NZASE scientist profile

Research director Ariana Estoras

Born

Born in 1978 in Marton, where she grew up.

Affiliations

Ko Kakepuku te maunga, ko Waipā te awa, ko Tainui te waka, ko Ngāti Urunumia te hapū, ko Ngāti Maniapoto te iwi, ko Te Kotahitanga te marae.

Schools and subjects

At Rangitīkei College, Ariana studied Science, Biology, Chemistry, Physics, Maths and Te Reo.

How she got into science

"Me and my sister spent every school holidays on my grandfather's drystock (sheep and beef) farm in the Waitomo, working with him sunup to sundown.

"I asked lots of questions - how tadpoles in the trough turn into frogs; why cows are different colours; how did he know that a storm was coming and to move the animals.

"He really indulged my questions, explaining how things worked, from tractors to lambs being born. At school I saw how science started to answer some of those questions about the natural world. I really enjoyed it, had good teachers, and did well."

Training and jobs

MSc in Biochemistry, 2001; **Biosecurity Risk Assessment Officer**, 2001-5, Ministry of Agriculture and Fisheries; **Research Officer** (genetic modification), Imperial College London, 2005-7; **Policy Analyst**, Meat & Wool NZ, 2007-10; **Agricultural Analyst**, Beef + Lamb NZ, 2010-12; **Senior Implementation Adviser,** Māori Partnerships and Programmes, Ministry of Primary Industries, 2012-15; **Director - Māori Research and Partnerships,** AgResearch, from 2022.

"At Imperial College, my career stepped out of the lab. I was focused on regulation, advising genetics researchers on applications that fit the European Union and UK regulations on genetically modified organisms (GMOs)."

Ariana in 2022. Photo: AgResearch.

Fields of science

Biochemistry, microbiology, molecular genetics, kaupapa Māori, mātauranga Māori.

Research example

Molecular genetics of a retinal disorder

For her Masters project, Ariana worked with a branch of the large East Coast Manuel whānau, which had an inherited visual disorder.

Ariana with her daughter Karahuia and husband Jon in 2021.

"It was linked to the X-chromosome, so inherited from mothers. All boys born to a female carrier were legally blind from birth, and some were also intellectually disabled, while the girls born to those mothers lost their sight by their 20s. The disorder had been in the whānau for many generations, and was viewed as a curse they had to live with."

Ariana found "a genetic defect that kept the calcium channel in people's retina permanently open, rather than opening and shutting as usual, which damaged the retina."

"My research gave the whānau a biological reason for their disorder, and led to a genetic test for those who chose it during pregnancy. Some members wanted to find out, and others didn't."

Ariana says that rapid advances in genetic technologies have made "my research methods completely out of date now."

"However, I wouldn't have been able to manage researchers without doing that genetic research and working with the Manuel whānau. From that science, I learnt to critically analyse things."

Most valuable results

As well as her work with the Manuel whānau, Ariana values being able to "help researchers and other staff to achieve their potential".

"I started as a specialist in engagement with Māori and worked my way up. I love working with Māori groups, seeing them make decisions about their whenua."

Her Māori research and partnerships team of 20 includes three senior kaupapa Māori researchers, and five junior researchers who they mentor, as well as student interns and two new graduate positions a year. "We're the new kids in AgResearch, with no track record yet."

Mātauranga Māori

"Mātauranga is the first science of Aotearoa, arriving with our tūpuna, who navigated here using that knowledge. They then had to develop new sets of knowledge and practices for māra kai and kainga at a new latitude."

Ariana with her step-daughter Madia, left, and husband Jon in the snow at Whaka-papa skifield, Mt Ruapehu.

"That knowledge has been passed down over many generations in oral traditions, such as mōteatea, pūrākau, whakairo and waiata, which spread knowledge in the same way as early scientific publications."

In the early 1800s, that mātauranga quickly incorporated European technologies into large commercial, communal farms, enabling Māori to export produce to settlements in Aotearoa, Australia and the Pacific.

"After colonisation there was a dramatic shift in transmission of mātauranga to future generations, so that many of us didn't learn those things. We are lucky that we have some holders of mātauranga Māori who are sharing that knowledge among their hapū and iwi. Others are publicly sharing centuries of Māori knowledge about coping with climate change, because it's an issue for us all right now."

Examples of mātauranga include Māori classifications of clouds and soil; for example, Garth Harmsworth collected at least 100 different names for soil types.

"Matauranga Māori didn't have a space in AgResearch for a long time, but now the organisation is focussing on mātauranga as a knowledge system alongside science, which will contribute to the solutions that we need. There's so much knowledge out in Māori communities, local knowledge and local solutions."

What she likes about science

"I feel very satisfied when I hear about how a scientist has used their training and methods to answer a question that has arisen. They may not completely answer it, but they add to the pot of information that may eventually answer it. That process of trying to answer those questions is very satisfying."

"I love how Mātauranga Māori connects me to the past and future – it can lift your wairua. As we're brought up in tikanga: it's never about the individual, it's always about the whānau, the hapū, the iwi and te taiao. It's all about the connections."

Links

EPA, Dec 2022, Cutz and kōrero with Ariana Estoras, 2m video.

AgResearch, May 2022, New drive to harness mātauranga Māori for Aotearoa.

Jacobs, May 2022, AgResearch embraces mātauranga Māori, creates new department to support it, *Stuff.*

Garth Harmsworth, 2022, Exploring indigenous Māori soil health concepts in Aotearoa/New Zealand, Manaaki Whenua/Landcare Research NZ discussion paper.

Jon holds Ariana's Diploma in Te Reo Rangatira from Te Wananga o Aotearoa in 2019.

Ariana ready for the swim in the Iron Māori Triathlon in Napier in 2017.

Ngā Kupu

Māra kai – Food garden
Mata tuaroa – Retina
Mate ā-ira – Genetic disorder
Mātai iranga – Genetics (field of study)
Mātai matū koiora – Biochemistry
Mōteatea – Lament, traditional song
Pūrākau – Traditional story
Raweke ira – genetic modification
Tikanga – Customary values and practices
Waeture – Regulation
Whakairo – Carving
Wairua – Spirit.

From Paekupu and Te Aka Maori Dictionary