

## Capability building through the Kia Niwha Fellowships

### Fellowship recipient: Alice-Roza Eruera

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### Research Title

*Visualising Native Viruses from Aotearoa Whānui*

The Kia Niwha Fellowship has been a transformational experience that has deepened my rangatiratanga capability at the intersection of structural biology, indigenous knowledge systems, and public health resilience. This fellowship aligns strongly with Te Niwha's mission to uplift Aotearoa New Zealand's capability to respond to infectious diseases by supporting culturally grounded, community-connected research.

A central focus of this fellowship has been to explore how kaupapa Māori approaches to leadership at the iwi-level can inform infectious disease preparedness. Across the year, I participated in three marae-based wānanga that brought together Māori scholars, health practitioners, community leaders, and kaumātua to discuss tikanga-based approaches to pandemic response and building trust between the community and scientists. These wānanga offered a space for reciprocal learning and the strengthening of relationships between research institutions and iwi, hapū and whānau.

Through this kaupapa, I was also invited for two national media interviews, where I spoke on my mahi and the importance of Māori leadership in science and health decision-making. These interviews reached both Māori and non-Māori audiences and helped me to practice my interview skills. As a direct outcome of the networks established through this fellowship, I was invited to join a new study focused on Māori approaches to pandemic preparedness (Whiitiki Whakatika). My involvement in this new project represents a continuation of the leadership development initiated through Te Niwha funding and reinforces the critical importance of relational, indigenous-led research frameworks.

Looking forward, I intend to build a more formalised programme that integrates cryo-EM and virology with kaupapa Māori principles, bringing Indigenous voices to the forefront of structural biology and biomedical innovation. I will also continue to advocate for policies that centre Māori knowledge and self-determination in health research funding and infrastructure. Ultimately, this fellowship has set me on a trajectory toward systems-level leadership, where I can contribute to reshaping the way we do science in Aotearoa.

The research component of this fellowship focuses on solving the structures of three viruses using cryo-electron microscopy (cryo-EM), a powerful imaging technology that enables the visualisation of viral particles at near-atomic resolution. Understanding these structures is essential to guiding the development of targeted vaccines and therapeutics, particularly for viruses with pandemic potential. This work addresses a pressing need in global and national infectious disease preparedness—ensuring we are scientifically equipped to respond swiftly to future viral threats. The project is conducted in partnership with leading structural biologists, virologists, and Māori health researchers, ensuring that both scientific and cultural lenses are represented.

This research aligns with Te Niwha's kawenata of strengthening Aotearoa's research capability for infectious disease challenges. By building domestic expertise in cryo-EM and focusing on viruses with high public health relevance, this project contributes to national resilience. The integration of kaupapa Māori perspectives into the scientific process also reflects Te Niwha's commitment to equity and Indigenous innovation.

## Te Niwha Kia Niwha Fellowships Impact Case Study

In the longer term, this research contributes to the development of sovereign capability, hopefully opening the door to collaborative opportunities with Māori biotech ventures and public health organisations interested in culturally-aligned mahi rangahau.

The next phase of the project includes completing the structural determination of all three viruses and engaging in targeted dissemination to both scientific and community audiences. I will explore how these structures can feed into translational research initiatives such as vaccine development or diagnostics. Future research phases may include expanding the scope to viruses disproportionately affecting Māori and Pacific communities, further ensuring the equity and relevance of this work.

The Kia Niwha Māori Fellowship has allowed me to progress in scientific and has strengthened my ability to lead with purpose, engage across disciplines and communities, and contribute meaningfully to Aotearoa's infectious disease preparedness. By weaving together cutting-edge research with Indigenous values, this work charts a path toward a more resilient, equitable future for Aotearoa whānui.