



# Delivering Impact Through Research

Examples from  
New Zealand Universities



# New Zealand's university research system in action

Aotearoa New Zealand has one of the world's best university systems by every metric and all eight universities are ranked in the top 3% globally.

We are proud of our unique research system which is built on collaboration and a deep understanding that we are stronger when we work together.

The result is an internationally recognised, robust and effective research system that significantly contributes to New Zealand's society, environment and economy.

While New Zealand universities excel in many areas of research, they are especially prominent in the following key areas of expertise.



**Climate Resilience:** our scholars tackle the urgent challenges posed by climate change, seeking innovative solutions to safeguard our planet.



**Oceans and Marine:** with over 18,000 kilometres of shoreline, New Zealand is a rich location for research into marine life.



**Sustainability:** all New Zealand universities have a range of sustainability research centres, partnerships, and topics. We also practice what we preach – all 8 New Zealand universities' approach to sustainability and equality was recognised as the best in the world in the 2024 Times Higher Education (THE) Impact Rankings.



**VR, AI, Robotics, and Space:** at the cutting edge of technology, our researchers explore virtual reality, artificial intelligence, robotics, and space exploration—forging new frontiers.



**Health, Biology, and MedTech:** from medical breakthroughs to advancements in biotechnology, our universities contribute significantly to global health and well-being.



**Indigenous Knowledge:** the knowledge of our indigenous communities is vital to research endeavours.



**Agriculture and Environment:** nurturing sustainable practices, our agricultural research ensures food security and environmental stewardship.

The following selection of case studies from all eight New Zealand universities represents a tiny fraction of our research in action.



UNIVERSITY OF  
**AUCKLAND**  
Waipapa Taumata Rau  
NEW ZEALAND

The University of Auckland offers a critical mass of top minds, state-of-the-art infrastructure and research facilities, and extensive library resources.

Waipapa Taumata Rau the University of Auckland's impressive research record has helped them achieve a place in the world's top 100 universities.



[auckland.ac.nz](http://auckland.ac.nz)



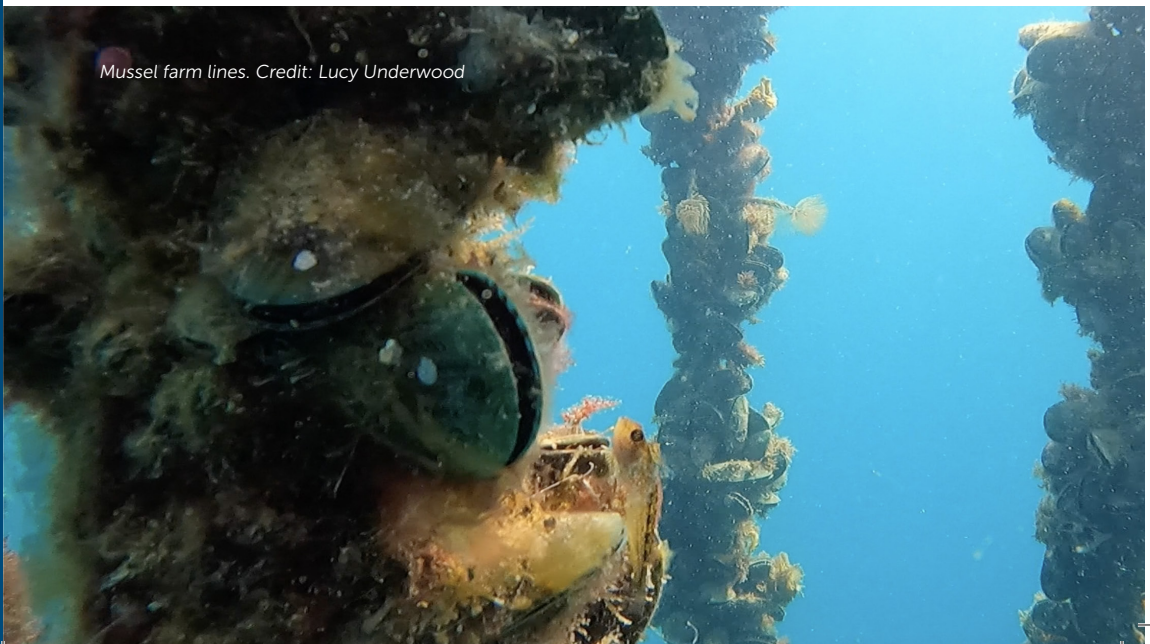
# Reviving Hauraki Gulf's Marine Ecosystem



A century ago, the Hauraki Gulf/Tikapa Moana/Te Moana-nui-a-Toi boasted green-lipped mussel (kūtai) beds covering an area larger than metropolitan Auckland. However, commercial dredging in the late 20th century decimated these beds, and led to their local extinction. Wild mussel beds serve as crucial habitats for small fish, especially juveniles, hosting approximately fourteen times more fish than bare seafloor.

To investigate whether mussel farms could provide similar benefits, researchers compared fish larvae settlement in four habitats near Coromandel: a mussel-only farm, a farm with kelp and mussels, a natural rocky reef with kelp, and soft sediment seafloor.

The study found nine fish species settling across these habitats, with no significant difference in species composition. Notably, both aquaculture habitats outperformed the soft-sediment habitat for some species' survival and growth, rivalling natural reef habitats. These findings suggest that aquaculture structures effectively provide nursery habitats for young fish, offering food and shelter. This groundbreaking study is believed to be the first to demonstrate the value of aquaculture as a nursery habitat for juvenile fish.



Mussel farm lines. Credit: Lucy Underwood

# AUT

AUCKLAND UNIVERSITY  
OF TECHNOLOGY

NEW ZEALAND

AUT research is focused on real-world impact with more than 60 research centres and institutes delivering innovative research – from artificial intelligence and robotics to ecology and public health.

AUT's research addresses issues facing the environment, society and the world, and also feeds back into the classroom to benefit their students.



[aut.ac.nz](http://aut.ac.nz)





# Breakthrough in respiratory humidification



In 2022, researchers at AUT secured the largest ever investment into an AUT-developed technology to found a company to commercialise their innovative respiratory technology.

RespirAq technology is the first fundamentally new medical airway humidification technology in decades. The RespirAq active heated humidifier removes the need for bulky water supply, tubing and sensors, making it a remarkably elegant and compact solution for medical humidification. It uses a chemically activated “smart fabric” to humidify the air breathed by patients on ventilators and other types of respiratory support.

Humidification is a routine standard of care, but existing medical humidifiers require a water supply and have problems with condensation forming in the air supply tubes. RespirAq provides the same level of humidification as humidifiers provided by well-known companies, but without the need to regularly refill water chambers and without creating any tube condensation.

In 2023 RespirAq was granted breakthrough device designation from the U.S. Food and Drug Administration (FDA) for its Active Humidifier product.



AUT engineering student, Aruna Korshapati (left) and RespirAq founder Dr Sandra Grau Bartual. Credit: AUT



THE UNIVERSITY OF  
**WAIKATO**  
*Te Whare Wānanga o Waikato*

The University of Waikato  
drives innovation for  
societal progress and  
global sustainability,  
linking knowledge with  
industry for a better world.



[waikato.ac.nz](http://waikato.ac.nz)





# Increasing flood resilience across Aotearoa



Flooding is one of the costliest natural hazards in Aotearoa New Zealand.

To increase resilience the country needs sound science that takes into account its changing climate, accurate information to underpin decision-making, and a better understanding of how flooding affects different people and communities.

Now in its fourth year, the University of Waikato leads a major collaborative project with national and international partners to create a New Zealand-wide, semi-automated system to model flood hazard under current and future climate scenarios. From there, tools are being developed to support risk-informed decision-making on land use, building and infrastructure development, and the long-term sustainability of flood schemes or defences.

Its Environmental Planning programme is central to ensuring the project outputs are fit-for-purpose. They have created a Boundary Organisation, Te whāriki ō te wai, which facilitates interactions between scientists and those who will use the outputs for decision making - river managers, iwi, government agencies, financial institutions and others. They are also researching how flood mapping can be used to reduce the vulnerability of future developments and how housing market signals and pricing can reduce exposure.

*Redclyffe Bridge, Waiohiki, Hawke's Bay, extensively damaged by flooding during Cyclone Gabrielle in February 2023.  
Credit: University of Waikato*





**MASSEY  
UNIVERSITY**

TE KUNENGA KI PŪREHUROA

UNIVERSITY OF NEW ZEALAND

Massey University is a research-led university with a reputation for excellence in innovation and the creation of new knowledge.

Massey's researchers solve national and global problems and are committed to making a real difference.



[massey.ac.nz](https://massey.ac.nz)



## Leading the way in understanding youth needs



A framework for people working with vulnerable youth, based on research and expertise from Massey University's School of Social Work, is being labelled "unique", "logical" and "easy to navigate".

The Long-term Successful Youth Transitions study, led by two professors from Massey University's School of Social Work, investigated how various services can support young New Zealanders aged 13-17 in their transition to adulthood and aims to identify new approaches for agencies in welfare, justice, mental health, education, and employment sectors to achieve better outcomes for youth.

The research builds on an international study and involves 593 young people participating in annual surveys, with detailed case studies on 107 of them. The study's high retention rate ensures robust data and has led to the development of the PARTH model (perseverance, adaptability, relationships, time, and honesty) for effective practice with multi-system youth. Community organizations in Aotearoa have already implemented learnings from the study. The findings are regularly disseminated to government agencies and will potentially influence future policies to better address the issues young people face.



Credit: istockphoto



VICTORIA UNIVERSITY OF  
**WELLINGTON**  
TE HERENGA WAKA

Te Herenga Waka—Victoria University of Wellington is fully committed to research excellence and work that will have a positive impact.

Victoria University of Wellington researchers are passionate about finding solutions to some of the world's biggest problems.



[wgtn.ac.nz](http://wgtn.ac.nz)



## A first-in-the-world programme for autistic children



Researchers at Te Herenga Waka–Victoria University of Wellington’s Autism Clinic have piloted a new programme to identify and support children showing signs of autism.

Recognising the difficulty many families have in finding help for loved ones after diagnosis, the programme includes training for 300 health and education professionals to identify early signs of autism in children aged under five and to refer them to the Autism Clinic for immediate support. As part of the programme, free support will be provided over 20 weeks to 60 children and their families locally.

Children referred to the Autism Clinic and their families will be given the opportunity to take part in Rauipi te Raupo, a support service specifically for children in Aotearoa. It was developed with input from an autistic advisory group and a Māori advisory group, the first time this type of co-design approach has been used in autism research in New Zealand.

Rauipi te Raupo provides children and their families with tailored support that is delivered by ‘coaches’ through practical weekly sessions where whānau and the coach play and interact with the child.

*Autism Clinic Te Herenga Waka VUW. Credit: VUW*





For more than 150 years, UC academics have created widespread impact throughout society with ground-breaking research, local and global collaborations, and an extensive footprint by training the next generation. Through engagement with communities, government and industry, academics ensure their research is translated, disseminated, and mobilised to create positive change in the world.



[canterbury.ac.nz](http://canterbury.ac.nz)





## Pioneering human-centred tech research



Operating since 2002, the Human Interface Technology Laboratory New Zealand (HIT Lab NZ) in the Faculty of Engineering at the University of Canterbury is recognised internationally as a leader in Human Interface Technology research and education.

HIT Lab NZ researchers are world-renowned for their expertise in virtual reality, augmented reality, applied games, haptics, and artificial intelligence, with a mission to support and empower people through the study, invention, development and dissemination of knowledge, technologies and processes that solve real-world problems and have positive global impacts.

Through collaborative research, HIT Lab NZ is addressing critical issues with widespread impact, such as developing new training experiences for Olympic skiers, capturing and revitalising Indigenous storytelling, and addressing issues of access to experiences for people with physical disabilities or geographic restrictions.

HIT Lab NZ engages with partners from industry, academia, and government, both nationally and internationally. They collaborate with many sectors including education and training, health, high performance sport, disaster management, gaming, transportation, tourism, and construction to take a human-centred approach to the analysis, design, and development of interactive and emerging technologies.







**LINCOLN  
UNIVERSITY**

TE WHARE WĀNAKA O AORAKI

Lincoln University  
undertakes research and  
grows the knowledge of  
students, shaping a world  
that benefits from a greater  
understanding of the  
relationship between land,  
the food and experiences  
created from it, and the  
ecosystems within it.



[lincoln.ac.nz](https://lincoln.ac.nz)



## EcoPond: New technology to reduce methane emissions



Effluent storage ponds are a crucial part of a dairy farm, but they are also the second-largest source of on-farm methane emissions from the dairy sector.

Lincoln University researchers are developing new technology using iron sulphate that aims to provide farmers with a cost-effective tool to help reduce methane emissions. Published research shows that treating effluent with iron sulphate can reduce methane emissions by over 90 per cent. Not only can it contribute to lowering emissions, but it will also help reduce freshwater contamination from phosphate and E. coli bacteria.

With co-investment from the Ministry for Primary Industries, the team from Lincoln University are working with farmer-owned co-operative Ravensdown to trial and refine the new technology to develop a commercial, cost-effective version.

The aim is to give farmers an affordable and effective solution to GHG mitigation and is one of many Lincoln University research programmes on improving the sustainability of agriculture.



*Measuring methane emissions on LUDF effluent pond. Credit: Lincoln University*



University  
of Otago

ŌTĀKOU WHAKAIHU WAKA

The University of Otago has a strong history of research and scholarship and is proud to be one New Zealand's most research-intensive universities.

Founded in 1869, the University of Otago continues to conduct research that is relevant, innovative, and connected.



[otago.ac.nz](https://otago.ac.nz)



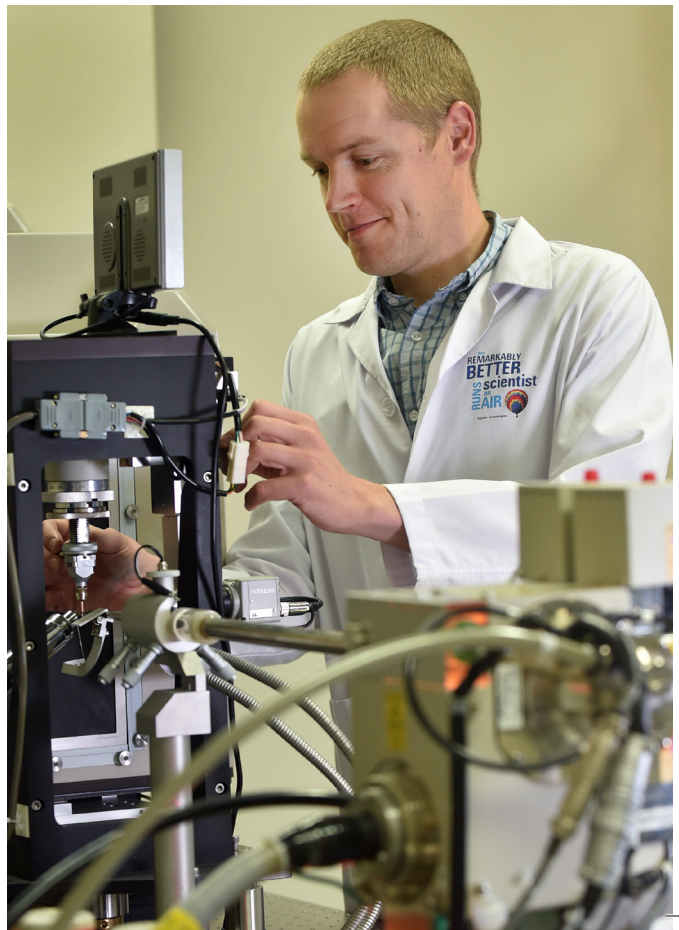
# Fundamental science powering new cancer treatments



A team lead by Professor Peter Mace, a biomedical scientist at the University of Otago, has made significant discoveries regarding the structure of proteins named “Tribbles”, which play a role in inflammation and potentially in some cancers. Mace’s research has focused on determining the 3D structure of these proteins, understanding how their structure influences their function, and how they can be affected by new drugs.

This important research has received grants from the Health Research Council, Rutherford Discovery Fellowship, and other sources, and has implications for cancer treatment, particularly for acute myeloid leukaemia and breast cancer. Tribbles-1 has been shown to promote these cancers, making it a potential target for drug development.

Mace has published academic papers, presented at international conferences, and engaged with media to disseminate his findings. Key factors contributing to the success of the research’s impact include addressing knowledge gaps, trying new ideas, building relationships, and widely disseminating findings. Mace emphasizes the importance of a full spectrum of health research, particularly fundamental science linked to clinical problems, to facilitate real-world impact.



*Professor Peter Mace  
Credit: University of Otago*

# Centres of Research Excellence (CoREs)

The Centres of Research Excellence (CoREs) Fund was established in 2001 to encourage the development of excellent tertiary education-based research that is collaborative, strategically focused and creates significant knowledge transfer activities.

There are 10 primary CoREs operating across New Zealand's universities, plus many more smaller research institutions.



**Maurice Wilkins Centre** hosted by the University of Auckland and in partnership with institutions throughout New Zealand, targets major diseases affecting New Zealanders, particularly cancer, metabolic disease and infectious disease, by delivering world-class research that enables the discovery of new therapies, diagnostics and vaccines.

[mauricewilkinscentre.org](http://mauricewilkinscentre.org)



**Te Pūnaha Matatini** hosted by the University of Auckland and in partnership with institutions throughout New Zealand, is a network of over a hundred investigators and students who are tackling the interconnected and deeply interdisciplinary challenges of our time. This community achieves impact by leveraging big data using quantitative complex systems approaches within an informed and richly contextual social sciences framework.

[tepunahamatatini.ac.nz](http://tepunahamatatini.ac.nz)



**Pūtahi Manawa | Healthy Hearts for Aotearoa New Zealand (HHANZ)** hosted by the University of Auckland and in partnership with universities, DHBs, community partners and organisations across New Zealand, aims to improve cardiovascular health and well-being in Aotearoa and achieve equity for Māori and Pacific Peoples through research excellence.

[manaakimanawa.ac.nz/putahimanawa](http://manaakimanawa.ac.nz/putahimanawa)



**Ngā Pae o te Māramatanga** hosted by the University of Auckland and in partnership with 21 other organisations, including all New Zealand universities, works to realise Māori aspirations for positive engagement in national life, enhance excellence in Indigenous scholarship, and provide solutions to major challenges facing humanity in local and global settings.

[maramatanga.ac.nz](https://maramatanga.ac.nz)



**The Dodd-Walls Centre for Photonic and Quantum Technologies** hosted by the University of Otago, and in partnership with institutions throughout New Zealand, is a world class organisation building on Aotearoa New Zealand's internationally acknowledged strength in the fields of quantum optics, photonics and precision atomic physics.

[doddwalls.ac.nz](https://doddwalls.ac.nz)



**Coastal People: Southern Skies** hosted by Otago University, and in partnership with institutions across New Zealand, works to connect communities with world-leading, cross-disciplinary research to support transformative change to rebuild coastal ecosystems.

[cpss.org.nz](https://cpss.org.nz)



**The Riddet Institute** hosted by Massey University and in partnership with multiple organisations across New Zealand and internationally, is a premier national centre for fundamental and strategic scientific research in food. Its area of expertise is at the intersection of food material science, novel food processing, gastrointestinal biology and human nutrition.

[riddet.ac.nz](https://riddet.ac.nz)





**The MacDiarmid Institute for Advanced Materials and Nanotechnology** hosted by Victoria University of Wellington, and in partnership with institutions throughout New Zealand, is a network of leading researchers united in the common goal to create and explore innovative, sustainable materials that will improve the lives of people in Aotearoa and around the world, working together and partnering with industry and government to address global challenges such as clean water, renewable energy and climate change.

[macdiarmid.ac.nz](http://macdiarmid.ac.nz)



**QuakeCore: Centre for Earthquake Resilience** hosted by the University of Canterbury, and in partnership with institutions around New Zealand, aims to establish and link multi-institutional national research programmes that are internationally networked. Their research programmes advance the science and implementation pathways of earthquake resilience through system-level science with highly integrated collaborations coordinated across the physical, engineering and social sciences and relevant research institutions.

[quakecore.nz](http://quakecore.nz)



**Bioprotection Aotearoa hosted by Lincoln University** and in partnership with multiple organisations across New Zealand, is dedicated to developing future bioprotection leaders through pioneering, multi-disciplinary research and collaboration to create innovative solutions for communities to protect both natural and productive ecosystems from pathogens, pests, and weeds in a changing environment.

[bioprotection.org.nz](http://bioprotection.org.nz)



Te Pōkai Tara  
**Universities  
New Zealand**

[universitiesnz.ac.nz](http://universitiesnz.ac.nz)

