



## 2020 Endeavour Round Successful Projects

### SUCCESSFUL 2020 RESEARCH PROGRAMMES

Organisation	Title	Duration (years)	Contract Value (GST excl)	Applicant's Public Statement
Auckland Museum Trust Board	*Te mana o Rangitāhua: A holistic approach to transform ecosystem wellbeing	5	\$13,363,325	<p>Te mana o Rangitāhua will transform Aotearoa's environmental leadership, executing a Ngāti Kuri-led research programme in a large, pristine and globally significant part of our EEZ. Rangitāhua hosts internationally significant terrestrial nature reserves and one of our largest marine reserves. While scientifically identified as one of the most intact marine ecosystems on Earth, the region remains poorly understood as a consequence of a severe lack of strategic science investment. The mauri of Rangitāhua is not comprehensively understood: we lack the critical knowledge required to guide evidence-based environmental management and protect Rangitāhua ecosystems in the face of future challenges.</p> <p>We will identify tohu (signs) of change, undertake a stocktake of taonga species, and work with novel methods for monitoring the resilience of Rangitāhua's ecosystems. Importantly, these methods will be designed and developed within a collaborative framework whereby iwi, as mana whenua, kaitiaki, and researchers in partnership with scientists, are at the centre of delivering on our national and international obligations around marine and terrestrial reserves, and our obligations to Te Tiriti o Waitangi.</p> <p>This is world-leading in research practice, intentionally building knowledge synergies between Mātauranga Māori and Science with emerging technologies to inform and increase understanding of biodiversity and ecosystem functions, while new environmental leadership and reform will result from prioritising cultural values and insights. Re-storying ancestral landscapes and biodiversity of Rangitāhua enables active Ngāti Kuri kaitiakitanga: scientific discoveries result in new perspectives on the connections between these islands and the wider Pacific. We will together layer our knowledge, producing Te Kupenga, a new way of understanding this ecosystem.</p> <p>Te mana o Rangitāhua presents a highly ambitious, strategic investment, leading environmental research for the future benefit of Aotearoa and the Pacific.</p>
Auckland University of Technology	Enhancing the impact of major urban regeneration on community wellbeing	5	\$7,995,410	<p>The purpose of this programme is to improve the revitalisation of New Zealand communities, leading to better wellbeing outcomes nationally, within communities, and among individuals. The research is aligned with the multi-billion-dollar urban regeneration and building projects currently taking place across New Zealand. The focus on wellbeing has arisen from the substantial international evidence indicating that countries that enhance wellbeing not only raise the standard of living for their citizens but also create a foundation for stronger and more resilient economic growth. This programme will firstly unravel the long-term impact of urban regeneration on high-level indicators of community wellbeing and deprivation using routinely collected government data. The next aspect of the project is centred on Kāinga Ora tenants – a population that experiences significant economic, social, health, and education hardship. The personal wellbeing of public housing tenants at various stages of housing development will be examined. The final stage of the project will explore in how urban regeneration impacts 'experienced' wellbeing (e.g., momentary affective states like stress, anxiety, mood), physical activity, social contact, sense of community, neighbourhood interaction/mobility, and cultural identity. The outcomes of this work will provide developers and policy-makers with new and essential information on the multifaceted impact of major urban regeneration on the people of New Zealand, giving direction to future improvements. By protecting and adding value to the government's major social investment, this will have significant and long-lasting benefits for New Zealand society.</p>



## 2020 Endeavour Round Successful Projects

### SUCCESSFUL 2020 RESEARCH PROGRAMMES

Organisation	Title	Duration (years)	Contract Value (GST excl)	Applicant's Public Statement
Institute of Geological & Nuclear Sciences Limited - Trading as GNS Science	Rapid Characterisation of Earthquakes and Tsunami: Fewer deaths and faster recovery	5	\$13,200,000	<p>New research providing earlier and more accurate information about earthquakes will save lives and enable quicker recovery, says the scientist leading the project. Dr. Bill Fry of GNS Science says his team's work centres on developing scientific methods allowing more rapid estimates of earthquakes' characteristics and impacts. "Currently, initial earthquake information is limited to location and estimated magnitude; in other words, a dot on a map represents the rupturing of a three-dimensional fault structure through time." "By understanding the earthquake's three-dimensional nature, we can better predict triggering of tsunami and landslides and potential damage to infrastructure in the minutes following the event."</p> <p>Dr Fry says his team's research will help New Zealand respond to and recover from disastrous earthquakes by providing better estimates of their extent and damage from shaking as well as any tsunami that may be generated. "The improved science will provide more rapid and accurate tsunami warnings leading to more effective evacuations and fewer false alarms. It will allow government agencies, utility companies, first-responders and the engineering community to most effectively direct resources, improving life-safety and maintaining critical infrastructure."</p> <p>The research will draw on extensive experience of an international team involved in relevant science and first response. Recent investments by government agencies in improved geohazard monitoring will provide the technical and operational structure to swiftly implement and use the research findings.</p> <p>Data from newly-deployed DART (Deep-Ocean Assessment and Reporting of Tsunami) buoys will be used to make estimates of tsunami height, arrival time, duration and inundation.</p> <p>"This adds value to our recent investment of \$47M in DART tsunamimeters, making New Zealand and our neighbours in the south-west Pacific more resilient to earthquakes and tsunamis," Dr Fry says.</p>
	*Powering NZ's Green-Hydrogen economy: Next-generation electrocatalytic systems for energy production and storage	5	\$8,450,000	<p>This Transformational research programme responds to the ambitious challenge of decarbonising New Zealand's energy sector through the implementation of green hydrogen production and storage technologies.</p> <p>If technologies can be developed to economically produce hydrogen from water, rather than fossil-fuels, the world will meet its energy needs while reducing greenhouse gas emissions. This programme focuses on utilising renewable electricity as an energy source to generate hydrogen by water splitting (electrolysis) – producing a clean, emission-free variant of this key industrial feedstock for stationary power and transport. While electrolysis is not new, it relies on high-cost, inefficient materials to make it work, making hydrogen production in this manner uncompetitive with the conventional fossil-fuel reforming. Our research aims to stimulate the creation of next-generation technologies with an order-of-magnitude improvement in performance relative to existing water electrolysis-based hydrogen production systems, along with new capabilities in hydrogen storage and distribution. We have several promising options currently under development capable of delivering a step-change in green energy production. Not only is our approach more effective, we believe it will result in significant cost savings that will flow through to the New Zealand consumer.</p> <p>By focusing on hydrogen production for stationary power and transport, our programme aligns with NZ's Renewable Energy, Hydrogen &amp; Carbon-Zero Strategies/Targets. It supports New Zealand's international commitments to reduce greenhouse gas emissions and assists with our challenging 2030 emissions target.</p> <p>Our programme will drive the development of new, knowledge-intensive industries, accelerating regional innovation, and incorporating the Māori economy as part of the transition to a low-emissions future. Our technology has a strong potential to strengthen NZ's pathway to becoming a net energy exporter.</p>



# 2020 Endeavour Round Successful Projects

## SUCCESSFUL 2020 RESEARCH PROGRAMMES

Organisation	Title	Duration (years)	Contract Value (GST excl)	Applicant's Public Statement
Massey University	Creating Capacity and Capability for the New Zealand Construction Sector	5	\$8,660,854	<p>The NZ Government is embarking on a substantial spending programme in the built environment to deliver societal improvements. It has formed the NZ Infrastructure Commission to lead this programme, developing a strong project pipeline of work planned across New Zealand, including road upgrades, land development, and housing, with investment coming from departments, agencies, local authorities, and the private sector. In parallel with these plans, the construction sector has joined with government to address well-recognised shortcomings and needs for improvement in the delivery of construction projects, through the NZ Construction Sector Accord.</p> <p>A collaborative team of university academics and industry professionals, headed by Professor Monty Sutrisna, School of Built Environment, Massey University, will help improve the delivery of these new national projects by creating a world-first smart system, called CanConstructNZ, that will model and report the dynamic inter-relationships of New Zealand's infrastructure work pipeline (the proposed building, construction, and infrastructure projects) against the construction sector's capacity and capability to deliver (including: procurement &amp; processes, supply chain &amp; organisations, people, and technology &amp; tools).</p> <p>By providing focus to this supply and demand situation, CanConstructNZ will enable tailoring of projects to the delivery constraints, while enabling enhancement our construction sector's performance, allowing optimised solutions, so that New Zealand's future construction projects will be delivered efficiently, effectively, sustainably, and safely.</p> <p>It is envisaged this collaborative endeavour CanConstructNZ, led by Massey University, will bring about a fundamental change in the construction sector by creating a new level of visibility for all stakeholders, enabling investor confidence in delivery, stability of construction companies and resource planning, confidence to people seeking training and education to work in the sector, and a brighter future for all.</p>
	Relational resources for change – New futures for youth with complex needs	5	\$6,877,579	<p>The Child and Youth Wellbeing Strategy states: "While most NZ children and young people are doing well, the distressing reality is that many are not experiencing anything close to a good life". Practitioners working with vulnerable youth report a critical need for culturally and contextually responsive resources that support them to increase the impact they have on the lives of these youth. These resources need to enable relational practices because the evidence has connected these practices to better outcomes. This research builds on a longitudinal study of pathways to adulthood of vulnerable youth which demonstrated the connection between positive relational practices and better youth outcomes. It creates a diverse kete of culturally and contextually anchored resources that youth practitioners can use to build and sustain effective, change-making relationships with vulnerable youth. The resources will be available in a range of formats and able to be used across service systems. They will be tested in diverse practice settings to establish their efficacy and usability. The kete includes tools that can be used to plan, review and track intervention progress and to measure the impact of the work. As a result, organisations can demonstrate the positive impact of their work in a uniform and consistent way and funders can use this data to support decision-making that encourages the use of these relational practices. The research team comprises practitioners, researchers and youth-clients who use a co-design methodology so that resources are culturally and contextually responsive and meaningful to those working in the varied organisations that provide support to vulnerable youth. The kete will be managed by sector organisations so that they are accessible and widely available.</p>
National Institute of Water and Atmospheric Research Limited	Reducing flood inundation hazard and risk across Aotearoa/New Zealand	5	\$15,355,360	<p>Flooding is one of New Zealand's most damaging hazards. It is also the hazard that will change the most rapidly in intensity and nature as climate change impacts become realised. For instance, flash flooding caused by very heavy rainfall over a short period of time is expected to increase the most dramatically. At the same time our country is undergoing intense urban development, that if not linked to climate futures will increase the risk to people's homes and wellbeing. These dual challenges make reducing flood risk extremely difficult for our current planning and response systems. There is a knowledge vacuum about the scale of these problems, the integration of different policy domains, and the details of how different parts of the country will be affected.</p> <p>Our research programme will support the changes that are needed. We will produce New Zealand's first consistent national flood map, showing where flooding is likely to occur, but also identify how vulnerable our assets and taonga are. In partnership with local and central government agencies, iwi, communities and key financial organisations we will work collaboratively to design, test and establish novel decision-making practices that integrate different climate and socio-economic projections and promote proactive adaptation to changing flood risks.</p> <p>Recent flooding events have demonstrated the ongoing impacts of flooding are not restricted to rescuing those inundated by water but are felt widely through society and the economy. We will work closely with communities to understand these cascading impacts and how we can be better prepared for them.</p> <p>This programme will generate information and guidance that is immediately relevant as local and central government form the regulations and policy that will drive our response to climate change.</p>

\*Transform proposals



## 2020 Endeavour Round Successful Projects

### SUCCESSFUL 2020 RESEARCH PROGRAMMES

Organisation	Title	Duration (years)	Contract Value (GST excl)	Applicant's Public Statement
New Zealand Forest Research Institute Ltd Trading as Scion	*The Tree Microbiome Project: at the root of climate proofing forests	5	\$13,500,000	<p>Our future wellbeing and fate of our trees and forests are inextricably intertwined. However, survival of many of our cornerstone native and commercial tree species is at serious risk due to rapidly changing environmental conditions. Breeding new tree varieties tolerant to future conditions will take too long and, for most species, we do not know if climate or disease tolerance traits are even present in their genomes. In short, time is running out to future-proof our trees and forests, putting their survival, and our quality of life, at risk.</p> <p>We aim to make our trees and forests more adaptable to disruption by using their microbial associations. Just like humans, trees live in close association with diverse microorganisms. And, just like humans, microbes living on plants can profoundly impact their health and fitness. For example, the microbes living in the human gut not only affect our physical state, but communicate directly with our brain, and are associated with psychiatric and neurologic disorders. We contend the soil-root-microbiome has the same function for trees as the gut-microbiome has for humans. We will use the root-microbiome to alter plants environmental perception, learning, and responses to changing environmental conditions.</p> <p>To achieve these outcomes, we will develop the first tree-microbiome model system using radiata pine. We use pine as we have a wealth of physiologic, trait, and genetic information, availability of national and international trial networks, and access to co-evolutionary host-microbiome associations across its natural and globally expanded ranges.</p> <p>Our expert national and international team will unravel how the root-microbiome functions to enable extended tree phenotypes that can resist climate change. This is a transformational opportunity to climate-proof both our native and planted trees and forests.</p>
The New Zealand Institute for Plant and Food Research Limited	*Cyber-physical seafood systems: Intelligent and optimised green manufacturing for marine co-products	5	\$16,280,000	<p>We typically think of seafood as delicious shellfish and fillets, but the enormous range of harvested animals from Aotearoa's aquaculture and fisheries also represents a complex mixture of molecules with uses far beyond food. Many of these molecules have special properties making them valuable commercially, including as products for human/animal health. They range from big structural proteins for biomedical scaffolds, through to anti-inflammatory omega-3s, and blood pressure-lowering or anti-aging peptides. The good news is that these molecules are often found in by-products and by-catch, so we can grow our seafood industry without affecting seafood availability, or needing more fish to be caught - a genuine vision of kaitiakitanga. The challenge is how to extract them all out of really diverse marine organisms, containing different types and combinations of the molecules. Current technology can't do this. We need new technology that is economical, uses environmentally friendly processes with low emissions and the biggest challenge, doesn't destroy one component while recovering another.</p> <p>We need factories that can change how they operate to match raw materials with the products we want. Right now, we can assess composition using chemical testing, but this takes a long time. For our responsive factories to work, we need analysis in real time as material arrives or changes. The Cyber-Marine research programme will develop AI-integrated sensor systems able to immediately tell us what's in the raw material, then use the information to direct optimised processing. This will require development of new low-energy extraction technologies that use the differences in properties of molecules to sequentially separate the components.</p> <p>While this programme centres on seafood, the technology will have application across the primary-production sectors and beyond.</p>
The Research Trust of Victoria University of Wellington	*High magnetic field electric propulsion for space	5	\$11,613,720	<p>Satellites need on-board propulsion for orbital adjustments, orbital transfers, station keeping, attitude control systems, and decommissioning. Most satellites use chemical propellants to power thrusters for these manoeuvres. Electric propulsion, deriving energy from solar cells, is the most propellant-efficient technology but uses high power to achieve low thrust. Power requirements can be reduced by applying an external magnetic field to the system which increases the Lorentz force applied to the propellant ions. One type of such an augmented thruster is an Applied-Field (AF)-Magnetoplasmadynamic (MPD) thruster. We will develop applied field -MPD thrusters which make use of the low weight and high magnetic fields possible using superconductor coils. Our hypothesis is that using superconductor to access higher fields, we can produce higher thrust, higher specific impulse, and more efficient AF-MPD thrusters for a given mass. We will also investigate whether by using superconductors AF-MPD thrusters can be effective at different scales, for application from nanosatellites to large satellites. We will build a prototype thruster and launch it to space on a test mission.</p> <p>Benefits from the programme will be through the commercialisation of the thruster technology and related technology developed. High efficiency thrusters enable higher value satellite and spacecraft missions and enable more economical availability of data from space services giving benefits to end users of the data. The uses of satellite data are many: from environmental and hazard monitoring to national security, telecommunications, and asset management.</p>

\*Transform proposals



## 2020 Endeavour Round Successful Projects

### SUCCESSFUL 2020 RESEARCH PROGRAMMES

Organisation	Title	Duration (years)	Contract Value (GST excl)	Applicant's Public Statement
University of Auckland	*Waerau waikawa iti rongoā paturopi: New Generation Peptide Antibiotics	5	\$9,179,085	<p>The World Health Organisation stated that “greater innovation and investment are required in research and development of new antimicrobial medicines, vaccines, and diagnostic tools” and published a list of 12 “priority pathogens (superbugs) according to how urgently antibiotics are needed.” New Zealand’s National Antimicrobial Resistance Action Plan broadly aims to improve control and detection of antimicrobial resistance. This research programme addresses antimicrobial resistance by focusing on knowledge creation for new antibiotics for human use, to replace and invigorate the exhausted pipeline. Our last lines of chemical defence against multi-drug resistant Gram-negative and Gram-positive bacteria are antimicrobial peptides produced by environmental microbes. Due to their unique bactericidal mechanisms of action, antimicrobial peptides have a lower tendency to elicit antimicrobial resistance than conventional antibiotics. Insertion of a lipid tail on a peptide sequence increases its affinity for bacterial membranes and selectivity for specific membrane components. This programme expands the new antibiotic pipeline by optimising the therapeutic properties of lipopeptide antimicrobial peptides using our patented “Cysteine Lipidation on a Peptide or Amino-acid” (CLipPA) technology. The genomes of both cultivated and uncultivated New Zealand microbiomes will also be mined to discover new lipopeptide scaffolds that possess novel mechanisms of antimicrobial action. We will deliver genome-mined and/or chemically engineered easy-to-manufacture lipopeptide antibiotics with superior antimicrobial activity. The investment will disrupt the current therapeutic paradigm and lead to an innovative NZ pharmaceutical sector that discovers, develops and produces antibiotics, an area of high value growth potential in terms of international revenue and highly paid technical job opportunities.</p>
	*Assessing and managing the risk of carcinogenic erionite in New Zealand	4	\$7,682,404	<p>Erionite is a natural mineral fibre that forms in volcanic regions, including being newly discovered in the Auckland region of New Zealand. It is similar to asbestos but even more likely to cause cancer when inhaled. When rock and soil containing erionite are disturbed during construction projects e.g. tunnelling, erionite can be released into the air, exposing workers and the general public. Erionite has caused significant health issues in Turkey and the western USA. However in NZ, little is known about where and how much exists. Due to the potential health and safety risks of erionite, it is of utmost importance to determine its distribution, test how easily it is disturbed and, together with the construction industry, develop methods to keep workers and the public safe.</p> <p>This programme combines a team of geologists, environmental scientists, medical specialists and engineers with industry experts, policy makers, social scientists and community members. The team’s goal is to replace uncertainty with knowledge about the risk posed by erionite, and deliver sound risk assessment and safe management practices, and foster the development of a new high-tech erionite measurement industry with potential for export of services, knowledge and technologies to other countries struggling with erionite contamination.</p>
University of Otago	*Public housing and urban regeneration: maximising wellbeing	5	\$12,393,935	<p>Every New Zealander has a right to adequate housing, but many people cannot afford to buy or rent a house. The government is now making the largest investment in public housing and urban regeneration seen in many decades. Given the amount invested in different levels and the range of models used to provide public housing, it is important that we have evidence about what works best to improve people’s wellbeing.</p> <p>Our research will compare social, cultural, economic, environmental and wellbeing outcomes across six models of public housing: the Tāmaki Regeneration Programme; Eastern Porirua Regeneration; He Tipu Manahau (Wainuiomata); Ōtautahi Community Housing Trust; Wellington City Housing; and Salvation Army housing.</p> <p>Our team of researchers from different universities and disciplines will measure wellbeing outcomes for public housing tenants in areas such as education, health and employment. We will interview tenant and housing providers as well as looking at anonymised data from the Integrated Data Infrastructure. Alongside this, we are evaluating innovative approaches to the residential use of solar energy.</p> <p>We are working closely with Māori colleagues to develop appropriate wellbeing measures in relation to sustainable housing and urban development that reduce carbon emission. As part of this work we will aspects of wellbeing relating to ease of access to public transport, and building infrastructure.</p> <p>Our research will bring together the skills of an experienced team to draw ongoing lessons from major housing and urban developments. These findings can help shape the developments, improve people’s wellbeing and reduce the carbon footprint of the built environment.</p>



## 2020 Endeavour Round Successful Projects

### SUCCESSFUL 2020 RESEARCH PROGRAMMES

Organisation	Title	Duration (years)	Contract Value (GST excl)	Applicant's Public Statement
	*Solar Tsunamis: Space-Weather Prediction and Risk Mitigation for New Zealand's Energy Infrastructure	5	\$15,038,728	<p>Space Weather investigates how solar explosions impacts human technology. As our reliance on advanced technology becomes more pronounced, this field has become increasingly important globally. In many countries the principle focus is on the hazard to the electrical power network. Unusually large space weather events have caused blackouts and multi-million dollar equipment has been written off, including here. The concern is that an extreme event will happen again, and could very large amounts of damage across the globe. For the USA the estimated cost of such an event is US\$0.5-2.7 trillion. A very rough estimate for New Zealand suggests an annualised risk cost of NZ\$1 billion a year.</p> <p>Solar explosions drive rapid changes to the Earth's magnetic field. Through Faraday's law, changing magnetic fields induce currents in wires and pipelines. It is these induced currents that can write off transformers and cause pipelines to rapidly corrode. This happens at a small level all the time, with large "geomagnetic storms" occurring most years. The issue is around extreme events at the 1 in 100 year to 1 in 200 year level: How likely and how big will such storms be? Can they be forecast? And what impact would that have on our critical energy supply networks, sitting on the land of our country?</p> <p>Our energy industry partners have identified the detailed questions that need to be answered. Our research will address these questions to mitigate the extreme storm space weather hazard. New Zealand is comparatively small, making the problem tractable, plus the highly collaborative nature of the relationship with our energy sector and international partners is truly unique, and set to maximise reduction of uncertainty in risk mitigation strategies.</p>
University of Waikato	Tikanga in Technology: Indigenous approaches to transforming data ecosystems	4	\$6,007,260	<p>The world is undergoing disruptive change as rapid advances in data linkage and powerful digital technologies converge. For Indigenous peoples these innovations are a double-edged sword, creating vast potential for improved wellbeing as well as major risks of group exploitation and harm. The current narrow focus on individual data rights and protection is failing us. We need a profoundly different approach - one that recognises collective identities and allows data to be understood through a wider set of ontological realities.</p> <p>Situated at the interface of Mātauranga Māori and data science, this interdisciplinary programme leverages our recognised leadership in indigenous data sovereignty to focus on two central questions:</p> <p><i>How can tikanga Māori (customary protocols) and Mātauranga Māori (Indigenous knowledge) inform the construction of digital identities and relational responsibilities to data?</i></p> <p><i>What tools, processes and mechanisms create transformative ecosystems for Indigenous data that enable ethical use and generate equitable benefits?</i></p> <p>We address these challenges through research to theorise, develop and test Māori approaches to collective privacy, collective benefit and governance in a digital environment; develop novel approaches to data classification, provenance, and valuation that ensure Māori data can be recognised, tracked, and valued within data infrastructures; and move beyond current efforts to reduce bias in algorithms to explore what it means to 'decolonise' algorithms that adversely affect Māori communities, and how Indigenous AI might be harnessed to realise Māori aspirations for self-determined development.</p> <p>This programme has strong support from key data stakeholders across Te Ao Māori and government. We will make publicly available a range of tools, frameworks and principles that will promote ethical and equitable engagement with data grounded in Te Ao Māori worldviews.</p>



## 2020 Endeavour Round Successful Projects

### SUCCESSFUL 2020 RESEARCH PROGRAMMES

Organisation	Title	Duration (years)	Contract Value (GST excl)	Applicant's Public Statement
	*Working to End Racial Oppression	5	\$10,030,790	<p>Racism, as a social structure that underpins forms of interpersonal and institutional discrimination, has had deleterious effects on Aotearoa New Zealand, evident in inequitable outcomes across almost every indicator of wellbeing, including those within health, education, housing, employment and justice. Working to End Racial Oppression is an interdisciplinary research programme that investigates the costs of racism, the systems that produce and reproduce racism, and transformative responses to reduce racism.</p> <p>In addition to collating and communicating extant evidence of racial inequalities across multiple domains, the costs of racism will be investigated through specific projects analysing: income distribution over time; employment outcomes; housing disadvantage; geospatial segregation and exposure to environmental risk; and the impact of racism on health education and training, and health systems.</p> <p>Systems through which racism is (re)produced will also be identified through analyses of: the settler colonial racialisation of differentially positioned communities of colour (including tangata whenua, tangata Moana, and migrants of colour); the maintenance of settler colonial narratives through national commemorations; the role of privileged populations in excluding racialised minorities; the significance of employment and housing systems in maintaining inequalities; and the role of technologies (e.g. social media) in exacerbating inequalities.</p> <p>Finally, responses to racism will include (but not be limited to) the development and dissemination of: toolkits to audit and address institutional racism; protocols to promote inclusive online communication; strategies for building relationships between racialised communities; and guidelines for the ethical remembering of New Zealand history.</p> <p>The programme assembles knowledge experts in Māori studies, health, Pacific studies, immigration, economics, data science, human geography, sociology and psychology, and will amplify innovation by bringing these knowledge systems into dialogue, towards the transformational long-term agenda of ending racial oppression in Aotearoa.</p>
	*Āmiomio Aotearoa – A circular economy for the wellbeing of New Zealand	5	\$10,939,795	<p>Āmiomio Aotearoa is a circular economy concept created for the Aotearoa New Zealand (NZ) context, shaped by the philosophies and values of both founding cultures, Māori and NZ European.</p> <p>The circular economy is cyclical in nature, whilst being regenerative by design, seeking to maintain products, components and materials at their highest value as long as possible. A shift to a circular economy in NZ would play a significant role in meeting the aims of key NZ Government policies related to sustainable development and wellbeing. It presents a major opportunity to improve NZ's long-term competitiveness, to create value across the economy, and to simultaneously provide regenerative environmental benefits and enable a sustainable, low-emission, climate-resilient future.</p> <p>Despite the transformative potential of the circular economy concept, it has yet to achieve significant uptake by business and other key societal actors because, while the concept is intuitively appealing and widely supported, the underpinning research and knowledge required to realise it in practice are scattered across multiple disciplines, and are collectively inadequate. This research programme will address these gaps, delivering a transformative multidisciplinary platform that integrates the many essential bodies of knowledge, research communities, novel insights, and practical actions that can contribute to circular economy success in NZ.</p> <p>The programme brings together a team formed of investigators with expertise in materials science, engineering, energy, economics, Kaupapa Māori, business, law and regulation, social science and public policy. Together, the team has a collection of impressive research outputs and a strong track record of transforming research into applied outcomes. The team will work in partnership with Māori and in close collaboration with Government, industry/business and society.</p>