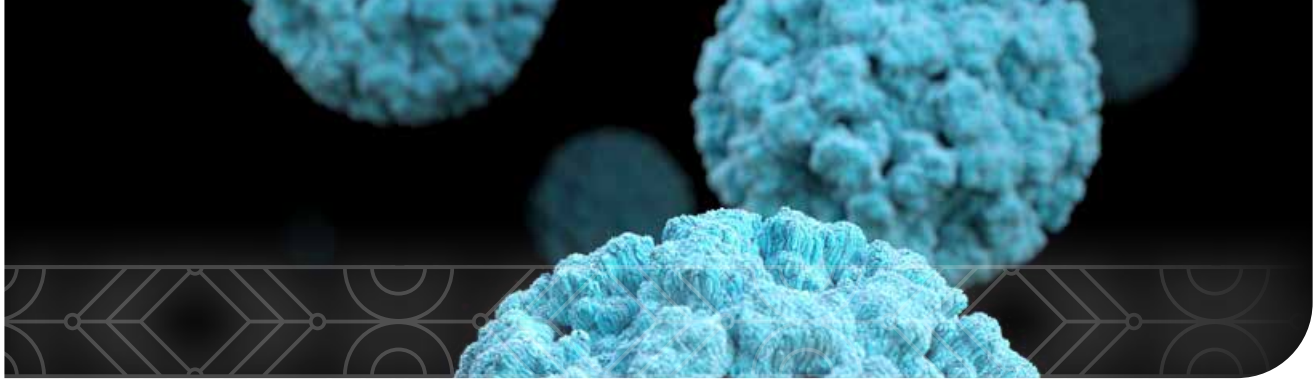
In total, 58 pharmacists and pharmacy-based nurses were trained in 20 pharmacies across Aotearoa New Zealand, including rural, urban and CBD pharmacies. The project compared rates of swabbing and viruses detected in pharmacies to that detected by the national system over the same period. Results will inform public health strategy for seasonal viruses. Evidence gathered provides a case for funding permanency in community pharmacy-based ILI surveillance and enhances New Zealand's public health data and response. This will bolster pharmacy-based services, which are increasingly critical to reduce clinical burden on General Practice, helping to respond swiftly in future pandemics.

Project team: Kyley Kerse, Dr Sarah Jefferies, Dr Gabby Shortt, Melemafi Porter, Nick Shortt, Allie Eathorne, Dr Selwyn Te Paa, Dr Andrea McNeill, Ben Waite, Lauren Jelley, Professor Richard Beasley, Adjunct Professor Alex Semprini.

Research partners: The Medical Research Institute of New Zealand.

Research funding: $853,269.

Pharmacies that contributed to the research: Alexander Pharmacy, Wellington; Life Pharmacy Te Puke, Te Puke; Ranolf Pharmacy, Rotorua; Anderson's Exchange Pharmacy, Dunedin; Unichem Cherrywood Pharmacy, Tauranga; Tamatea Pharmacy, Napier; Campus Pharmacy Waikato, Hamilton; Clive's Chemist, Wainuomato; Life Pharmacy New Plymouth, New Plymouth; Waitangirua Pharmacy, Porirua; My Pharmacy Te Puke, Te Puke; Wigram Pharmacy, Christchurch; Jaks Pharmacy, Auckland (Manukau); Queen Street Pharmacy, Upper Hutt; Vogel Street Pharmacy, Feilding; Central Feilding Pharmacy, Feilding; Newton Pharmacy, Auckland; Ōtahuhu 7 Day Chemist, Auckland; Windsor Pharmacy, Invercargill; Unichem Petone Pharmacy, Petone; Unichem Mainstreet Pharmacy, Taupō; Owles Unichem Pharmacy Naenae.



Engaging Communities in Infectious Disease Control

A community-based carriage study of severe infectious diseases causing pathogens impacting Māori and Pacific populations.

Why this matters

- Invasive meningococcal disease (IMD) and invasive pneumococcal disease (IPD) are severe infectious diseases that disproportionally affect Māori and Pacific populations, especially children and the elderly.
- These two pathogens can be carried asymptomatically by healthy people in their upper respiratory tract.
- The relationship between high carriage and disease development is not clear.

Engaging with communities to investigate meningococcal and pneumococcal bacteria carriage in Māori and Pacific households.

Improved population health and health literacy – improved community health and health status for remote regions and disadvantaged populations in Aotearoa New Zealand.

Empowered communities – built trust, fostered sustained engagement, improved health equity in underserved communities.

Better decisions – more evidence-based health policy, immunisation policy and vaccine procurement decision-making.

This project investigates the carriage of two bacterial pathogens that could cause severe disease with a focus on high burden population and prevalence areas. The study involved swabbing and surveying participating households, requiring robust community engagement and a codesign approach.

The team partnered with the Moko Foundation and the Pasefika Family Health Group to engage with Māori households in Northland and Pacific households in South Auckland, respectively. Promotion of infectious disease awareness and prevention messaging was provided in these communities, including through kanohi-ki-te-kanohi engagement and the provision of audience-specific resources.

Molecular typing and genomic sequencing of isolated bacteria provides insights into the diversity of circulating meningococci and pneumococci in these regions could contribute to refining vaccination policy. Understanding the conditions or household behaviours that reduce or accelerate transmission could inform policy and contribute to the design of mitigation tools.

Project team: Conor Watene O'Sullivan, Vaifagaloa Naseri, Louisa Ryan, Mishal Manisha, Eszter Yelena Scarlett-Herbert, Dr Sue McAllister, Emma Best, Dr Gerard Sonder, Dr Sarah Jefferies, Amanda Kvalsig, Professor Philip Hill, Xiaoyun Ren.

Research partners: The Moko Foundation, The Pasefika Family Health Group.

Research funding: $1,388,706.

Vibrio – a Collaborative Study

Community engagement is strengthening public health surveillance of emerging diseases and improving communication pathways for Māori.

Why this matters

- *Vibrio* infections can cause mild to severe gastroenteritis or tissue infections. Infections occur through contaminated kaimoana (seafood) or water.
- In recent years, Aotearoa New Zealand has seen a rise in *Vibrio* infections, particularly among Māori.
- *Vibrio* thrive in warm water. As climate change warms our waters, the prevalence of *Vibrio* will likely increase in Aotearoa.
- The current surveillance system, including the database used to record hospitalisations and deaths in Aotearoa, is not capturing all vibriosis cases.
- Māori are reported less frequently for gastrointestinal notifiable diseases, despite experiencing high hospitalisation rates.

Investigating *Vibrio* infections to improve surveillance processes and estimate the burden of disease, and establishing effective pathways to communicate trusted public health messages.

Reduced health inequities for Māori presenting at a general practice with gastrointestinal illnesses.

Earlier detection and better decisions with improved enteric disease monitoring and surveillance.

Better informed, more responsive communities with effective communication pathways to share trusted health messaging.

Vibrio species are reported to cause gastroenteritis and soft tissue infections in Aotearoa. However, the burden of disease is difficult to quantify due to the current notifiable disease definition for *Vibrio* infection not capturing all species of *Vibrio*, and the lack of a centralised national communicable disease reporting system.

Improving notification rates of enteric illness for Māori would enable better estimates of the true burden of illness and guide important public health resources to key areas. Surveillance that captures all *Vibrio* infections and risk factor information could help monitor and predict changes, shape risk management activities, and support health service planning and resilience.

Understanding the barriers faced by Māori is essential to assess the true burden of gastrointestinal disease and inform health service decision-making. Te Toi Ora ki Whāingaroa held focus groups with hapū in the Waikato Harbour, enabling tino rangatiratanga (self-determination) to identify public health barriers and concerns faced by Māori whānau with gastroenteritis. These insights will inform better primary care practices, and help to develop more culturally responsive, trusted ways to effectively communicate alerts of risk to Māori communities.

Project team: Dr Lucia Rivas, Maria Hepi, Wendy Dallas-Katoa, Nicola King, Jackie Wright, Peter Cressey, Rob Lake, Lisa Lopez, Michael Edmonds, Sam Totten, Claudine Waitere, Okeroa Waaka, Jamine Teei, Eden Maikuku.

Research partners: Te Toi Ora ki Whāingaroa.

Research funding: $485,200.

PRIORITY AREA RESEARCH

Te Ao Māori

The Te Ao Māori theme ensures Māori worldviews, values, tikanga and mātauranga are embedded throughout the research portfolio.

Projects in this theme support Māori leadership, community partnership, culturally grounded methodologies and approaches that reflect the aspirations of whānau, hapū and iwi. This theme strengthens the cultural integrity of the portfolio, enhances trust and engagement, and leads to solutions that are more effective, equitable and sustainable for Māori communities, benefiting Aotearoa as a whole. It ensures that research does not sit apart from culture or community but is enriched by them.

Māori-led Resilience Solutions

Throughout history, Māori have fared the most poorly of all populations during infectious disease incursions in Aotearoa New Zealand. This project is documenting and integrating mātauranga Māori practices of resilience to support future national responses for the protection of whakapapa.

Why this matters

- **Māori suffer disproportionate impacts** during infectious disease outbreaks.
- Māori immunisation rates are significantly lower than non-Māori – **immunisation frameworks and strategies are not working for Māori**.
- Te Tira Ārai Urutā – The Royal Commission COVID-19 Lessons Learned – found that **iwi Māori involvement in decision-making in the early phases** of the COVID-19 response would have resulted in better outcomes for Māori.
- Te Tira Ārai Urutā also found that **Māori needs should be specifically addressed** in any future pandemic response, and iwi, hapū, marae and Māori organisations **need to be engaged in decision-making from the outset.**

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By amplifying the voices of our kuia, koroua, tāne, wāhine, and tamariki we are learning from their kōrero. The insights we gather from this kaupapa will help legitimise Māori knowledge in a scientific space, and make a real and positive difference for iwi Māori health outcomes in Aotearoa.

– Huirama Matatahi

This project held wānanga across multiple tribal regions, learning from whānau, hapū and iwi to better understand and incorporate local community-level values and knowledge systems in pandemic response planning.

In collaboration with the National Iwi Chairs Forum, a governance group, Te Tākere Nui, was established. Wānanga in Te Tai Tokerau, Ngāi Tahu, Te Tai Hauāuru, Waikato, Te Puku o Te Ika, and Te Tau Ihu aimed to foster strong relationships, build trust, and engage in meaningful, reciprocal collaborations with kāinga communities. Wānanga strengthen whakapapa – connect whānau, mātauranga, culture, place and community, provide support, and set solid foundations for resilience.

The wānanga serve to expand the mātauranga continuum through sharing knowledge, learning, negotiation, and practices. They also play a critical role in data collection – providing an opportunity to gather insights through kōrero as researchers receive firsthand accounts of the challenges, success and culturally responsive solutions experienced during pandemics.

Strengthening Aotearoa New Zealand's pandemic preparedness, policy and practice with Māori-led, culturally connected readiness solutions that will improve health outcomes for all New Zealanders.

Māori are enabled and empowered – to action their own ways and methods of responding to infectious diseases and pandemics as they arise, supported to implement and revive authentic mātauranga and tikanga in order to control and manage preventative measures in the face of future pandemics.

Communities are involved in health decision-making processes – participating as valued partners to design Māori led, culturally anchored resilience solutions that resonate with their realities and worldviews.

Improved public health service delivery and policy efficiency – through accessing mātauranga Māori, we are identifying gaps and paving the way for Māori-led governance structures and culturally grounded pandemic strategies that are inclusive, responsive and co-designed for long-term success.

Strengthened relationships between iwi, hapū, whānau and government health agencies. Incorporating mātauranga Māori to build trust, improve uptake and reduce the risk of marginalisation during crises.

World-leading – potential to develop a global model for integrating indigenous knowledge into public health systems.

Project research leads: Huirama Matatahi, Dr Raukura Roa, Dr Raaniera Te Whata, Honourable Nanaia Mahuta.

Te Tākere Nui Steering Group: Rahui Papa, Bayden Barber, Tania Wati, Olivia Hall, Geoff Rolleston, Wallace Rivers, Sheena Maru.

Karu Atua Kairangahau: Erana Kihi, Paaniora Matatahi-Poutapu, Tiana Matatahi, Hepi Ferris-Bretherton, Tahua Pihema, Hemaima Rauputu, Huhana Rolleston.

Kaiāwhina Kaupapa: Tasha Hohaia, Paris Matatahi, Mike Cummins, Hana Toroa, Māia.

Our partners: The National Iwi Chairs Forum.

Research funding: $2,250,000.

PRIORITY AREA RESEARCH

Maimoatanga Therapeutics

Therapeutics advance the development and refinement of treatment pathways for infectious diseases.

Research includes drug discovery, optimisation of existing treatments, evaluation of clinical interventions and participation in global clinical trials. These projects help determine what treatments work best, for whom, and in which contexts. By generating evidence that informs clinical practice, the Therapeutics theme ensures that when people do become unwell, healthcare providers have safe, effective and evidence-based options to improve recovery and reduce harm.

Best Treatments for Severe Influenza

Finding optimal treatments to support patients with severe seasonal influenza and preparing for the next influenza pandemic.

Why this matters

- Seasonal influenza causes significant morbidity and mortality, and Māori and Pacific people are disproportionately affected.
- The optimal management of patients hospitalised with severe influenza is not known.
- Severe influenza is a costly public health problem.
- Influenza is the most likely cause of the next global infectious disease pandemic.
- New Zealand must invest in understanding the optimal treatment of seasonal influenza that will support patients and healthcare systems when an influenza pandemic hits.

Establishing the optimal combination of treatments for patients with severe influenza to improve public health, reduce cost and ready New Zealand for the next outbreak.

More effective patient care – finding the best treatments to improve survival and speed of recovery.

Learning health system breaks down barriers between clinical practice and clinical research, improving public healthcare delivery.

Saves time in crisis – having an effective, established research platform enables swift delivery of critical information in a pandemic.

Economic benefits – reducing hospitalisation rates and cost to the public health system.

REMAP-CAP (Randomised, Embedded, Multi-factorial, Adaptive Platform Trial for Community-Acquired Pneumonia) is a global study, with strong leadership from New Zealand. It is an adaptive learning healthcare platform for evaluation of treatments for hospitalised patients with acute respiratory tract infections and also includes a large observational dataset. Patient recruitment to the trial in New Zealand is strong per capita and representative of our population with 24% and 15% of trial participants identifying as Māori and Pacific, respectively.

This research is evaluating influenza antivirals, corticosteroids, and immune modulator therapies. It is active in 10 study sites across the motu, predominantly in intensive care settings. REMAP-CAP focuses on widely available and typically cheap treatments. Identifying effective treatments will reduce mortality, time in intensive care and time in hospital. Identifying ineffective treatments will enable disinvestment and reduce cost.

This research platform is well established and will save the New Zealand health response critical time in a pandemic, enabling necessary knowledge, faster. The REMAP-CAP study will continue to expand our knowledge of severe pneumonia and influenza in New Zealand, including evaluating influenza antivirals, corticosteroids, and immune modulator therapies until we have established the optimal combination of treatments for patients with severe influenza.

Project team: Dr Colin McArthur, Dr Anthony Jordan, Dr Tom Hills, Associate Professor Matire Harwood, Dr Susan Morpeth, Professor Paul Young, Professor Richard Beasley, Anne Turner, Soana (Karuna) Motuhifonua.

Research funding: $989,107.

More Convenient, Equally Effective Treatment for SAB

Generating evidence to support reducing IV antibiotic treatment duration for *Staphylococcus aureus* bacteraemia (SAB) by replacing IV with effective, more convenient oral treatments.

Why this matters

- New Zealand is part of an international SNAP trial, aiming to find better treatments for S. aureus bacteraemia (SAB), a serious bloodstream infection.
- SAB is one of the most common serious bacterial infections in New Zealand, with a 15–20% mortality. A conservative estimate for the incidence of SAB in New Zealand is around 1,100 people per year, amongst the highest reported in the world.
- SAB disproportionately affects Māori and Pasifika, babies, the elderly, and those living in socioeconomic deprivation.
- SAB is currently treated with very long courses of exclusively intravenous (IV) antibiotics but there is increasing evidence that partial oral antibiotic treatment for SAB is safe and effective. Compared with IV antibiotics, oral antibiotics are more convenient and cheaper, and are probably safer.

Generating critical evidence to support using oral antibiotics in the treatment of serious infections.

Improved patient experience – oral antibiotics are more convenient than IV.

Better communication and prescribing – supporting more informed discussions about drug administration and more rational, patient-centric prescribing.

Developing capability – mentoring emerging researchers and supporting national and global collaboration.

Evidence suggests that oral probenecid-beta-lactam combination therapy (PCT) treatments are safe and effective alternatives to weeks of IV antibiotic therapy – but that evidence doesn't meet the high threshold required to change clinical practice or be incorporated into SAB treatment guidelines.

This 18-month study is embedded in SNAP. The project has so far recruited 150 of an expected 200 participants. We measure blood antibiotic levels from patients taking IV and oral antibiotics, with and without probenecid. We will correlate findings with clinical outcomes. We aim to produce pharmacological and clinical data demonstrating that oral PCT achieves drug exposure equivalent to that achieved with IV therapy. A complementary qualitative study showed that patients prefer oral over IV treatment because it is more convenient, despite a perception that IV antibiotics work better.

Growing evidence supports the shortening and replacement of prolonged IV antibiotic courses for SAB with oral treatment, which could inform SAB treatment guidelines and, ultimately, transform patients' experiences.

Project team: Dr Genevieve Walls, Dr Max Bloomfield, Loughlin McGrath, Natasha Pool, Dr Michael Trent Herdman, Associate Professor Mei Zhang, Dr Paul Chin, Dr Diana McNeill, Dr Viliame Tutone, Dr Euna Sahng.

Research partners: Professor Jason Roberts, Associate Professor Amanda Gwee, Associate Professor Anecita Gigi Lim.

Research funding: $614,984.

Repurposing Anti-Cancer Drugs to Combat Viruses

Challenges created by rapid viral evolution and antiviral drug resistance demand innovative solutions for our protection against viral diseases. Repurposing cancer therapies in various stages of clinical development as broad-spectrum antivirals may be able to provide effective treatments with a more rapid pathway to the clinic.

Why this matters

- Viral diseases are responsible for a significant portion of **acute and transmissible hospital admissions.**
- **We lack approved antivirals and vaccines** for most viral infections.
- **Māori and Pacific People** face inequitable impacts from many viral diseases.
- For the few viral diseases where we do have antivirals available, we face **increasing drug resistance.**
- **Constant viral evolution** creates challenges, impacting the effectiveness of any treatments or vaccines.
- **Broad-spectrum antivirals are a first line of defence** against emerging viral threats to give time for the development of other tools, such as vaccines.

Pathway to solution

- **Broaden the range of available treatments** that can successfully combat viral diseases
- **Reduce the time to market** for new antiviral drugs by repurposing treatments that have already been through clinical trials
- Investigate how antiviral drugs can **work together to achieve greater efficiency**, reduce side effects and remain effective over time
- **Support more equitable health delivery** for New Zealanders disproportionately impacted by viral disease

“

Broad-spectrum antivirals give us a crucial head start against new viral threats, protecting communities while longer-term solutions like vaccines are developed.

– Dr Natalie Netzler

This therapeutic innovation project explored repurposing drugs that were previously developed to treat cancer as potential broad-spectrum antivirals against viral infections.

Developing safe and effective antiviral treatments is essential to protect Aotearoa New Zealand's unique populations. But viruses are highly adaptable, and resistance to virus-targeting drugs can emerge quickly, making research into new strategies critical. Some anti-cancer medicines work by blocking an enzyme called PI3-kinase, found inside human cells. Viruses often hijack this enzyme to help multiply and spread. Some studies showed these same drugs could be repurposed to block the infection of certain viruses. This research team examined how certain drugs work against viruses, determined which were most effective, and investigated whether pairing them with antivirals that directly target the virus could boost their antiviral impact.

Using drugs in combination can enhance antiviral effects with lower required doses, reducing side effects and limiting the chance of viruses evolving resistance. In this study, one lead PI3K inhibitor that was originally developed as a cancer treatment, showed broad activity against multiple viruses, including coronaviruses, RSV and herpes simplex. Experiments with the virus that causes COVID-19 found that this lead drug worked synergistically with the active ingredient in Paxlovid, strengthening its antiviral impact when used together. Further work is required to see if the PI3K inhibitor drug could be used safely in the clinic against viral diseases. The panel of PI3K inhibitor drugs showed no effect against measles virus, highlighting the continued importance of MMR immunisation. Future work may explore efficacy against the cancer-causing human papillomaviruses (HPV).

The research team partners with the Moko Foundation, a Kaitaia-based organisation focused on elevating Māori community health and education opportunities for rangatahi. This collaboration co-created educational materials on infectious diseases including vaccines and antivirals in both te reo Māori and English. Five new researchers, including tauira Māori and Pacific students have joined the research team to study viruses and ways to combat viral diseases. By engaging with communities to understand their views and aspirations on vaccines and antiviral development, the team aim to ensure that any arising treatments meet the needs of both healthcare providers and the people they serve.

Broad-spectrum antivirals can help to safeguard communities against existing and emerging viral disease threats.

Smarter ways to combat viral diseases – by blocking the ways that viruses commonly hijack our bodies to multiply and spread.

Striving for more equitable health outcomes – by engaging with communities to ensure drug development responds to real health needs.

Empowered future leaders – offering opportunities to engage and inspire Māori and Pacific students to explore a career in biomedical research.

Lead researchers: Dr Natalie Netzler, Dr Claire Wang, Professor Peter Shepherd.

Community partners: Moko Foundation.

Research funding: $584,490.

New Guidelines and Tools to Improve Antibiotic Use

New, user-friendly national antibiotic guidelines and smart measurement tools will support the optimal treatment of infection for all New Zealanders and help the global campaign to limit Antimicrobial Resistance (AMR).

Why this matters

- New Zealand reports **very high antibiotic use and escalating antimicrobial resistance**.
- **Māori and Pacific people experience high rates of infectious diseases** and are more likely to experience **adverse health outcomes** following infections.
- **New Zealand lacks national standards** to consistently guide and measure appropriateness of antibiotic prescribing.
- **Use of antibiotic guidelines** improves patient outcomes, reduces cost, reduces lengths of hospital stays, and reduces patient harms related to adverse drug reactions.

Pathway to solution

- **National antibiotic guidelines** will support optimal antimicrobial treatment decisions
- **Improving measurement and analysis** of antibiotic use will enable identification of inequities in appropriate and inappropriate antibiotic prescribing in clinical settings
- **Enabling effective feedback** will improve clinical practice and support equitable appropriate prescribing

Prescribers' user experiences underpin Aotearoa New Zealand's new national antibiotic guidelines – Te Whata Kura – developed to support optimal treatment. Innovative, smart tools in our hospitals will monitor the quality of antibiotic prescribing and support targeted quality improvement activities. Used together, these new products support appropriate antibiotic prescribing to improve patient outcomes and limit AMR in Aotearoa.

The name, Te Whata Kura, recognises antibiotics as a taonga (precious resource) and the guidelines as a repository of knowledge. By developing national guidelines and introducing measuring systems, this project aims to improve Aotearoa New Zealand's prescribing of antibiotics, supporting these important medicines to remain available and effective into the future.

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Te Whata Kura is good for the clinician, the patient, and the nation. More consistent prescribing will lead to consistently better outcomes.

– Associate Professor Stephen Ritchie

Aotearoa has large and persistent inequities in infectious diseases. New tools to measure appropriate prescribing will enable real time, pro-equity quality improvement.

– Dr Karen Wright

To inform the new guidance, 30 primary (n=17 and included 6 Māori General Practitioners) and secondary care (n=13) prescribers from throughout Aotearoa were invited to share their past experiences of, and current priorities for, accessing guidelines and antibiotic prescribing advice. Common themes included recognition of resource constraints that influence prescribing practice – such as time – and also affordability, and proximity and access to healthcare. Prescribers value speed and ease of guideline access, availability of advice, and the ability to easily share patient-facing educational content.

The researchers are developing innovative systems to monitor the appropriateness of antibiotic prescribing in primary care and hospitals. This involves collecting the reasons for prescribing antibiotics and information about the populations for whom antibiotics were prescribed. Used together, the guideline and monitoring system can determine the appropriateness of antibiotic prescribing for important infectious diseases in Aotearoa – like sore throats, skin infections, and meningitis – and identify inequities. This analysis is particularly important for Māori, Pacific peoples and other population groups that experience disproportionately high rates of infectious disease in Aotearoa.

Fair and consistent prescribing of antibiotics and improved monitoring will help limit AMR and achieve better and more equitable disease outcomes.

Reduced threat of antibiotic resistance through improved antimicrobial stewardship.

Better and more equitable disease outcomes – Te Whata Kura provides prescribers with nationally consistent advice on optimal treatment to support effective, timely and equitable antibiotic treatment decisions across Aotearoa.

Antibiotic prescribing analysis – smart monitoring tools can measure equity of antibiotic prescribing for Māori and Pacific peoples, and the compliance of appropriate prescribing in primary care and hospital settings.

Pandemic preparedness – Te Whata Kura's design and digital build enables new treatment algorithms to be developed and maintained quickly, without the need for hard coding expertise.

Lead researchers: Associate Professor Stephen Ritchie, Dr Lily Fraser, Dr Karen Wright, Dr Emma Best, Dr Maxim Bloomfield, Professor Stephen Chambers, Eamon Duffy, Dr Sharon Gardner, Dr Thomas Hills, Dr Anecita Gigi Lim, Dr Sarah Metcalf, Associate Professor Alesha Smith, Dr Leanne Te Karu, Associate Professor Mark Thomas.

Research partners: RUSH digital, Health New Zealand, ProCare, National Hauora Coalition, and Total HealthCare.

Research funding: $1,788,950.

Rangahau Rautaki
Strategic Projects

Strategic Projects strengthen Aotearoa New Zealand's ability to anticipate, detect, and respond to infectious disease threats in ways that are proactive, culturally grounded, and scientifically robust.

These initiatives focus on building coordinated systems and tools that provide early warning signals, improve surveillance, and support rapid response, while embedding Te Tiriti o Waitangi principles into decision-making. By combining cutting-edge science with tikanga-informed approaches, Strategic Projects create frameworks that prioritise equity, trust and rangatiratanga. They empower communities, foster collaboration across iwi, researchers, and agencies, and ensure resilience is not only about preparedness but also about shared wellbeing.

Mapping Aotearoa New Zealand's ID Research

Cataloguing the capacity and capability of infectious diseases (ID) research in Aotearoa New Zealand, highlighting where gaps can be filled to help us prepare for future pandemics.

Why this matters

- The New Zealand context of ID research is challenging, and the breadth of capability and capacity is not comprehensively documented, and not always well understood.
- The full extent of the Crown investment and other funding streams into ID research is unclear.
- A comprehensive catalogue of research agencies does not exist in New Zealand.
- There is no easily accessible way to know what areas of ID research are most prominent, and what is lacking.
- We do not have a national view of our ID research capability strengths and gaps.

Developing an enduring tool to evidence the scope and capacity of Aotearoa New Zealand's infectious disease research sector.

Accessible information collating the fulsome investment New Zealand is providing to support ID research, and the agents undertaking that research.

Better understanding of unmet need – gaps in ID research can be identified and addressed.

Connection and collaboration – the database will support the research sector to better connect and align efforts for broader impact.

Engagement during development of the Te Niwha research platform indicated a gap of understanding of the New Zealand infectious diseases landscape.

To address that, this project developed a database to set out the agencies, funders, key stakeholders, and research groups undertaking infectious diseases research in Aotearoa New Zealand. It also identified currently funded infectious diseases-related research and documented national infectious diseases research investment.

The mahi was done by researchers in partnership with a 12-person expert peer-nominated reference group. As a result of the group's input, the project evolved to include the development of a 'Burden of Disease Index' that includes direct costs, indirect costs, health outcomes, disease attributes, social determinants and equity related to 25 notifiable diseases.

The index tool will assist domestic and international research collaboration and project development. Outputs from this project will be used by researchers undertaking COVID-19 Equity Response Synthesis for proactive evaluation and gap analysis – understanding New Zealand's readiness and capacity to prevent, control, and manage COVID-19 and other infectious diseases.

Project team: Dr Amio Matenga Ikihele, Faletaoese Asafo, Joscelin Raymond Taugasolo, Rihi-Karenga Fisher-Marama, Dr Ruby Tuesday, Dr Jacinta Fa'alili-Fidow, Dame Dr Teuila Percival.

Research funding: $649,824 (Funding is jointly allocated to Mapping Aotearoa's ID Research and the COVID-19 Equity Response Synthesis).

COVID-19 Equity Response Synthesis

Understanding New Zealand's readiness and capacity to prevent, control, and manage COVID-19 and other infectious diseases.

Why this matters

- Understanding how the COVID-19 pandemic impacted communities is important to plan better for future infectious disease events.
- The Royal Commission COVID-19 Lessons Learned | Te Tira Ārai Urutā research found Māori involvement in the early phases of the COVID-19 response would have resulted in better outcomes for Māori.
- Māori and Pacific communities repeatedly demonstrate innovative means of resilience, mobilising swiftly to support people during times of need. Identifying effective tools and processes and including them in pandemic planning will improve Aotearoa New Zealand's future pandemic performance.

Enhancing infectious disease research, addressing health inequities, and improving health outcomes for Māori and Pacific communities in Aotearoa New Zealand.

Better understanding of unmet need – learning from communities' experiences of COVID highlights where improved service is required.

Strong partnerships established between researchers and clinicians and the communities they serve.

Improved health outcomes – identifying service changes that will reduce disparity and better support Māori and Pacific communities.

The Landscape Mapping project provided a comprehensive database of infectious disease research information and developed a Burden of Disease Index to show the real impact of 25 infectious diseases, including financial and social costs.

This research project is part of wider mahi to understand Aotearoa New Zealand's pandemic preparedness. It seeks insights into the effectiveness of Aotearoa New Zealand's planning, with a focus on Māori and Pacific health providers and communities.

Engaging widely to gather documented pandemic plans and responses from iwi Māori, Pacific communities, and Māori and Pacific health providers, the work was guided by cultural frameworks and methodologies – taking a kaupapa Māori approach and aligning with the Pacific Kakala Research Methodology.

This engagement is generating the critical information Aotearoa must lean on to become more responsive to community needs in a pandemic.

Project team: Dr Amio Matenga Ikihele, Faletaoese Asafo, Joscelin Raymond Taugasolo, Rihi-Karenga Fisher-Marama, Dr Ruby Tuesday, Dr Jacinta Fa'alili-Fidow, Dame Dr Teuila Percival.

Research funding: $649,824 (Funding is jointly allocated to Mapping Aotearoa's ID Research and the COVID-19 Equity Response Synthesis).

Immunisation Evaluation in Tainui

Understanding the hauora provider immunisation ecosystem context and how it impacts whānau oranga, including provision and uptake of immunisation and the resulting impact on immunisation rates.

Why this matters

- The Counties Manukau and Waikato regions are home to New Zealand's largest Māori and Pasifika communities.
- Immunisation rates for Māori children remain below fifty percent, and rates for Pasifika children are also low in these regions.
- The immunisation ecosystem that providers must navigate while providing hauora services is complex.
- We need to understand the drivers for low immunisation uptake to then design strategies and tools to improve immunisation rates in these regions, and elsewhere across New Zealand.

Helping to lift childhood immunisation rates, optimise hauora service delivery, and support whānau and communities to make informed decisions about immunisation.

Stronger immunisation ecosystem – Hauora providers are connected, and supported to have strategic conversations.

Informed communities – iwi, hapū, Māori and Pasifika providers and whānau are supported to understand the value of immunisation and can make better decisions.

More strategic delivery – insights shared with national decision-makers can support improved policy and process.

More equitable outcomes – Māori and Pasifika communities in the Counties Manukau/Waikato rohe benefit from improved immunisation rates.

This project supports hauora providers within the Tainui waka rohe (Waikato) to have more strategic conversations across the provider network and strengthen the immunisation ecosystem.

The project takes a developmental evaluation and tikanga-led kaupapa Māori approach to engage with iwi, hapū, Māori and Pacific providers and whānau. It seeks to understand the effectiveness of today's immunisation services and initiatives for Māori and Pasifika children (birth to five years old) and determine ways to improve immunisation practices and insights. Ultimately, it aims to enhance potential for whānau to make well-informed decisions about immunisation and understand how they see it prioritised in the whānau oranga landscape.

Interviews, focus groups, wānanga and surveys were conducted, including leveraging community participation at the Turangawaewae Regatta, and Te Matatini events. Analysis of the insights collected identified three variant age groups with vastly differing immunisation needs and views. The project is socialising learnings with decision-makers, making recommendations about how best to engage with whānau around immunisation, and seeking to influence policy change to strengthen Māori provider immunisation ecosystems within the Counties Manukau/Waikato rohe.

Project team: Riki Nia Nia, Shaun Akroyd, Laurie Porima, Louise Were.

Research funding: $1,483,450.

Understanding Rongoā Anti-microbial Properties

Guided and led by Mātauranga, science research can verify observed health benefits of rongoā rākau, and uncover new opportunities to support infectious disease preparedness.

Why this matters

- Many species of indigenous flora are rongoā – they have medicinal properties used by Māori for hundreds of years.
- Rongoā plants have provided relief for many common ailments and chronic conditions over centuries, their use guided by Mātauranga Māori (traditional knowledge) and stewarded by Rongoā Māori practitioners.
- New Zealand's indigenous flora has not been comprehensively evaluated for anti-viral efficacy related to infectious disease (ID).
- Claimed efficacies of rongoā rākau with anti-viral properties are not based on robust clinical trials of a modern standard. Rongoā Māori practitioners' work is ignored due to the lack of scientific and clinical research available to inform their practice.

Identifying active anti-viral agents from rongoā plants to support their functional efficacy for ameliorating infectious disease.

New frameworks for culturally safe harvesting, processing, traceability and scientific analysis of rongoā rākau.

Established approach for exploring and validating indigenous knowledge through scientific research and innovation.

Developing cultural capability in science research.

We are supporting the ID preparedness of our partners, Te Hiku Rongoā Collective (THR) and Rangitāne o Manawatū (RoM) by collaborating to identify and affirm the immune health benefits of taonga herbal remedies.

Frameworks were developed to enable bioactivity testing of the immunomodulatory and antiviral bioactivity of rongoā extracts against a viral mimetic and the pathogenic RSV virus. The frameworks facilitate protocol adaptations to uphold cultural integrity while meeting regulatory requirements. This includes incorporating tikanga into sample handling, testing procedures, and tissue culture-associated waste disposal, ensuring lab practices respect both Māori values and biosafety standards.

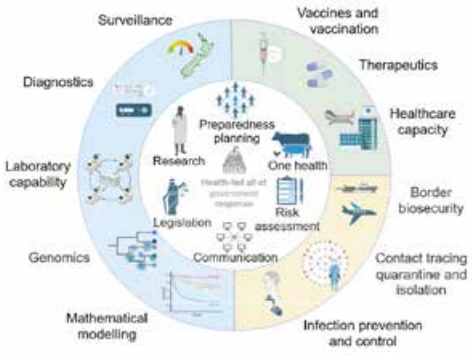
A systematic approach to first determine appropriate concentrations to be tested on relevant cell models (lung epithelial cells) ensures observed effects reflect true bioactivity rather than false positives. Leveraging the chemistry expertise of the Bioeconomy Science Institute, researchers will characterise the chemical composition of rongoā extracts. This may enable the identification of novel compounds, or combinations of compounds, responsible for the observed immune effects.

Project team: Dr Jonni Koia, Dr Dominic Lomiwes, Dr Isabel Moller (BSI), Joanne Murray (THH), Wayne Blissett (RoM), Renata Blissett (RoM), Melanie Miller (RoM), Dr Natalie Netlzer.

Research partners: University of Auckland, Rangitāne o Manawatū, Te Hiku Rongoā Collective, The Bioeconomy Science Institute.

Research funding: $500,000.

Pandemic Agents and Scenarios



Ensuring Aotearoa New Zealand's response to current, ongoing and emerging infectious disease threats is strong, prepared and unified.

Why this matters

- Pandemic planning presents significant challenges due to the many complexities and uncertainties surrounding the risk assessment and management of emerging infectious diseases.
- A constant theme across historic pandemics and epidemics is inequity: the heaviest burden often falls on populations with the least resources to manage these threats.
- Future pandemic plans must be flexible enough to respond to a wide range of potential pandemic threats, while addressing structural inequities through policy and practice.
- The interconnectedness of societal networks means that tackling inequity is not just a moral imperative but is crucial for the success of any pandemic response.
- Aotearoa New Zealand's Ministry of Health published an influenza pandemic plan in 2017. The plan was intended to "be adopted and applied to any pandemic event", but recent experiences with the COVID-19 pandemic have shown the need for a more comprehensive approach.

Aotearoa New Zealand's unique characteristics need to be considered and incorporated into pandemic preparedness, planning and response, to achieve the most equitable and effective outcomes.

Comprehensive guidance, advice and insights for more successful pandemic readiness and response.

Research results are published in ScienceDirect's **The Lancet Regional Health – Western Pacific:** **"Preparing for the next pandemic: insights from Aotearoa New Zealand's Covid-19 response"** and in Te Niwha's full report: **Likely future pandemic agents and scenarios: An epidemiological and public health framework.**

This collaborative research project examined the COVID-19 response, reflecting on strengths, limitations and implications for pandemic planning.

The project had four key objectives:

- Identify and characterise pathogens that are most likely to cause future pandemics/Public Health Emergencies of International Concern (PHEICs) and possible scenarios resulting from such events.
- Capture the key features that need to be considered during the interpandemic period (i.e. preparedness) and the multiple phases of a pandemic/PHEIC (i.e. response).
- Provide a framework and essential material for the preparation of a pandemic plan that is fit-for-purpose now and into the future.
- Identify capabilities that are needed to aid rapid decision-making and support control measures in the event of a new pandemic/PHEIC.

Researchers have identified three key areas for improvement:

- Development of a systematised procedure for risk assessment of a new pandemic pathogen.
- Investment in essential capabilities during inter-pandemic periods.
- Building equity into all stages of the response.

Project team: Distinguished Professor Nigel French, Dr Kristen Dyet, Dr Sue Huang, Professor David Hayman, Professor Michael Plank, Professor Jemma Geoghegan, Dr Howard Maxwell, Associate Professor Amanda Kvalsvig, Dr Pippa Scott, Dr Fiona Callaghan.

Reviewers: Professor Michael Baker, Euan Russell, Te Pora Thompson.

Research funding: $200,000.

Housing-related Health Outcomes in Te Tai Tokerau

Identifying communities that experience the greatest burden of respiratory, skin, and gastrointestinal infections to better understand how our housing conditions affect infectious disease outcomes.

Why this matters

- Te Tai Tokerau has one of the highest proportions of Māori in Aotearoa, with around 48% of residents identifying as Māori compared to 17% nationally.
- Many communities face lower household incomes and poorer housing quality, with cold, damp, and overcrowded homes that often do not meet Healthy Homes Standards.
- These conditions are known social determinants of health and contribute to persistent inequities for Māori whānau and tamariki.

Creating a regional baseline of the burden of housing-related infections to guide policies that improve housing quality, reduce preventable illness, and enhance community wellbeing.

Strengthened cross-sector collaboration between health, housing, and social agencies, helping build resilience to future infectious disease threats.

Evidence-based decisions – the mixed-methods baseline will directly inform future cross-sector housing-health investment and policy in Te Tai Tokerau.

Strengthening regional and Māori research capability through active mentoring, data management training, and governance participation.

Guided by kaupapa Māori principles, this study places Māori governance and data sovereignty at its centre. Through a Te Tiriti o Waitangi partnership approach, it supports collective action between housing, health, and social sectors to inform policy, direct investment, and improve wellbeing for whānau across Te Tai Tokerau.

The project aimed to determine how housing conditions influence infectious disease patterns in Te Tai Tokerau, identifying where inequities are most pronounced and why. Researchers analysed anonymised health data from 2020–2025 to identify which communities experience the greatest burden of respiratory, skin, and gastrointestinal infections, and understand how these patterns compare nationally.

This research enables the transformative, data-driven decision-making that can reduce hospitalisations, improve quality of life, and advance long-term health equity for Māori and all communities across Te Tai Tokerau. By integrating quantitative analysis with qualitative insights, the findings will contribute to national policy discussions on housing as a public health intervention.

The evidence generated will help decision-makers across housing, health, and social sectors target resources and design interventions that deliver measurable impact.

Project team: Tia Ashby, Professor Stephen Chambers, Dr Fiona Cram, Meremere Paitai, Dr Jonathan Willman, Mareea Paitai, Dr Grace Walker.

Research partners: University of Otago, Katoa LTD, Massey University, Think Analytics.

Research funding: $450,000.

Preventing Preschool Wheeze

Targeting one of the leading causes of preventable hospital admissions in young children, this research has the potential to significantly reduce avoidable illness, strain on families, and pressure on the New Zealand health system.

Why this matters

- **Preschool wheeze is the leading cause of childhood hospitalisation, particularly affecting Māori and Pacific children.**
- **More than 3,000 preschool children** are hospitalised each year with wheezy illness.[1]
- **1 in 5** of these children are readmitted within 12 months.
- Preschool-aged Pacific children are three to four times more likely to be hospitalised for wheeze.[2]
- Māori children are **twice as likely** to be hospitalised for wheeze.[2]
- The World Health Organization has advocated for lower inhaler use, as propellant inhaler gases are around **3,000 times more warming than CO_2.**

Pathway to solution

- If OM-85 works, **fewer young children will need to return to hospital** for wheezy illness – improving wellbeing and reducing stress for whānau
- Reducing repeat admissions will help **ease pressure on hospital services** and reduce avoidable healthcare costs
- This treatment could deliver **environmental benefits** by cutting the need for propellant inhalers

1 (Simpson J, Duncanson M, Oben G, et al. The Health Status of Children and Young People in New Zealand 2015. Dunedin: New Zealand Child and Youth Epidemiology Service, University of Otago, 2016).

2 (O'Loughlin C, Uia T, Grant C, Smiler K, Churchward M, Tu'akalau C, Ellison-Lupena R, Jeffreys M. Consequences of COVID-19 protection measures on children's respiratory health in Aotearoa New Zealand. New Zealand medical journal 2025;138(1610):74-92. doi: 10.26635/6965.6714).

“

This work is grounded in community relationships and whānau needs. It has made space for genuine partnership, and that is essential for improving respiratory outcomes for our children.

– Professor Cameron Grant, Paediatrics, University of Auckland

The ARROW study is testing whether OM-85 can prevent hospital readmissions in children aged 1 to less than 6 years who experience recurrent wheezing illnesses. It is taking place across seven hospitals in New Zealand and 45 in Australia. Participating children will be followed over a 12-month treatment period.

This is a multi-centre, randomised, double-blinded, placebo-controlled trial. The study intends to enrol 1088 children, aged between 1 and 6 years and having experienced at least one hospital admission due to wheeze lasting more than 6 hours, as well as two or more additional wheezy illnesses in the last year. Half of the children in the study will be given the treatment medicine (OM-85), and half will receive a placebo (which does not contain the real medicine). The medicine is taken by mouth for the first 10 days of each month for 12 months.

As well as working with the hospitals, the project has collaborated with community organisations supporting preschool-aged children. In New Zealand, this includes Plunket and Asthma New Zealand, as well as various Kōhanga Reo, preschools and schools, libraries, pharmacies, and Māori and Pacific primary care organisations in the Tāmaki Makaurau and Waikato regions.

Existing relationships fostered, and local and international collaborations and partnerships built.

The New Zealand arm of the ARROW trial ensured local children and whānau could participate. By the end of November 2025, 933 children had been recruited across Australasia, including 267 from New Zealand. Of the New Zealand participants, over half identify as Pacific or Māori.

Fostering partnerships with Māori providers and communities has been a project cornerstone, and community Hauora and wellbeing has been central to the project's strategy. This included having a dedicated community engagement lead, Mrs Tania Milne, Ngāti Hauā. Tania had a vision of making ARROW visible throughout Aotearoa and in community settings caring for preschool aged children.

This research has contributed to New Zealand's economy by creating new job opportunities for nurses, doctors and community workers.

New collaborations among health professionals across hospital and community settings have improved connections between primary, secondary, and tertiary healthcare, building stronger social and infrastructure systems.

Lead researchers: Professor Cameron Grant, Marisa van Arragon.

Funding partners: The Australian National Health and Medical Research Council, Cure Kids, Starship Foundation, Auckland Medical Research Foundation, University of Auckland, Te Niwha, Lottery Health, and the Health Research Council of New Zealand.

Future project directions: In early 2026 the ARROW trial will close the enrolment period and, in 2027, transition into the data analysis phase.

Research funding: $558,558.

Reducing Preventable Disease in Pacific Youth

PRISM study: Co-designing infectious disease messages for social media that resonate with Pacific youth and drive healthier action and outcomes.

Why this matters	Pathway to solution
• Pacific youth experience **disproportionately higher rates of infectious diseases** compared to other ethnic groups. • **Hospitalisation for close-contact infectious diseases is notably higher** for Pacific peoples. • Key contributing factors to these disparities include **barriers to healthcare access like cost, language, and cultural differences**.	• **Growing Pacific People's understanding** of infectious disease risk factors and prevention strategies • **Improved health policy** for infectious diseases surveillance, prevention and control, and service delivery • More **engaged Pacific youth** and communities that trust the health system and invest in their health outcomes • Opportunities for **two-way conversation and feedback** between youth and policymakers

Reducing preventable infectious diseases among Pacific youth by developing culturally relevant public health information disseminated via social media network sites.

Having Pacific researchers facilitate research for the Pacific communities is the key to meaningful research and lasting relations with Pacific communities. One of the strengths of the PRISM study was the early involvement of both the Expert Advisory and Youth Advisory groups in shaping the research tools. Cross-sectional research was conducted with 550 Pacific youth in Tāmaki Makaurau, and, through focus groups and fono, the project identified the barriers and enablers to accessing services. All stages of the research process were conducted collaboratively with youth, from developing study materials and approvals to analysis and dissemination.

“

When it comes to Infectious diseases, understanding risk isn't enough. We need to communicate it – culturally, digitally and powerfully.

– Sir Collin Tukuitonga

Results show youth care about health. Family is the main source of health learning, with knowledge gained through observation, tradition, and relational norms rather than formal education. Additionally, 90% use social media to find health-related content. Favoured platforms include TikTok (53.6%), Instagram (49.6%), Facebook (38.7%), and YouTube (34.4%). In total, 60.5% reported changing behaviour due to a health-related post on social media. Increased health knowledge increases health care uptake, though cost prevents 75% of Pacific youth seeking medical help. 86% of respondents consider it very important or crucial that healthcare staff are non-judgemental. Sexually transmitted infections are seen as the most dangerous due to links with HIV/AIDS and social shame. Rheumatic fever is feared for its cardiac risks but not well understood, and respiratory infections are viewed as minor and manageable.

To reduce the incidence of preventable infectious diseases in our Pacific youth we need compelling, relatable public health information.

Better health outcomes for Pacific youth through the creation of culturally responsive healthcare services, and the delivery of community-led education programmes and bespoke digital health interventions tailored to their needs.

Improved understanding across the wider Pacific community about infectious disease risk factors and prevention strategies, and within the health system of the Pacific youth's perception of disease risk and barriers to healthcare.

More robust, more effective health policy for infectious disease surveillance, prevention, control, and service delivery.

Increased capacity and capability of Pacific researchers through improved access to career opportunities.

Lead researchers: Professor Sir Collin Tukuitonga, Professor Judith McCool.

Research team: Jason Tautasi, Luisa Taufa, Nalei Taufa, Lisi-Malia Pereira, Jay Chu Ling, Raymond Taufa, Vake Taufa, Lois Chu Ling.

This project was co-hosted by PHF Science and the University of Otago. With thanks to Te Poutoko Ora a Kiwa/Centre for Pacific and Global Health for conducting the research.

Research funding: $1,500,000.

A Safer Future with Māori-led Data

An innovative approach for Māori across Aotearoa to rapidly share insights about health and disability, and their experiences during a pandemic, providing a rich information source that can help shape more effective services, policies and communities.

Why this matters

- For generations, Tāngata Whaikaha Māori have been missing from the datasets that drive Aotearoa New Zealand's pandemic planning.
- A survey in 2013 estimated 24% of the total population of Aotearoa New Zealand was disabled and that Māori and Pacific peoples had higher than average disability rates.
- Disability Support Services (DSS) recipients aged less than 70 years had four times the risk of hospitalisation due to COVID-19 compared with the rest of the population. People in this group were 13 times more likely to die of or with COVID-19.
- The COVID-19 pandemic exposed health-system barriers for disabled people. Tāngata Whaikaha Māori reported issues with access to primary care and emergency services causing them to delay seeking healthcare for fear of contracting COVID-19.
- There are disproportionate multi-dimensional social impacts from COVID-19 on disabled people and Tāngata Whaikaha Māori.
- There is limited evidence available regarding the direct impacts of COVID-19 on Tāngata Whaikaha Māori in Aotearoa.

Improving lives with Tāngata Whaikaha Māori knowledge and principles at the heart of infectious-disease research and response.

Equitable planning and response – Government agencies and health providers can better support disabled Māori.

Improved capability – improved panel methodology, data governance and policy translation, and better decisions.

The research team has a long history of prioritising Te Ao Māori in data collection, analysis and interpretation. This project extends earlier work and involves Tāngata Whaikaha Māori in an ongoing panel survey.

The Tāngata Whaikaha Māori Data Sovereignty Framework, now intellectual property vested in Te Ao Mārama Aotearoa Trust, is a first-of-its-kind template for indigenous-disabled data governance in Aotearoa. This nationwide study is embedding mātauranga Māori in the design and delivery of quantitative infectious disease research, and empowering Tāngata Whaikaha Māori.

A randomly selected panel of Māori adults are sharing information to support deeper, more meaningful analysis of the needs of the diverse disabled population.

By embedding equity indicators and accessibility features into the survey, the project is creating rapid-response capability for future infectious disease outbreaks. Government agencies now have an established mechanism to generate real-time data on disabled Māori needs.

Project team: Professor Tristram Ingham, Assoicate Professor Bernadette Jones, Assoicate Professor Meredith Perry, Assoicate Professor Paula Toko King, Andrew Sporle, Assoicate Professor Lara Greaves, Dr Tom Elliott, Professor Barry Milne, Taki Peeke.

Research funding: $500,000.

Understanding Aotearoa New Zealand's Mosquito-borne Virus Risk

With climate change, urbanisation, and extreme weather helping mosquitoes spread, the risk of new mosquito-borne diseases entering Aotearoa New Zealand is increasing.

Why this matters

- Mosquito-borne diseases, once confined to the tropics, are now appearing in places like Europe, North America, and Australia.
- When a mosquito feeds on blood, it swallows any viruses or parasites living in the blood. These can be transferred to the next host the mosquito bites, through its saliva.
- Mosquito-borne diseases can cause significant human harm.
- The World Mosquito Programme reports that 390 million people are infected each year with dengue, and hundreds of thousands more are affected by Zika, chikungunya and yellow fever.
- Environmental Health Intelligence New Zealand (EHINZ) advises that mosquito-borne diseases such as dengue, malaria, chikungunya, Zika virus, and Ross River virus pose a greater risk to New Zealand because people have no natural immunity, vaccines are limited, the diseases spread easily, and they can cause serious illness.
- EHINZ data shows that, following a decline in mosquito-borne disease notifications in New Zealand in 2021, cases have dramatically increased – from 46 in 2022 to 122 in 2023.
- We know very little about the viruses carried by Aotearoa New Zealand's mosquitoes or what animals they feed on.

Developing the first nationwide map of viruses and microbes carried by Aotearoa New Zealand's mosquitos, providing critical insights into potential risks of mosquito-borne disease.

Improved understanding – unlocking critical insights into potential risks of mosquito-borne disease.

Better prepared for future mosquito-borne disease threats in Aotearoa.

Aotearoa has 16 known mosquito species, most of which are native and likely to feed mainly on birds. However, female mosquitoes also feed on many other animals, including humans, which can allow viruses to jump between species.

This study mapped the viral diversity of our endemic mosquitoes to better understand the risk of vector-borne viruses, such as dengue virus.

Mosquitoes were collected from right across the country. Studying the specimens using cutting-edge genomic tools, the research revealed what species they are, which animals they have fed on, and what microbes and viruses they carry.

A mātauranga approach was adopted to better understand the history and relationship between mosquitos, their blood meal hosts, and humans. The study supported two-way knowledge exchange by engaging with iwi, community groups, health agencies, and conservation managers to include their priorities and perspectives.

Research findings will be widely shared and provide an evidence base for surveillance, conservation, and health policy.

Project team: Professor Jemma Geoghegan, Stephanie Waller, Jessica Darnley.

Research funding: $100,000.

Water Security Risks from Livestock Burial

Identifying and mitigating the risks to groundwater and drinking water from mass on-farm carcass burial.

Why this matters

- Approximately 40% of Aotearoa New Zealand's population relies on groundwater for drinking water supplies.
- In rural areas, many New Zealanders rely on private supply bores, which are often untreated and unmonitored.
- Aotearoa New Zealand's territorial authorities have relied upon arbitrary setback distances of 20–100m from wells or streams and a vertical separation distance of 1–2m above the water table for on-farm burials, regardless of the type of subsurface media and the number of animals being buried.
- During emergency culling of livestock, as occurred with the response to the HPAI outbreak in December 2024, mobilisation risk for pathogens is increased, creating significant risks for human and animal health through the consumption of contaminated water.

Guiding emergency response plans for disease outbreaks and livestock burial to avoid contamination of drinking water and minimise risk to human health.

Improved health outcomes with safer disposal practices.

Strong partnerships between government, iwi, and industry.

New Zealand is better prepared for future infectious disease emergencies involving livestock, with science-based, culturally appropriate policy and best practices for mass poultry carcass disposal.

This research supports Aotearoa in better preparing for, managing, and mitigating the impacts of future disease outbreaks through emergency responses. By synthesising international evidence and tailoring it to Aotearoa New Zealand's context, the research fills critical knowledge gaps and contributes to safer, more resilient water and waste management systems.

With a focus on poultry disposal, the project leveraged international literature, outbreak reports, and scientific publications to simulate and inform Aotearoa New Zealand's risk profile and response planning. Researchers reviewed international practices and guidelines on the mass burial and treatment of poultry carcasses during avian influenza outbreaks; evaluated the decomposition process of poultry carcasses, with a focus on the release and behaviour of bacterial and viral pathogens; assessed the suitability of current landfill sites in Aotearoa New Zealand for emergency poultry carcass disposal, identifying key risks to environmental and human health; and developed a set of science-based and culturally appropriate recommendations for MPI, regional authorities, and the poultry industry on best practices for carcass disposal during future disease emergencies.

Researchers engaged with rūnanga and iwi to share and discuss project risk, scope, methodology, analysis and findings. They worked closely with key stakeholders, including MPI, and regional councils, as well as Hokonui Rūnanga, to inform the papatipu rūnanga on project progress.

Project team: Dr Theo Sarris, Dr Laura Banasiak, Dr Liping Pang, Dr Allanah Kenny, Dr Louise Weaver, Phil Abraham, Richard Sutton, Dr Michael Hayford, Judith Webber, Dr Alexandra Meister.

Research funding: $100,000.

Responding to the Rise of Antimicrobial Resistance in Fiji

Empowering researchers, health professionals, and communities in the Pacific to develop effective prevention strategies and control measures against resistant bacteria.

Why this matters

- Antimicrobial resistance (AMR) is recognised by WHO as a critical threat to human health and wellbeing, especially in low-resource settings like the Pacific.
- Past studies have highlighted the critical need for advanced AMR genomic surveillance in the Pacific region.
- There is an increasing number of Pacific patients seeking medical treatment in Aotearoa.
- Previous research has also demonstrated the utility of pathogen genomics for the identification of a previously unrecognised outbreak of carbapenem-resistant Acinetobacter baumannii in the Pacific Islands, identified connections between isolates across the Pacific and to India, and revealed prolonged, unrecognised outbreaks within and between healthcare facilities in Fiji.
- Next-generation sequencing (NGS) has the potential to enable rapid identification of transmission networks and outbreaks.

Building research capacity and expertise in AMR surveillance and molecular diagnostics, contributing to the global fight against AMR.

Enhancing regional collaboration and data sharing, ensuring a coordinated and effective response to AMR threats in the broader Pacific region and in Aotearoa.

Advancing capability and capacity for genomic testing in Fiji.

Reducing inequitable health outcomes in both the Pacific and Aotearoa.

Given the rise of AMR in Fiji and the Pacific, it is crucial to enhance AMR surveillance and diagnostics to help identify outbreaks, inform infection prevention and control interventions, break the chain of transmission, and inform treatment options for patient management.

Traditionally, next-generation sequencing (NGS) has been restricted to specialised facilities due to high equipment costs and the need for extensive bioinformatics expertise. Today, advances in bioinformatics have led to the development of streamlined analysis pipelines that do not require extensive expertise. More affordable, portable sequencing solutions are available, making advanced genomic analysis more accessible and practical for regions with limited resources.

This project is developing real-time pathogen genomic solutions to address AMR by implementing AMR genomic surveillance. It has established an AMR reference laboratory in Fiji to serve as a hub for cutting-edge research and training and develop innovative solutions.

This work is empowering researchers, health professionals, and communities in the Pacific to develop effective prevention strategies and control measures against resistant bacteria.

Project team: Professor James Ussher, Dr Sakiusa Baleivanualala.

Research partners: Associate Professor Donald Wilson (Fiji National University [FNU]), Adriu Sepeti (FNU), Swastika Devi (FNU), Sajnel Sharma (Colonial War Memorial Hospital, Suva, Fiji).

Research funding: $105,000.

Rangahau Whanake
Seeding Projects

Encourage exploration of new ideas that weave together mātauranga Māori and scientific innovation.

This theme supports early-stage research that uplifts cultural integrity and responds to community aspirations. By creating space for culturally grounded innovation, Seeding Projects ensure solutions reflect Aotearoa New Zealand's diverse knowledge systems and values, fostering approaches that are inclusive, respectful, and transformative.

Ngā Kawenga i Rangiātea

Delivering a framework for understanding infectious disease in a manner that resonates with rangatahi and Māori communities, whānau, hapū and iwi of Aotearoa.

Why this matters

- **Māori suffer disproportionate impacts** during infectious disease outbreaks. Throughout history, Māori have fared the most poorly of all populations during infectious disease incursions in Aotearoa New Zealand.
- Te Tira Ārai Urutā – The Royal Commission COVID-19 Lessons Learned – found that **iwi Māori involvement in decision-making in the early phases** of the COVID-19 response would have resulted in better outcomes for Māori.
- Te Tira Ārai Urutā also found that **Māori needs should be specifically addressed** in any future pandemic response, and iwi, hapū, marae and Māori organisations **need to be engaged in decision-making from the outset.**
- **Rangatahi Māori must be empowered as leaders**, and supported to engage in science and research.

Collaboratively developing a generation firmly committed to advancing scientific endeavours for Māori whānau, hapū and iwi.

New frameworks for facilitating effective and culturally safe kōrero to deepen iwi Māori, and particularly Rangatahi Māori, understanding of infectious disease prevention, control and response.

Stronger communities, with intergenerational involvement in pandemic preparedness.

Developing cultural capability in science research.

Enabling comprehensive strategies to manage infectious diseases with engagement guidance that resonates with Rangatahi Māori.

Kōrero about infectious disease is broad and varying, with whānau Māori still feeling the impacts of loss and harm through the ages. Anchored in the realm of ancestral intelligence, this kaupapa is empowering rangatahi, fostering a new generation of leaders that are both culturally attuned and adept in scientific inquiry.

The concept of 'Ngā Kawenga i Rangiātea' (all that descends from Rangiātea) is at the heart of this approach, offering a holistic perspective on health and wellbeing. Adhering to research methodologies underpinned by Te Ao Māori, this research upholds the principles of tiakitanga, hononga, tūhonotanga, and rangatiratanga.

Intergenerational conversations are critical in finding intergenerational solutions. While the project focused on rangatahi Māori, it recognised the wider impact of infectious diseases and the importance of all-inclusive community involvement in pandemic preparedness.

This work has cultivated a deeper understanding of the impact of disease on Māori whānau, hapū and iwi, within a broader context of Te Ao Māori and within the colonial constructs that currently inhibit wellbeing for whānau Māori.

This lays strong foundations for the development of comprehensive, effective strategies for managing infectious diseases – particularly for those that continue to disproportionately affect Māori.

Project team: Paaniora Matatahi-Poutapu, Janell Dymus-Kurei, Paris Matatahi, Tiana Finai, Paea Waikai.

Research funding: $100,000.

Towards a Point of Care Diagnostic Test for Gonorrhoea

Laying the foundations for a rapid, clinic-based test for gonorrhoea that will achieve early diagnosis, limit transmission and reduce unnecessary antibiotic use.

Why this matters

- Gonorrhoea is a common sexually transmitted infection (STI) that is becoming increasingly difficult to treat due to rising antibiotic resistance.
- Infection rates are increasing locally and globally.
- The disease has significant health impacts. Untreated, gonorrhoea can lead to pelvic inflammatory disease (PID) or a "silent" infection, cause infertility and miscarriage, and can be transmitted to babies during childbirth.
- Early diagnosis is critical to limit transmission and reduce unnecessary antibiotic use, but current tests require laboratory processing and results can take up to a week.

Faster diagnosis and treatment will enable reduced spread of gonorrhoea and improve sexual health – this will be of particular benefit for communities that face barriers to accessing STI testing.

Improved health outcomes with earlier diagnosis and treatment.

Reduced transmission with short lag time between testing and results.

Advanced understanding will inform future research and development.

This project combines synthetic and biological approaches to create a rapid, strain-independent point-of-care (POC) test for gonorrhoea, similar to a COVID-19 RAT.

Researchers designed small, highly-specific molecules called nanobodies that bind to conserved surface antigens on *Neisseria gonorrhoeae*, enabling its detection. By evaluating their stability and binding performance, the project team could identify the best candidates for diagnostic development.

Researchers partnered with Māori and Pacific people to ensure the developing test was culturally acceptable and relevant.

The new diagnostic test for gonorrhoea will improve detection, treatment, and surveillance by enabling fast, low-cost, and accurate testing using minimally processed samples.

The work has advanced our fundamental understanding of *Neisseria gonorrhoeae* biology, providing novel insights into key gonorrhoea antigens that will inform future therapeutic and vaccine research.

Project team: Dr Joanna Hicks, Dr William Kelton.

Research partners: Dr Craig Billington, Collette Broomhead.

Research funding: $100,000.

Pandemic Preparedness and Learning Disability

Investigating the living situations and context in which people with a learning disability experienced the COVID-19 pandemic, and co-designing a framework for preparedness planning that is responsive and accessible for people with a learning disability.

Why this matters

- People with learning disabilities are significantly impacted by infectious diseases and pandemics and have worse health outcomes, despite more frequent contact with healthcare services (StatsNZ, 2023).
- People with a learning disability are infrequently considered or consulted in preparedness planning.
- In 2008, Aotearoa ratified The United Nations Convention on the Rights of Persons with Disabilities (UNCRPD), which enshrined disabled people's rights into law. Article 11 [2] of the UNCRPD outlines that the State must ensure that disabled people are safe and protected during situations of risk and humanitarian emergencies. UNCRPD Article 4.3 [3] states that disabled people must be included in the development and implementation of policies that relate to the UNCRPD or disabled people.
- People with a learning disability may live in residential care or in group homes, which are significantly and uniquely affected by infectious disease and pandemics (Independent Monitoring Mechanism, 2021). Poor system design and implementation can have significant impacts on residents, including people with learning disabilities.

Whakarakatira te tākata, ahakoa ko wai, ahakoa nō hea
Respect and treat all with dignity, irrespective of who they are and where they come from.

Better, more inclusive, collaborative planning with a framework and critical insights to support future consultation and national infectious diseases and pandemic planning that is inclusive, rights-based and just.

This project has drawn on the UNCRPD and used qualitative, disability inclusive, rights based and intersectional frameworks to centre the experiences of people with a learning disability during the COVID-19 pandemic. It identifies the critical physical, mental and social wellbeing impacts experienced by people with a learning disability, and seeks to understand the factors this group identify as being critical to ensure Aotearoa New Zealand's future infectious disease and pandemic planning is responsive and accessible.

Researchers interviewed five people with a disability and used qualitative thematic analysis to generate key findings. Eight interviews were conducted with family, whānau, aiga or close supporters of people with a learning disability, and health and disability professionals.

In collaboration with researchers, people with a learning disability have led the co-design of a framework for consultative, responsive and accessible pandemic planning for people with a learning disability in Aotearoa.

This work has fostered inclusion and self-determination, advanced the rights of people with a learning disability under the UNCRPD, and provided a rich dataset of information to support future inclusive, rights-based, disabled-led public health efforts for infectious diseases and pandemic planning.

Project team: Associate Professor Brigit Mirfin-Veitch.

Research partners: Ngā Tāngata Tuatahi – People First New Zealand.

Research funding: $100,000.

Mana-enhancing Strategy for HIV Research Partnerships and Community Engagement

Developing a kaupapa Māori research strategy for Toitū Te Ao with a mana-enhancing framework to set the honotanga to support strong partnerships and meaningful community engagement.

Why this matters

- **Māori must lead research that affects Māori**. Māori-led research ensures the rangahau is culturally safe, grounded in mātauranga Māori and ensures better outcomes for Māori.
- **How research is done, matters**. Without tikanga, honotanga, power-sharing, and culturally responsive approaches, research risks causing harm, even when intentions are good.
- **The status quo must be challenged**. Continuing with western research models will keep marginalising Māori knowledge and voices and limit the impact of research in Aotearoa.

Ā Mātou Rautaki Rangahau (our research strategy) outlines the tikanga to ensure our research engagements are mana-enhancing, for everyone.

As the only Māori-led HIV organisation in Aotearoa, Toitū Te Ao provides holistic care and support for whānau living with HIV and whānau at greater risk of HIV.

Toitū Te Ao aims to engage in research that honours Māori identity, lifts mana, protects whakapapa, and reflects Māori realities. As a small, community-led organisation, Toitū Te Ao has experienced multiple challenges with meaningful engagement in the current research environment.

This project has developed a kaupapa research strategy, with a mana-enhancing framework to support meaningful research engagements and partnerships now and in the future.

This strategy, and the framework for engagement that supports it, aim to address gaps in current research practice. Driven by the premise **E kore mātou e kore tātou** – nothing about us, without us, the framework provides guidance to the research process, ensuring Māori led in every stage, including the decision-making, design, methodology, and delivery.

Ā Mātou Rautaki Rangahau is Toitū Te Ao's commitment to engaging in rangahau (research) in a way that upholds the mana of everyone involved – reflecting their values, strengthening connection, and contributing to better hauora for whānau living with, or at greater risk of, HIV. The rautaki helps navigate research, reminding us that research is not just about data collection, but the people behind the data. It encourages us to apply manaakitanga in our quest for māramatanga (deeper understanding).

At its heart, Ā Mātou Rautaki Rangahau is about supporting and protecting Toitū Te Ao's critical kaupapa.

Project team: Milly Stewart, Abby Leota.

Research funding: $100,000.

Community Engagement to Improve ID Systems

Identifying opportunities for enhanced surveillance and infectious disease modelling to improve pandemic preparedness.

Why this matters

- Te Tira Ārai Urutā | Royal Commission COVID-19 Lessons Learned explored the significant impact of the COVID-19 pandemic on Māori. It found that Māori community-based responses were able to engage with local people faster and more directly than government agencies, and that more Māori involvement in the early phases of the COVID-19 response would have resulted in better outcomes for Māori.
- It recommended that Māori needs should be specifically addressed in any future pandemic response, Māori need to be engaged in decision-making, and more responsibility should be given to Māori health providers and organisations to deliver better health outcomes for Māori.

Gaining community insights into how Aotearoa New Zealand's ID surveillance system can be adapted to better serve Māori, and how healthcare delivery can be improved.

Better understanding of community goals for infectious disease prevention and control.

Future direction guiding mathematical modelling opportunities in Aotearoa aligned with the priorities of Māori communities.

Connection and collaboration bringing researchers, public health teams and communities closer.

Mana enhancing engagement learning from the Māori experience of COVID to build better systems and improve community ID resilience.

This project helps to bridge two existing projects – **A Review of Infectious Disease (ID) Surveillance in Aotearoa**, reviewing Aotearoa New Zealand's current ID surveillance systems and assess their ability to support the prevention and control of important IDs, and **A Kaupapa Māori Infectious Diseases Surveillance Framework**, developing an indigenous-led framework for infectious disease preparedness and response. It provided a comprehensive national review of ID modelling research in Aotearoa for which future opportunities can be guided by the priorities of Māori.

This research united Māori qualitative research experts from Wai Rangahau with public health practitioners and modellers from the University of Otago, Wellington. This collaboration created wide reach for community engagement across Te Ika-a-Māui, organisations and disciplines. Meaningful engagement with Māori health providers, their whānau and public health experts highlighted their ID priorities and examples of successful community level approaches to data analysis.

This research gave Māori a platform to voice their success following the pandemic, as well as their concerns. It achieved trans-organisational and multidisciplinary collaboration and shared capability development.

Project team: Sarah Pirikahu.

Project partners: Wai Rangahau.

Research funding: $100,900.

Mana Tangata
People Leadership

At the heart of the Te Niwha's success lies a commitment to people. Our People Leadership is built on three pillars: investing in people, investing in training, and investing in collaboration.

These pillars have shaped a platform that not only advances science but also grows capability, strengthens relationships, and nurtures leadership grounded in cultural integrity and collective purpose.

Investing in people

Te Niwha prioritised supporting emerging leaders and researchers through initiatives like the Kia Niwha Leadership Fellowships, creating pathways for Māori and Pasifika scientists to thrive. This investment ensured diversity and equity were embedded in the leadership fabric of infectious disease research.

Investing in training

Through wānanga, mentoring programmes, and tailored development opportunities, Te Niwha strengthened the skills and confidence of its research community. Training extended beyond technical expertise to include cultural competency, partnership building, and leadership development – preparing the next generation of researchers.

Investing in collaboration

Te Niwha created spaces and opportunities for researchers across Aotearoa to connect, share knowledge, and work collectively. By bringing together diverse disciplines and perspectives, these collaborations fostered innovation, strengthened relationships, and built a united research community committed to tackling infectious disease challenges.

Together, these investments have created a leadership ecosystem that is innovative, inclusive, and resilient – one that will continue to serve Aotearoa well into the future.

Summer Studentships

Te Niwha's mission is clear – to ensure Aotearoa New Zealand has world-class research capability to support our preparedness for current and future infectious disease challenges.

Science skills are critical. Science makes our nation stronger, offering the innovative and responsive tools we need to keep our communities safe and our economy prosperous. It is important that we influence participation in science from an early age to encourage a curious cohort of students that grow into future researchers.

Our Summer Studentship programme, first offered in 2022, enables the growth of the next generation, building the capability we will rely on in the years to come to safeguard Aotearoa New Zealand from new and emerging threats.

The programme is made possible through deep partnerships and the generosity of our facilitators and host organisations – Pūhoro STEMM Academy Charitable Trust, Collaborative Mana Moana Three Lakes Partnership, the Malaghan Institute for Medical Technology, the Medical Research Institute of New Zealand, Te Puna Ora o Mataatua, Hapai Te Hauora, Auckland University of Technology, Victoria University of Wellington, and the Universities of Auckland, Canterbury and Otago. We extend on ongoing thanks for your significant and valued contribution.

The programme opens the door for students to work on stand-alone projects, or contribute to the body of knowledge progressing collaborative work that is readying and steadying us for tomorrow's challenges.

The studentships are many and varied – from improving influenza diagnosis and resource management in hospitals, to taking a kaupapa Māori approach to understand vaccine hesitancy. From tackling the globally significant issue of antimicrobial resistance, to exploring better diagnosis of Legionnaires' disease. From assessing the risk of animal coronavirus spillover to humans, to improving disease surveillance through innovative wastewater testing. In all, Te Niwha has supported 30 studentships and, in turn, this research is supporting a stronger future for New Zealand, and New Zealanders.

Te Niwha is proud to stand with our partners and contribute to Aotearoa New Zealand's critical capability pipeline by offering these talented students a healthy head-start into their science career.

Te Ao Māori

Claudia Priddey
University of Auckland
Access to care for chest infections in preschool aged children.
$9,000

Paepa Tohaia
University of Otago
Online maps for immunisation. Are they fit for purpose?
$8,000

Prevention

Ihāpera Esson
University of Otago
Understanding Māori contact networks for public health infectious disease investigations.
$8,000

Tanira Kingi
Medical Research Institute of New Zealand
A RCT of the immunogenicity and reactogenicity of subcutaneous vs intramuscular administration of Covid-19 vaccination in community pharmacies.
$8,000

Olivia Sloan
University of Otago
Exploring student decisions about and experiences of participating in a vaccine trial.
$8,000

Douglass Yee
Auckland University of Technology (AUT)
School age vaccinations: Changes in uptake over time and by children's characteristics.
$6,000

Branagh Overington
Te Puna Ora o Mataatua (TPOOM)
Kowheori-19 – Eastern Bay of Plenty.
$6,000

Georgie Allen
University of Otago
Nga Hua Akoranga: Māori solution for global problems learning from MIHI māori mobile vaccination programme to achieve equity.
$6,000

Kaia Sheehy-Wikio
Malaghan Institute for Medical Technology
Optimising In Vitro transcription for RNA vaccine production: Evaluation of T7 RNA polymerases and cap Analogs.
$10,000

To'oa Brown
University of Otago
The role of bacteria signals in regulating activation of antibacterial MAIT cells.
$8,000

Ashleigh Pologa
Malaghan Institute for Medical Technology
mRNA vaccine formulation.
$9,000

Jacqui Ormsby
University of Canterbury
Confirming and identifying the ubiqitin binding Site of RIOK3.
$8,000

Surveillance

Lena Cassin
University of Otago
Assessing animal coronavirus spill over risk in Aotearoa.
$8,000

Feya Durkin
Victoria University of Wellington
Sampling wastewater from buildings for better infectious disease surveillance.
$8,000

Larissa Renfrew
Hapai Te Hauora
Community respiratory virus surveillance in preschool children.
$6,000

Abigail Kalontano
Medical Research Institute of New Zealand
Community pharmacy-based virological surveillance: Exploring expansion to Pacific Island countries.
$8,000

Catrin Ogilvie
Htin Lab – University of Otago
Characterising the genome of Mycobacterium Tuberculosis, the causative agent of Mate Kohi.
$1,000 contribution

Diagnostic

Ava Elsmore
University of Otago
Clinical characteristics of laboratory-confirmed influenza in children <16 years of age presenting to Christchurch Hospital.
$6,000

Sophia Hamada
University of Auckland
Characterisation of Staphylococcus aureus *isolates from Osteomyelitis.*
$6,000

Jessica Leong
University of Otago
Host histone deacetylase 2 during the Influenza A virus induced innate immune response.
$6,000

Elizabeth Chernysheva
University of Otago
A CRISPR-based diagnostic assay for Legionella longbeachae *in human blood.*
$6,000

Memphis-Jay Millward-Clapp
Malaghan Institute for Medical Technology
Exploring how fever alters immune cell function.
$1,000 contribution

Axel McKenna
Malaghan Institute for Medical Technology
Software Engineering Studentship.
$10,000

Therapeutics

Jinwei Sun
University of Auckland
New Daptomycins to treat infectious disease.
$6,000

Jesse Wijaya
University of Auckland
Development of polymyxin analogues to tackle antimicrobial resistance.
$8,500

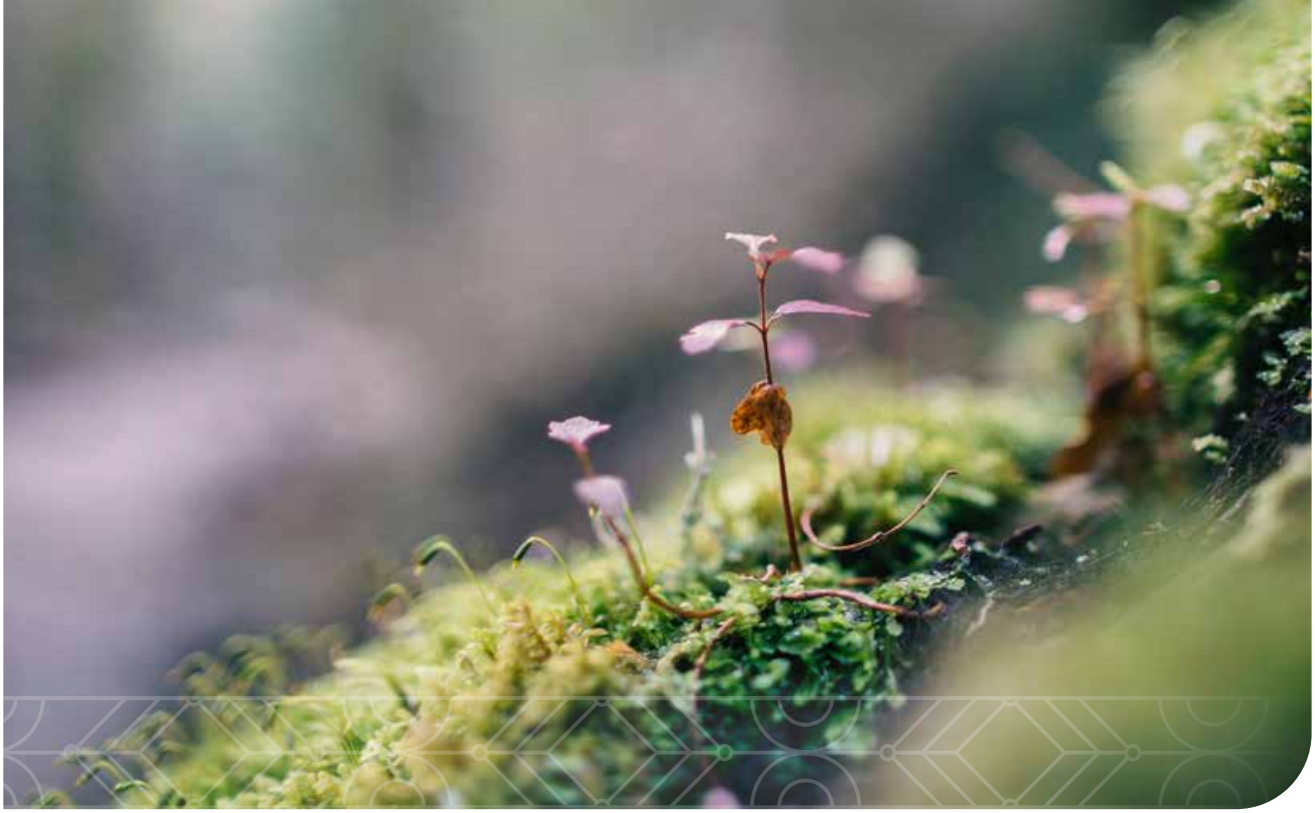
Samantha Samaniego
University of Auckland
Understanding our current surge in complex pneumonia in children.
$8,000

Myles Landon
University of Canterbury
Incorporating Malonyl-CoA Decarboxylase into a Coacervate.
$9,000

Imogen McNeill
University of Otago
Synthesis of dinogunellin analogues.
$8,000

Ihaia Mulholland
Malaghan Institute for Medical Technology
Developing immune cell therapies for cancer.
$1,000 contribution

Robert Mullin
University of Auckland
Non-toxic Polymyxin B thioester analogues.
$8,000



Masters

Masters Scholarship

Teinatangi Ringi

Strengthening STI Surveillance in the Cook Islands: An Epidemiological and Policy Review.

Sexually transmitted infections (STIs) contribute to infertility, chronic pelvic pain, ectopic pregnancy and neurological complications. Emerging research on STIs like gonorrhoea has found growing antimicrobial resistance (AMR) to treatment, highlighting the importance of improving AMR stewardship and STI management. Across the Pacific, limited STI data and fragmented surveillance systems hinder effective infectious disease control. This research will provide insights to guide STI surveillance and management. The results will not only be relevant to the Cook Islands but also offer a model for other Pacific Island countries to adapt. In the long term, this research aims to reduce STI-related illness, improve reproductive health outcomes and ensure equitable access to sexual and reproductive health services across the Cook Islands and the Pacific region.

Total research funding $34,000.
The project will complete in 2026.

Masters Scholarship

Sarah Cosgrove

An investigation into Aotearoa New Zealand's approaches to adolescent vaccination against the Human Papillomavirus (HPV).

In Aotearoa, HPV vaccines are primarily delivered to adolescents aged 12 to 13 through a school-based vaccination programme, with Canterbury as the only exception. Canterbury instead delivered HPV vaccines through primary care practitioners (PCPs) and switched to a combined schools and PCPs approach in 2016. This research evaluated one-dose HPV vaccination coverage in Canterbury relative to other regions in Aotearoa, from 2013 to 2023, to identify any differences in coverage due to Canterbury's unique model. The research also sought to investigate if the vaccination model impacted HPV vaccine inequities due to ethnicity, particularly amongst Māori and Pacific adolescent populations.

Total research funding $32,000.
The project completed in January 2025.

Masters Scholarship

Brittany Meafou

Investigating the impact of drinking water outages on enteric disease in Aotearoa.

The drinking water network in Aotearoa is sub-optimal. Systemic failures in drinking water systems can result in significant health risks, and Aotearoa faces a major drinking water infrastructure deficit of ~$120-185bn by 2050. This project examines the association between drinking water network outages and enteric disease notifications. If a significant relationship is detected, the work could assist water suppliers with prioritising drinking water renewals. It could also assist researchers and policy makers to quantify the burden of disease associated with unplanned outages across Aotearoa – a significant step towards generating an updated burden of disease from drinking water estimate.

Total research funding $34,000.
The project completed in August 2025.

Masters Scholarship

Jack Blackwood

Investigating the antiviral range of rongoā Māori and traditional Pacific medicines.

Viruses pose a significant and persistent global health risk. There are currently few approved antivirals for most infections and, when clinically approved antivirals are available, many are at risk of antiviral resistance. Traditional Pacific medicines and rongoā Māori have been used for many centuries but very few studies have examined their antiviral activities. This research investigates rongoā Māori and traditional Samoan medicinal extracts to determine potential antiviral activities against influenza A virus (flu), and herpes simplex virus 1 (causing cold sores and infection-related blindness). Findings will be shared to help guide specific treatments for viral infections and tailor the care they provide.

Total research funding $32,000.
The project completed in August 2025.

Masters Scholarship

Matija-Taaitoa Sucich

Exploring the bioactivities of tūpākihi rongoā against viral infection and inflammation.

This project aims to preserve and expand the mātauranga around the rongoā Māori tūpākihi *(Coriaria arborea)* by working alongside rongoā experts from Te Hapua in partnership with Ngāti Kuri. Guided by mātauranga, this study uses co-designed methods and tikanga to better understand the medicinal properties of this taonga species, including its anti-inflammatory properties. Based on community aspirations, this work aims to identify novel medicinal uses for tūpākihi, including potential topical antiviral activities. This study is helping to understand the bioactive properties within this medicinal plant, to broaden scientific and cultural knowledge of tūpākihi as a rongoā in partnership.

Total research funding $34,000.
The project will complete in February 2026.

Masters Scholarship

Janaya Stevenson

Identify new bacterial drug targets in skin pathogens *in vitro* and *in vivo*.

Skin infections affect approximately one-third of the population, with New Zealand experiencing one of the highest infection rates among developed countries. *Acinetobacter baumannii* is an emerging pathogen that poses a significant threat in healthcare settings, particularly due to its role in skin and soft tissue infections. This bacterium is notorious for its ability to develop resistance to multiple antibiotics, making infections difficult to treat. This project aims to identify key regulatory genes and pathways in a highly virulent *A. baumannii* strain using state-of-the-art sequencing techniques. Its innovative approach to identifying essential genes will determine possible drug targets for treating skin infections.

Total research funding $34,000.
The project will complete in February 2026.

Masters Scholarship

Meghna Patel

Examining the potential of PI3K inhibitors as flavivirus antivirals.

Climate change is expanding the reach of mosquito-borne viruses like dengue and Zika, pushing them beyond tropical regions into new parts of the world. While the specific Aedes mosquitos that spread these viruses are not in Aotearoa, Northland is now warm enough to sustain the mosquito lifecycle. Consequently, it is only a matter of time until these mosquitos establish here, allowing local transmission of dengue and Zika viruses. Unfortunately, there are no approved antiviral treatments for these infections, and vaccines against dengue are only available for certain populations. To ensure that Aotearoa is prepared, this project investigated the potential of PI3K inhibitors as antivirals.

Total research funding $34,000.
The project will complete in February 2026.

Masters Scholarship

Rhonita Schutz

Epidemiology of tuberculosis and BCG vaccine uptake among Pasifika in Aotearoa New Zealand.

Aotearoa remains a low tuberculosis (TB) incidence country by global standards, however, Pasifika living in Aotearoa are particularly vulnerable to the disease. This is due to societal factors and determinants of health that are unique to Pasifika. The Bacillus Calmette-Guérin (BCG) vaccination programme targets at-risk populations, which can exclude Pasifika.

This is a mixed-method study, drawing from a Pasifika research worldview, employing Te Kora framework for guidance. It aims to inform improvements to the BCG vaccination programme in Aotearoa, and to TB prevention efforts in general, to reduce TB disease burden among the Pasifika population for more equitable outcomes.

*Tot*al research funding $32,000.
The project completed in August 2025.

Masters Scholarship

Jackson Smeed-Tauroa

Māori whānau experiences of critical illness in Wellington Intensive Care Unit (ICU).

The first step to provide best practice recommendations for future pandemics is to describe how current practices impact our whānau.

Māori are a collectivist culture, and being present to care for their whānau is important for both the patient and their whānau. This study aims to understand how health professionals can ensure the wellbeing of whānau whose whānau member is being cared for in an ICU.

Lessons learned from this study will help to address the challenges posed by future pandemics and ensure equitable outcomes for those who experience inequitable outcomes, including Māori.

Total research funding $33,907.
The project completed in August 2025.

PhDs

PhD Scholarship

Melemafi Porter

"It has been a privilege and honour to be part of a project that has a strong community focus, conducted throughout Aotearoa New Zealand's pharmacy research network. This study has the potential to inform practices for COVID-19 vaccines in Aotearoa."

A randomised controlled trial investigated the immunogenicity and reactogenicity of subcutaneous (SC) versus intramuscular (IM) administration of COVID-19 vaccination in community pharmacies in Aotearoa New Zealand.

Vaccination against SARS-CoV-2 is effective in reducing mortality and morbidity from COVID-19. However, obesity can decrease the likelihood that an IM injection is delivered into muscle, due to increased subcutaneous tissue thickness at the deltoid site. Vaccination guidelines currently offer non specific advice regarding needle length selection, recommending a 38mm needle for a "very large or obese person." Because these instructions rely on clinical judgement, interpretation may vary considerably among vaccinators.

It remains unclear whether IM delivery of COVID-19 vaccines is essential for achieving full therapeutic efficacy. Concerns about adverse events following immunisation contribute to vaccine hesitancy and refusal, meaning that inadvertent SC administration may influence vaccine-avoidant behaviour. This study compared the immunogenicity and reactogenicity of IM and SC COVID-19 vaccination to determine whether meaningful differences exist.

Understanding which delivery method produces the most favourable response, and communicating this evidence to health regulators, will help ensure that vaccination guidelines support the best possible outcomes for all New Zealanders.

PhD Scholarship

Lia Heremia

"What I value most about this work is that it is guided by mātauranga Māori and kaitiakitanga, strengthening community preparedness and enabling communities to respond to emerging risks in locally informed, meaningful, and appropriate ways."

Uncovering drivers of viral spillover.

Human-driven changes to landscapes – through agriculture, urbanisation, and wildlife trade – are intensifying interactions between wild birds, livestock, and people, facilitating the spillover of zoonotic viruses such as avian influenza and coronaviruses.

Although many avian viruses remain asymptomatic in their natural hosts, shifts in host ecology can promote viral emergence, with significant implications for biodiversity, public health, and biosecurity.

This project aims to characterise the diversity and evolutionary potential of avian viruses in Aotearoa, investigating how ecological and environmental factors influence viral emergence, re-emergence, and cross-species transmission.

It also seeks to uphold genomic data sovereignty through iwi consultation and collaborative research frameworks.

By analysing the viromes of native taonga and introduced avian species using high-throughput RNA sequencing, we can generate vital insights into host-virus interactions, cross-species transmission, and emerging infectious disease risks.

This work supports Aotearoa New Zealand's biodiversity protection, biosecurity preparedness, and pandemic prevention. It will inform conservation efforts, support Māori data sovereignty under Te Mana Raraunga, and contribute to global understanding of zoonotic emergence from a uniquely local perspective.

Total research funding $164,000.
The project is ongoing.

PhD Scholarship

Sumanta Saha

"Greater accuracy in measles immunity screening, and use of an efficient vaccine delivery method to generate stronger measles immune responses, are critical to address measles immunity gaps in Aotearoa New Zealand and sustain our measles-elimination status."

Measuring and strengthening waning immunity to measles in fully immunised young adults.

Measles immunity is waning globally and, despite being previously eliminated from the country, the severely infectious virus is re-emerging in Aotearoa New Zealand. This project is generating knowledge that will inform policy and practice by:

- Determining the prevalence and determinants of measles non-immunity in university students who have been screened for vaccine-preventable diseases, including measles.
- Examining the diagnostic accuracy of a locally available test used for screening measles immunity by comparing it with a gold-standard test used internationally and an alternative bead-based multiplex immunoassay well-correlated to the latter.
- Understanding the antibody responses to intramuscular third dose of measles, mumps, and rubella (MMR) vaccine.
- Comparing antibody responses to alternate MMR vaccine delivery methods (aerosol and intradermal) with traditional (intramuscular) administration in a randomised-controlled trial.
- Identifying antibody-based correlates of protection against measles using a challenge approach, where aerosolised measles-containing vaccine (MMR) is used as a proxy for wild measles virus exposure.

If an alternate vaccination method to intramuscular infection proves efficient, this work may lead to the adoption of a routine third dose of MMR and higher uptake due to non-needle delivery.

Total research funding $162,000. Funded by Te Niwha and the Health Research Council New Zealand.
The project completed in August 2025.

PhD Scholarship

Gabe Mulcare

"I'm driven by the belief that everyone deserves safe, reliable drinking water, and I'm passionate about research that strengthens the wellbeing of communities who are often overlooked."

Roof-harvested drinking water surveillance using metagenomics and qPCR in the Ngāi Tahu Takiwā.

Systemic failures in drinking water systems can result in significant health risks. Past outbreaks, including the largest reported water-borne campylobacteriosis outbreak in the world in Havelock North (2016), have highlighted the severe impact of waterborne diseases.

Current microbial water-quality testing relies on faecal indicators such as total coliforms and *E. coli,* which fail to capture the full spectrum of risks and provide limited insight into contamination sources. Metagenomics and qPCR are genetic methods that offer a change for drinking-water management, though further foundational science is needed to guide its implementation.

This PhD sits within a larger MBIE Endeavour project and builds on a previous Te Niwha project, shifting from a local case study to a national assessment of microbial risk in roof-water self-supplies.

The project aims to estimate the number of people potentially exposed to risks associated with roof-water supplies across Aotearoa by integrating spatial datasets on distribution zones, climate, remote sensing, resource consents, and commercial tank sales data.

Empirical analyses will test links between roof-water exposure and notified cases of legionellosis and enteric disease, supported by targeted metagenomics and qPCR sampling to validate national exposure estimates.

The ultimate aim is to ensure better water quality throughout Aotearoa and improved health outcomes for the communities we serve, upholding Te Tiriti o Waitangi by enabling tangata whenua to hold the Crown accountable for any inequity in water service provision or the protection of freshwater.

Total research funding $123,000.
The project is to be completed in 2028.

PhD Scholarship

Katharina Wolf

"With local data confirming the need for appropriate K. kingae coverage, our diagnostic work will help clinicians make evidence-based decisions that directly improve care for children in Canterbury and across Aotearoa."

A non-invasive "liquid-biopsy" for *Kingella kingae* infections in children using cell-free DNA.

Acute osteoarticular infections (OAI) pose a significant threat to Australasian children with reported infections rates higher than in other OECD countries. *Kingella kingae* is the leading cause in young children. Early identification of the disease-causing pathogen improves patient prognosis and reduces treatment duration and the possibility of long-term sequelae.

Blood cultures are routinely performed but less sensitive compared to culture from joint aspirates, however, these are not routinely carried out due to their invasiveness.

This project is developing a liquid biopsy assay to detect *K. kingae* cell-free DNA (cfDNA) in a patient's blood and urine.

This novel diagnostic assay can be routinely implemented, leading to more targeted antibiotic treatment for OAI patients. It also has the potential to be a foundation for the detection of other infectious diseases.

This will solve currently hard-to-diagnose infections, allow faster diagnosis, improve antimicrobial stewardship and be non-invasive for our tamariki. It may also allow point-of-use application in remote areas.

Antibiotic susceptibility testing of local *K. kingae* isolates against commonly used agents provided evidence supporting Canterbury's recent change in first-line treatment recommendations to ensure appropriate coverage for this organism.

Total research funding $162,000.
The project completed in August 2025.

PhD Scholarship

Okeroa Waaka

"When we seek the betterment of taiao, we simultaneously uplift whānau of today and the generations to come."

Using 16S rRNA sequencing as a surveillance tool for the monitoring of rural Māori community drinking water supplies in the Aotea Harbour.

Outbreaks as a result of waterborne illness and diseases are the ultimate consequence of inadequate drinking water systems. Public health will remain at risk from potential outbreaks following contamination events without effective means to monitor and respond. For those who live rurally, there is an even greater risk, as many households rely on self-supplied domestic water systems that are not covered by drinking water regulations.

The drinking water standards (DWSNZ) define the maximum acceptable concentrations of contaminants in safe drinking water. The DWSNZ highlight the detection of indicator organisms *E. coli* and total coliforms to assess the bacterial quality of drinking water.

This traditional form of water quality testing lacks the ability to capture the full microbial profile of organisms present in water samples, omitting key insights around sources of contamination.

Next-generation sequencing (NGS) can identify and characterise all microorganisms present in environmental samples, increasing the capability of rural residents to monitor and maintain the quality of their drinking water supplies.

The overall aim of this research is to ascertain the effectiveness of NGS techniques (16S rRNA sequencing), as a surveillance tool to aid in the monitoring of rural Māori community drinking water supplies in the Aotea Harbour.

Total research funding $162,000.
The project is to be completed in 2028.

Fellowships

Māori Kia Niwha Leader Fellow

Dr Alice-Roza Eruera

Dr Alice-Roza Eruera (Ngāpuhi-nui-tonu, Ngāti Ruanui) is a cryo-electron microscopist who specialises in modelling the 3D structures of viruses and their proteins. Built computationally, using data collected in high-end electron microscopes, 3D atomic models can inform how viruses' function, infect the host cell, and evolve over time. In addition to structural virology, Dr Eruera is also an avid language learner passionate about Te Ao Māori, and an amateur scientific illustrator.

Mā te kimi ka kite; visualising native viruses of Aotearoa whānui.

Dr Eruera has worked with viruses that infect animals, people and bacteria, including human norovirus, SARS-related coronaviruses, animal hepeviruses, and bacteriophages. Of these, she has solved a wide range of different physical structures.

As a postdoctoral fellow, Dr Eruera has now turned her attention to a small number of native viruses from Aotearoa New Zealand. These viruses have evolved in complete isolation for a very long time and are highly distinct and unique to this whenua. Little is known about these viruses, such as their potential to cause disease or spread to other animals or humans.

AI algorithms such as AlphaFold are used internationally to predict virus components. But they do not have enough reference models to produce reliable, confident predictions on highly divergent viruses such as those native to Aotearoa.

Dr Eruera is creating 3D structures of native New Zealand viruses and making them freely available as reference models to guide AI tools. Analysis of these structures will give information about viral evolution and could be used to determine the risk of spillover from animals to humans by comparing our native viral structures to known pathogens.

Te Niwha has funded $129,237 for this research. The project completed in May 2025.

Kia Niwha Leader Fellow

Dr Andrew Highton

Dr Highton is a Research Fellow at the University of Otago, where he is researching ways to understand and improve gut health specifically relating to inflammatory bowel diseases and colorectal cancer. He has had previous positions at the University of Oxford in the United Kingdom and at the Leibniz Institute of Virology in Germany. While overseas, he researched immune functions in viral infection and how cellular metabolism is linked to immune potency. This included in-depth study of natural killer cells, an immune first line of defence against viral infection. In Germany, he used mini-lung culture techniques to study sex differences in COVID-19 outcomes.

Mini-lungs to study viral-immune responses.

Mini-lungs are the latest technology. Grown as three-dimensional cellular structures from adult stem cells present in donated lung tissue, or from lung wash fluid, they are highly representative of human lungs.

Mini-lungs can be infected with viruses such as SARS-CoV-2 (causing COVID19), influenza, and those that cause common colds, such as rhinovirus. This allows laboratory-based observation of the reaction of the immune system to new viruses.

The immune system is the most important defence against viral infection. Of particular importance early in viral infection are immune lymphocytes, known as natural killer cells, which can directly kill cells infected with viruses. Dr Highton is developing a system of mini-lungs and natural killer cells to create an accurate lung disease model in the laboratory.

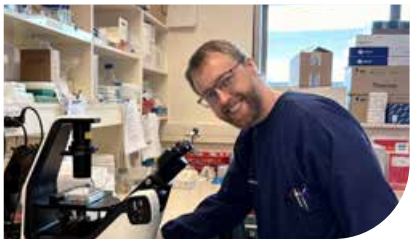
Dr Highton is creating a platform to study human lung disease, weaving together facets of lung physiology, immunity and viral infection.

This model of human lung disease will be used to better understand lung infections, with potential for use against emerging threats, and with the ultimate aim of improving health outcomes for New Zealanders now and in the future.

Te Niwha has funded $175,282 for this research.
The project completed in May 2025.

> If we can more accurately replicate disease processes in the lab it gives us a greater ability to study and understand those diseases.

– Dr Andrew Highton



Kia Niwha Leader Fellow

Dr Nadia Charania

Dr Nadia Charania is an Associate Professor in Public Health, Deputy Director of the New Zealand Policy Research Institute, and Co-Director of the Migrant and Refugee Health Research Centre at the Auckland University of Technology. Originally trained as a respiratory therapist, she completed her doctoral studies in environmental sciences and public health in Canada before migrating to Aotearoa New Zealand. Nadia is an applied public health researcher who specialises in qualitative and participatory action research methodologies. Her primary research focus is on addressing health inequities related to infectious diseases and service access among marginalised populations.

Applying complexity science to improve outcomes for migrants and refugees during future pandemics.

With equity and social justice at the core of her research programme, Dr Charania is passionate about addressing locally relevant issues in partnership with communities. She primarily engages with communities with migrant, refugee, and asylum-seeking backgrounds.

Dr Charania aims to achieve meaningful outcomes and advocates for systems-level change to improve the health and wellbeing of marginalised communities.

Migrants and refugees face a myriad of challenges as they settle in a new country, including language barriers and limited access to employment and health services.

Dr Charania is applying a complexity-informed approach that recognises dynamic relationships, unpredictability, and uncertainty within systems to improve pandemic prevention, preparedness, and response for migrant and refugee background communities.

Analysis of rich information obtained through extensive engagement will produce complexity-informed recommendations that reflect the realities of migrants and refugees over the phases of a pandemic.

Application of this research will support better future outcomes for migrants and refugees, with transferrable learnings that can benefit other marginalised groups.

Te Niwha has funded $196,922.30 for this research. The project completed in December 2025.

> During the COVID-19 pandemic, migrant and refugee communities were disproportionately impacted, as infectious disease outbreaks amplify existing inequities. Traditional approaches to pandemic planning do not sufficiently account for complex, dynamic factors.

– Dr Nadia Charania

Pacific Kia Niwha Leader Fellow

Dr Natalie Netzler

Dr Natalie Netzler is a New Zealand born Sāmoan (Moto'otua, Falealili) and Māori (Ngāti Ruanui, Ngāti Hauā) virologist and Senior Lecturer at the University of Auckland and an Associate Investigator of the Maurice Wilkins Centre. She holds a PhD from the University of New South Wales in Australia, and has several years' experience developing antivirals and vaccines to combat viral infections from both biotech and academic research settings. Currently, Dr Netzler's research focuses on broad-spectrum antiviral discovery and development, and how the unique genetics of Pacific and Māori populations impact the immune response.

Broad-spectrum antiviral activities within indigenous Pacific traditional medicines.

Dr Netzler has a keen interest in the antiviral properties of traditional medicines from the Pacific. She volunteers her time to provide infectious disease education for Pacific and Māori communities.

Over many centuries, Indigenous healers across Te Moana-nui-a-Kiwa region, including Aotearoa New Zealand, have developed effective traditional medicines that are still widely used.

Studies have found anti-inflammatory, anti-HIV and anti-bacterial activities within Indigenous Pacific medicines, but few studies examine antiviral activities against contemporary respiratory viral threats, such as SARS-CoV-2, which caused the COVID-19 pandemic, measles, influenza, and respiratory syncytial virus (RSV).

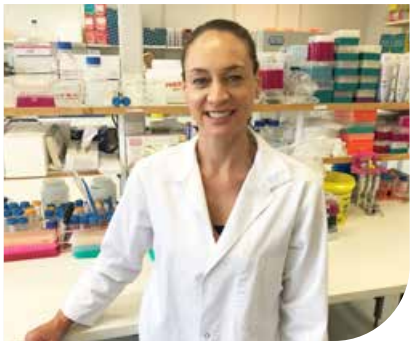
Through an existing collaboration with traditional Samoan healers, Dr Netzler screened medicinal plant extracts for antiviral activities against SARS-CoV-2, RSV and influenza to identify novel uses within traditional medicines.

Indigenous and Western medicines are often used simultaneously but little is known about the effectiveness of combinations.

Where clinical antivirals are available, such as Paxlovid for COVID-19, Dr Netzler combines them with traditional antivirals to test if they are effective together, or if they cancel out each other's activities, to help inform on safe use.

Te Niwha has funded $157,953 for this research.
The project completed in December 2025.

> Clinical antivirals are rarely available in Pacific nations, so we aimed to find effective, accessible antivirals within currently used traditional medicines.



– Dr Natalie Netzler

Kia Niwha Leader Fellow

Dr Rose Collis

Dr Rose Collis is a Scientist at the Bioeconomy Science Institute. Raised on a dairy farm in Eketahuna, Dr Collis completed her PhD at Massey University, focusing on the prevalence and distribution of antimicrobial resistance (AMR) determinants on New Zealand dairy farms. She currently partners with community groups, farmers, mana whenua, and various local and government stakeholders in collaborations that aim to understand the impact of various land-use activities on water quality.

He puna mātauranga rānei te māwhaiwhai – The house of the spider, a spring of knowledge or not?

Dr Collis' key capabilities extend from microbiology, genomic epidemiology, and metagenomics through to community outreach. She applies different genomics methods to assess levels of antimicrobial resistance and waterborne pathogens, informing potential public health risk.

Water sampling. Rose Collis Fellowship project, comparing the potential of māwhaiwhai (spider webs) and freshwater for monitoring biodiversity and antimicrobial resistance.

This research investigated AMR in New Zealand's environment and developed strategies to enhance surveillance, strengthen connections between scientific research and community groups, and help mitigate the transmission of AMR.

Dr Collis compared the potential of māwhaiwhai (spider webs) and freshwater for monitoring biodiversity and AMR. Water samples and māwhaiwhai were collected from sites associated with urban, agricultural and reserve bush land uses. Samples were analysed using Nanopore long-read metagenomic sequencing to detect AMR genes, culture-based analysis to isolate AMR bacteria, and using environmental DNA monitoring to assess biodiversity and ecosystem health. Integrating land use, biodiversity and AMR surveillance enables a more holistic understanding of how these factors interact and can impact AMR transmission and biodiversity changes that affect human health.

Te Niwha has funded $189,500 for this research.
The project was completed in December 2025.

> A highlight for me was working alongside researchers, farmers and communities to enhance AMR surveillance and water quality research in Aotearoa.

– Dr Rose Collis

Māori Kia Niwha Leader Fellow

Dr Theresa Pankhurst

Dr Theresa Pankhurst is an immunologist interested in the fundamental biology underlying effective vaccine-mediated immunity, and how the immune system can be harnessed to improve vaccine efficacy against future infectious disease threats. She is currently based at the Malaghan Institute of Medical Research, on secondment in Cambridge UK. Previously she contributed to the Malaghan Institute's development of a preclinically efficacious COVID-19 booster vaccine, and completed her PhD on mucosal vaccine design at Te Herenga Waka.

Preclinical development of vaccines that rejuvenate the ageing immune system.

Ageing causes a decline in how the immune system builds protection following immunisation, leaving kaumātua more vulnerable to severe infections. Dr Pankhurst is investigating whether bespoke mRNA vaccination can overcome these age-related barriers by restoring the immune processes that decline with age. This research aims to develop age-tailored vaccination strategies that better protect kaumātua and strengthen Aotearoa New Zealand's resilience to infectious disease threats.

This fellowship enabled Dr Pankhurst's secondment from the Malaghan Institute of Medical Research to the Babraham Institute in Cambridge UK, establishing a research partnership that combines the Malaghan Institute's mRNA vaccine capability with the Babraham Institute's world-leading expertise in immune ageing.

This fellowship supported the development of strong relationships with iwi, Māori health organisations and communities across Aotearoa, ensuring this research remains grounded in whānau values and priorities.

In addition, this fellowship has helped Dr Pankhurst consolidate her pathway towards becoming an independent infectious disease researcher, strengthening the future research capability of Aotearoa.

Te Niwha has funded $209,464 for this research. The project completed in December 2025.

> This fellowship taught me that powerful research is built on relationships, those anchored in our communities and strengthened by global scientific partnerships. I am grateful for these opportunities that will allow me to conduct impactful research for Aotearoa.

– Dr Theresa Pankhurst

Kia Tupu Community Grants

Kia Tupu Community Grants empower communities to strengthen capability, build resilience, and grow confidence in science, health, and wellbeing. Through grassroots leadership and local knowledge, communities shape solutions that support long-term wellbeing.

Te Niwha's Kia Tupu Community Grants are one pathway to stronger communities. The funding is awarded to local groups to undertake meaningful projects that will directly impact local communities.

These projects are providing opportunities for rangatahi (youth) and achieving tangible outcomes with broad societal gain. Rangatahi benefiting from this work are inspired by science, building curiosity and developing knowledge that may propel them towards a research career. The Kia Tupu Community Grants enabled by Te Niwha may well be shaping our next generation of scientists!

Community grants are made possible by the efforts of our host partners. Thank you for your significant contribution.

Lead: Richard Brooking
Host: Massey University and Whakakī Lake Trust

Collaborative Mana Moana Three Lakes Partnership.

$10,000

Lead: Michelle Crook
Host: New Zealand Sepsis Trust

Face-to-face wānanga with Māori and Pasifika communities to raise awareness of sepsis, gather feedback to new sepsis resources, and to co-create awareness plans and content to help build resilience in response to infection and sepsis.

$10,000

Lead: Maihi Makiha
Host: Te Waka Pupuri Putea Trust

Ngā Awa o Te Rarawa – eDNA Testing Survey.

$10,000

Lead: Darren Nathan
Host: Roma Marae

Strengthening our marae community resilience to prepare for future pandemic events.

$10,000

Lead: Seth Clement
Host: Pūhoro Charitable Trust

Pūhoro Internship Noho – Increase Māori representation within STEMM study pathways.

$10,000

Lead: Monique Henry
Host: Ngāti Tamaoho Trust

Mātauranga Pūtaiao – Increasing engagement of Māori and Pasifika ākonga within the curriculum of Social Sciences.

$10,000

Lead: Te Hao Apaapa-Timu
Host: Te Kura Kaupapa Māori o Hoani Waititi Marae

He whakapūaretanga ki te ao mātai rongoā – increasing representation of Māori in science and health research.

$10,000

Lead: Manaia Cunningham
Host: Mahaanui Kurataiao Ltd

Feasibility of a sustainable community-led response plan for infectious disease.

$21,000

Lead: Sheryl Matenga
Host: Ira Koopuu

Inspiring and educating youth about the importance of Science and Health.

$10,000

Ngā Pou Urungi
Governance and Oversight

The governance of Te Niwha rests on a robust framework underpinned by the Te Niwha Charter (Te Kawenata o Te Niwha), which outlines core principles guiding our strategic direction, research accountability, and partnership obligations:

- **Co-hosted leadership** by PHF Science and University of Otago:
  - PHF Science provides contracting, infrastructure, and science leadership.
  - Otago leads community engagement, cultural partnerships, and operational outreach.
- **Treaty-aligned governance and Charter values** – the Kawenata *(charter)* mandates honouring Te Tiriti o Waitangi, Māori wellbeing and embedding Rangatiratanga within the Platform's operations primarily focused on accountability, partnerships, relational integrity, leadership, and equity.
- **Annual performance and engagement reviews**, including public reports, summits, and forums ensuring transparency, iwi/community involvement, and responsiveness to emerging threats.

Te Niwha Governance and Advisory Groups

Te Niwha operates under a governance framework designed to ensure scientific excellence, cultural integrity, and strategic leadership. Four key groups form the tuarā *(backbone)* of this structure:

1. Platform Governance – PHF Science and University of Otago

The co-hosts provide foundational governance and operational leadership for Te Niwha. PHF Science and the University of Otago jointly oversee the Platform, ensuring strategic alignment, resource management, and delivery of research outcomes. PHF Science leads contracting and infrastructure, while Otago focuses on community engagement and cultural partnerships. Together, they uphold the principles of the Kawenata (*Te Niwha Charter*) and ensure Treaty obligations are embedded in all activities.

2. Te Niwha Steering Group

Ensuring that the Platform's activities align with the mission to strengthen infectious disease preparedness and response, the intent of the Steering Group is to provide high-level governance and strategic direction. The group comprises executive senior leadership upholding the principles of accountability, partnership, and leadership.

3. Te Kete Mātauranga – Technical Advisory Group

The technical advisory body responsible for maintaining scientific rigor and excellence, primarily focussed on reviewing research proposals, ensuring all initiatives meet high standards of multidisciplinary relevance and innovation, guiding the Platform's research priorities and fostering collaboration across institutions.

4. Whakamana Māori – Māori Advisory Group

Whakamana Māori provides cultural leadership and guidance, ensuring that Te Ao Māori principles and mātauranga Māori are embedded throughout the Platform. This group advises on tikanga, equity, and Treaty-aligned approaches, affirming that research activities respect and reflect Māori values and aspirations. Their partnership with Te Kete Mātauranga ensures that both scientific and cultural integrity are upheld.

5. International Advisory Group

The International Advisory Group provides independent, high-level guidance that strengthens the scientific rigor, global alignment and strategic direction of the Platform. Comprising internationally recognised experts in infectious diseases, public health, epidemiology, diagnostics, therapeutics and Indigenous health, the Advisory Group ensures the Platform's work is informed by global best practice and internationally connected and positioned to contribute meaningfully to global infectious disease efforts while delivering solutions that protect the health and wellbeing of New Zealand communities.

Together, these groups form a robust governance architecture that balances strategic oversight, operational leadership, technical excellence, and cultural responsiveness. This integrated approach enables Te Niwha to deliver world-class infectious disease research that is scientifically sound, culturally grounded, and aligned with the needs of communities across Aotearoa.

Te Au o Mihi
Acknowledgement

Te Niwha honours the breadth of contribution and extends gratitude to every hand, heart and mind that responded to the need to build a stronger, more prepared Aotearoa. This research platform was built on scientific excellence, trust, partnership and insight of individuals, and teams and communities across Aotearoa, ensuring that the Te Niwha remained grounded, connected and real.

Your commitment has helped build a platform that strengthens policy and practice, and advances monitoring, diagnostic, preventative and therapeutic science for the betterment of Aotearoa. You have threaded together mātauranga Māori, Pasifika expertise, community voice, international collaboration, and cutting-edge science to create culturally responsive, effective and impactful outcomes, while nurturing and growing the next generation of researchers, and expanding Aotearoa New Zealand's global contributions at a time when infectious disease challenges continue to grow.

We extend our heartfelt appreciation to the guider groups of Te Niwha, whose wisdom, leadership and unwavering commitment have been the pou that upheld this kaupapa. Your guidance has ensured Te Niwha remained purposeful, culturally grounded and connected to the communities we serve. Through your foresight and integrity, you have woven together diverse voices, strengthened partnerships, and safeguarded the values that define Te Niwha. Your contribution has not only shaped the journey but has laid a foundation of excellence and trust for the future.

As this first investment phase concludes, your collective efforts have laid the foundations for the continuation of investment into a new Infectious Diseases Research Platform and a renewed commitment to building a nationally coordinated system that delivers world-class science and impact.

As we move forward, we hold close the call of Kiingi Taawhiao to serve with a steadfast heart:

Kia niwha te ngaakau ki te whakauu ki ngaa mahi atawhai i te iwi.
Be brave and immovable to do what is best for the people.

Your resolute care, however big or small, has been the heartbeat of this kaupapa. It has ensured that every project, every partnership, every innovation has been driven by a commitment to protect and uplift our communities here in Aotearoa and beyond.

Te Niwha has been shaped by you all, its strength drawn from your insights, your relationships, your persistence, and your willingness to work together:

- **Your contribution has mattered.**
- **Your voice has shaped the journey.**
- **Your partnership has strengthened the foundation for the future of Infectious Disease Research.**

Kia tau iho ai ngā manaakitanga o Ihowa ki runga i a koutou katoa – thank you for walking alongside us, for believing in the vision, and for helping prepare Aotearoa for future challenges and opportunities.

Te Niwha
Infectious Diseases
Research Platform

teniwha.com